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THE CONFERENCE AND ITS DELEGATES.

IT is probable that there are at present in New York more individuals directly interested in rubber than have ever before been gathered in any American city. In addition to the list of distinguished delegates to the International Rubber Exposition and to the Conference, there are members of the great Commerce Congress in which forty nations are represented, delegates to the International Chemical Congress and individual representatives of the whole rubber trade.

That the Rubber Exposition should call together so great and notable a gathering is in no way remarkable. The last half dozen years have shown unparalleled expansion in both crude and manufactured rubber, an expansion that is far from reaching its limit, and indeed is going steadily on. To the many present, therefore, facing a future full of promise and growth, whatever their interest in rubber, from whatever part of the world they come, we offer felicitation and welcome.

THE THIRD INTERNATIONAL RUBBER EXPOSITION.

AS this number of THE INDIA RUBBER WORLD comes from the press on the day of the opening of the Third International Rubber and Allied Trades Exposition, it is not possible to speak of that enterprise as one that is complete and finished; but, by reason of the breadth with which it has been planned and the thoroughness of the preparations that have been made for it—preparations that have been in progress for over a year—it is quite possible to prognosticate with more than a fair degree of certainty the outcome of this event.

We cannot, of course, from this initial viewpoint, make any definite statements as to the success of the exhibition from the standpoint of popular appreciation and attendance; but as a great educator and stimulator of the trade, and as a revelation of what the rubber industry in this country is to-day, it is perfectly possible to speak now, and to speak with all confidence. Looked at from this point of view, its success is already achieved, and is beyond all question. It merits success in every direction and will doubtless realize it. It is a worthy enterprise. The plans were well and wisely laid and they have been carried out carefully, conscientiously and intelligently.

The two great London rubber expositions were not only trade successes but made a wide appeal to popular appreciation. It may not, to be sure, be quite safe to argue from British experiences to American probabilities, for conditions are somewhat different. It cannot be questioned that American manufacturers, and business men take a less enthusiastic interest in exhibitions in general than their English contemporaries. There is a temperamental difference between the English and Americans. It might be described as saying that Americans are more keenly alert to the immediate substantial results of any enterprise on which they embark; or viewed from another angle, it might be expressed in this way,—that our friends across the water have more imagination, that their commercial outlook is broader, that they are concerned with the future as well as the present. However it may be described, the fact undoubtedly remains that the English as a class are more ready to participate in exhibition enterprises than we are. As a result of this American hesitancy to take part in shows, some of our large manufacturers are not actively participating in this great international rubber exploitation; but, on the other hand, many are—enough at any rate to make a creditable display of American rubber manufactures.

Foreigners have taken an unexpectedly active part in

this New York exhibition. They have contributed with a lavish hand. Take Brazil, for instance, which is represented by half a hundred commissioners, counting those from the national government and from various commercial bodies; while the material display takes the colossal form of nearly a hundred tons of the choicest rubber of that great rubber country. The plantation companies of the Far East—considering their remoteness from New York and the distance which it was necessary for them to cover in sending their exhibits—have not been far behind. This exhibition has not only brought together the most wonderful collection of crude rubber ever seen in this country, but it is doubtful if another such collection will be displayed again here for many years.

THE AWAKENING OF BRAZIL.

THE Ministry of Agriculture of Brazil has recently published in pamphlet form in English the decrees and regulations passed by the National Congress and approved by the President, looking to the encouragement of rubber production in that country. This action on the part of the great rubber republic is incomparably the most important step ever taken in that country to protect its leadership in rubber production.

Brazil is at last awake to the problem that confronts her, if she is to maintain her premiership in the world's rubber market. It would have been better if this awakening had come earlier, but the lost time can be made up by a vigorous prosecution of the campaign that has been marked out.

These decrees and regulations are carefully thought out and comprehensive, and should do much to stimulate a wide activity in rubber production in the Amazon country. A careful translation of the decrees was made, and presented in considerable detail in our June issue, but now that they have been further exploited by the Government for the benefit of English-speaking people, it may not be out of place briefly to review their general scope. They cover the following points:—The exemption from duties of all utensils and materials intended to be used in the culture of various rubber trees named in the decree, and in the harvesting and preparation of rubber extracted from those trees; the granting of liberal bonuses ranging from $280 to $800 to those who shall start new plantations and carry them to successful production; the establishment by the government of experiment and demonstration stations at convenient places in the different states lying within the rubber territory; the building of houses where immigrants brought into the rubber country may receive proper shelter and sanitary habitation, and the building of hospitals where they may be given, free of charge, any necessary medical treatment; the construction of narrow gauge and other railways in various sections of the rubber country, including a railway from some convenient place on the Madeira-Mamoré railway to the frontier of Peru; the execution of work that shall make navigable for the shallow rubber boats various rivers where it is impossible now for these boats to operate; the promotion of many centres of food production for the maintenance of the rubber gatherers; the holding of triennial rubber exhibitions at Rio de Janeiro, intended for the instruction and encouragement of rubber growers; and other measures tending to stimulate the production of rubber and materially assist in the opening up of the rubber country.

Brazil is at last aroused to the necessity of the proper development of her vast and wonderful natural resources. She is profoundly to be congratulated on this awakened spirit. If she shall carry out with determination and energy the wise measures which her legislators have enacted, great will be her reward.

TWO GREAT SYNTHESISTS IN OUR MIDST.

DURING the past few days we have had two great champions of the new synthetic rubber in our midst or—as the purists would prefer to have us say—in the midst of us: Professor William F. Perkin, spokesman of the English group of rubber makers, and Dr. Carl Duisberg, director general of the Farbenfabriken of Elberfeld, Germany, leader of the German producers of artificial rubber. Both delivered able and exceedingly instructive addresses before the Congress of Applied Chemistry that held its sessions in New York during the first half of September. Both had much to say of deep interest, not only to the science of chemistry, but to the rubber industry. Both courteously received a representative of The India Rubber World and further elucidated the views presented in their lectures.

On another page will be found highly interesting interviews with both of these distinguished scientists, as well as other matters of importance relating to the absorbing synthetic problem. It is a matter of regret that the great allotment of space necessarily devoted in this issue to the Rubber Exposition, together with pressure of other matters, makes it impossible in this number to report Dr. Duisberg and Professor Perkin in full.

OVERALLS ON TOP OF HARVARD.

WHEN young Roswell Colt, son of President S. P. Colt, of the United States Rubber Co., landed in New York recently on his uncompleted wedding tour, he, jointly with his distinguished father, was interviewed by representatives of the New York daily press; and in reply to the questions of one of his interviewers as to what his future plans were, he is reported to have replied: "We will travel about a while, and I'll show my bride my college—Harvard. Then we go to Montreal, where I'll buckle down to hard work, don overalls and become acquainted with every phase of the rubber business."

That reply of the young man that he would first visit his *Alma Mater* and then get into overalls, while intended only to throw light on his own personal plans, as a matter of fact flashed an illuminating shaft on a modern commercial situation of great significance, to wit: the efficacy of a liberal education—plus a pair of overalls.

A few years ago college men were looked upon with considerable suspicion in manufacturing circles. A college education was considered all well enough, as a preparation for the so-called liberal professions. University culture was thought to be quite the proper foundation for a career of theological argumentation, for the efficient, or at least for the harmless, administration of medicine, and for dealing in the shifty subtleties of the law; but when it came to commercial life—and particularly to the din and dust of the factory—four years spent amid the classic shades were currently believed to have a thoroughly incapacitating effect.

But now all this is changed. It has been discovered that a trained mind is preferable to an untrained mind, whether the work to be done is the inditing of sermons, the elucidating of an argument, or the running of a mixing machine; and companies that twenty years ago employed only "practical" men—those who had grown up in overalls—are now filling their important places with the possessors of sheepskins. As an illustration of that point, one of the large Akron factories recently applied to a Western college for a list of promising young graduates, and took five out of the last graduating class, to place in positions of prospective importance.

To be sure, not every college man is willing to don overalls. If he isn't, the factory is no place for him. But where is he willing to start at the very bottom, put on his working clothes with the other workmen, feed crude rubber biscuit into the washing machine, go from that into the mixing room, thence to the calender room, and thus work his way up, his progress obviously ought to be much more rapid than that of his factory comrade whose whole schooling has been that of the shop, and whose outlook in life has always been closed in by the four walls of the factory.

The college, where it has the right material to work on, gives breadth of view, and range of vision, and quickens the imagination; and when range of vision and quickened imagination put on overalls—there ought to be some excellent work done.

SYNTHETIC TIRES HAVE ARRIVED.

ON the evening of September 9, Americans took their first view of actual automobile tires made from genuine synthetic rubber. It was on the occasion of Dr. Duisberg's lecture before the chemists, and he illustrated the progress the Germans had made in the production of synthetic rubber by rolling out before the audience a set of tires constructed of rubber made in Germany—rubber which was innocent alike of plantation parentage and Amazonian ancestry. Moreover, these tires had not only been on actual wheels, but had carried an auto of weight and proportions 4,000 miles, and were still intact and unpunctured, and in fact apparently little worn, and full of promise for a few thousand miles more.

But the makers using the orthodox material that comes from Pará need not feel undue alarm, for there are only two sets of these synthetic tires in existence—the set the doctor exhibits and another set that were presented not long since to the Kaiser. Just what these two sets of tires cost, probably not even Dr. Duisberg himself could accurately state, but reflecting that the German chemists started out five years ago on this synthetic quest, and purposed to spend 1,000,000 marks a year on it, and further reflecting that these eight tires represent practically the only tangible and utilizable fruits of their efforts—apart of course from their great scientific value—it is obvious that they have come rather high. The Doctor does not expect to see synthetic tires on next year's output of autos. He is modest, and inclined to be patient. "Synthetic rubber," he says, "will surely not appear on the market in the immediate future; but I, for one, hope to live long enough to see art triumph over nature also in this industry."

THE EUROPEAN COTTON MARKET.

AMONG the leading European consumers of American cotton, are the spinners of Germany and Austria. Owing to their constant and intimate relations with cotton manufacturers, spinners are in a position to forecast trade prospects from the point of view of consumption, as well as to form a more or less accurate idea of the speculative influences likely to affect the market.

Hence special interest attaches to the recent statements of the managing director of the Bamberg (Bavaria) Spinning Mills, and of the president of the Austrian Cotton Spinners' Association, Vienna, two of the most representative European authorities on the subject named.

The Bavarian director asks whether the 16-million bale crop is really insufficient to cover the wants of spinners, and whether the growing cotton is in a condition which leads to the expectation of higher prices through insufficiency of supply. While he considers these questions justified, he calls attention to the fact that nearly all private reports state that the area sown in cotton this year in the American cotton states, is only to an unimportant extent smaller than that of last year. At the same time, he refers to the effect which the cold and damp weather of the spring may have exercised upon the final result. Seeing, however, that planting conditions have been statistically favorable, speculators have only the weather to consider as a basis of operations for a rise.

The nominal quantity of 16 million bales for the crop of 1911-1912, he considers, on account of its defective quality for manufacturing purposes, can only be regarded as the equivalent of 15 million bales. As this quantity has proved sufficient, he urges that even should the new crop turn out to be only 13½ million bales, it would meet the absolute requirements of the world's spinning industry. The hopes which had been entertained of the German cotton yarn business in 1912 do not seem to have been fulfilled, and the position of German spinners is much worse than it was a year ago.

In the Austrian cotton spinning industry, the overproduction of recent years has led to radical measures. Under the auspices of the spinners' association, 90 leading Austrian spinning mills have come to an agreement for the regulation of production. This agreement does not apply to production generally, but to the share of the various mills in the domestic consumption of yarn, and the production of the quantities thus allotted. Thus the export trade of Austrian spinners does not apparently come under the new agreement, which is intended to stop the losses which have arisen in the past from unrestrained competition in the home market.

As a leading German textile journal puts it, the further development of the cotton market is "a book with seven seals." Among the factors meriting consideration, besides the weather and the attitude of spinners, is the consumption of next year. The consumption of yarn in 1912 having exceeded that of 1911 by 10 per cent., it is urged that weavers' stocks have probably been replenished, so that a further increase in consumption is not anticipated for 1913.

TWO MONTHS FOR COUNTERFEITING A TRADE MARK.

AN interesting trade-mark case recently occurred in Russia, as reported in the Bulletin published by the United States Trade Mark Association. Five directors of a certain Russian rubber company have been adjudged guilty of counterfeiting the trade-mark of a German company, and each has been sentenced to a term of two months in jail.

The Russian trade-mark law provides that any dealer or manufacturer who makes unauthorized use upon his goods, wrappers, labels or in any of his advertising, of another's trade-mark, or who uses a trade-mark so closely resembling another's that it is likely to be mistaken for it, is liable to a maximum penalty of eight months' imprisonment.

We have been in the habit of considering ourselves much in advance of Russia in our standards of ethics, but here is a case where we may well learn a lesson from the subjects of the Czar. There has been far too much laxity in the way of copyright infringement. Many a manufacturer—and this is quite applicable to the rubber trade—has built up an enviable reputation through years of honorable achievement and given his trade-mark a great commercial value, only to have some not too scrupulous concern enter the field and deliberately adopt a trade-mark so similar as to make it inevitable that the trade, particularly the consuming trade, would confuse the two, the newcomer hoping in this way to reap what another has sown. A few months in jail for the directors of a company that seeks to embezzle the reputation of another company, would be a wholesome object lesson.

It may be added, however, that there has been a general improvement in regard to this matter in this country. Some years ago the manufacturer whose trade-mark rights were infringed could get very little redress in the courts. Judges are now disposed to treat these complaints more seriously, and in addition to this fact there is a constantly growing sense of business honor, that entirely apart from the legal aspects of the matter, tends to bring this form of dishonesty into increasing disrepute.

A Visit to the "Black Republic."

By the Editor of "The India Rubber World."

Haitian Rubber Trees—From Curacao to Jacmel—"The Second French Republic"—A Dangerous Roadstead—Ashore at Jacmel—The Post Office, Market and Jail—Upper Class Haitians—A Visit to Aux Cayes—A Wonderful Fire Department—Traveling Haitians—The Birthplace of Dumas.

TIME was when there were rubber trees in Haiti—*Castilloas* probably, although the early visitors, in 1492 and on, did not know the *Hevea* from the *Asclepias*. They simply mentioned the ball games of the native Indians, where were used very lively rubber balls of domestic manufacture.

The natives died off with the advent of the whites, and although coffee, cacao, and sugar cane were introduced, and grown at great profit, practically nothing was done in rubber. To be

JACMEL WATERFRONT.

sure a short time before the historic "rubber craze" a Belgian company took up land, and started rubber planting, but did only a little and that in an intermittent way.

So it was not in search of gum elastic that I visited Haiti. I was on my way home from Venezuela, and by going to Curaçao and taking a Dutch steamer I could visit Haiti, and see all that was worth while. The fact that American capital was back of some new railway construction, and that business houses in the United States were paying more attention to the trade of the Black Republic, and further that Secretary Knox of the State Department was even then on his way to Port au Prince for a

"THE GREAT RIVER," JACMEL.

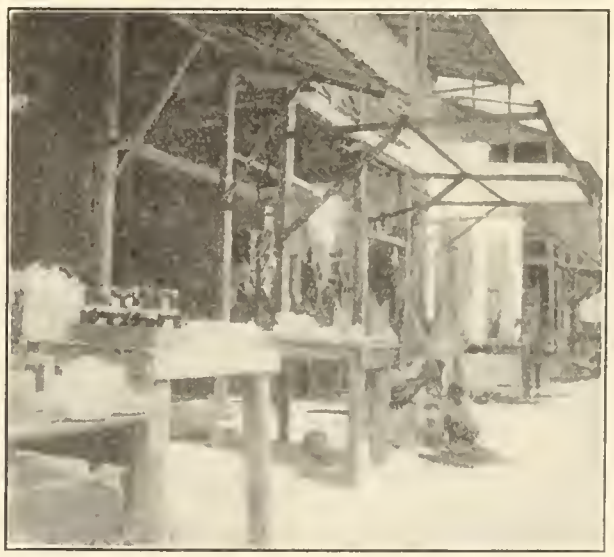
formal visit, led me to believe that this beautiful and fertile island was on the eve of an awakening. A visit would therefore be timely, for who could tell what the future might hold in store in the way of prosperous Haitian rubber plantations. The steamer was scheduled to stop at some seven ports, and would allow of visits ashore and even trips into the interior if one desired.

There was a Haitian aboard, who, as we neared his native land, waxed very voluble concerning his country's wealth and power. He spoke English well, although he claimed that he was

DANGEROUS HAITIAN COAST.

French. He was a large, raw-boned negro, black as night, and rather surly. When he did talk, however, his conversation was interesting, to say the least.

"I am a soldier," he said, "an officer—a general. You will not see our army, but we have thousands of the bravest. No country in the world can conquer us. Did not Spain, England and



MARKET, JACMEL.

France try it? We drove them into the sea. We are French. The second French Republic. We planned our constitution and laws after those of your country, which we far excel, as you will see."

It was thus he talked as we entered the dangerous roadstead off Jacmel, and puttered round for an hour or more to find safe anchorage. The harbor bottom is very treacherous, and steamers anchor fore and aft, and keep up steam ready to slip out and into deep water at the least sign of a blow. After we

were safely located the pilot came off and climbed aboard. He knew nothing about ships, shipping, or harbors, but was a thoroughly capable collector of harbor fees. He took the passenger list ashore, to be examined by the proper authorities, and after an interval returned with the information that "passengers

Primitive Sugar Mill.

would be permitted to land." Those who had visited the island before did not seem overjoyed; indeed, to a man they elected to stay on board. Some of us, however, chartered a row boat for a "Gourde" (30c.) each and started for the pier.

The little city, with its red roofed houses and its tropical setting, looked very pretty from the boat. So, too, the big flat-bottomed lighters, each propelled by three sturdy blacks standing side by side at the stern, sculling with twenty foot sweeps, were wonderfully picturesque. French were these boatmen, in their vivacity and wealth of gesticulation, but in appearance African. Some twenty of these lighters swept down upon our vessel, fighting for first place, crowding, casting off each other's moorings, jostling, swearing, threatening even to knife pulling, but never really coming to blows.

When we started the day was clear, but in a very few minutes heavy clouds appeared, and the mountain slopes were hidden by a brisk shower. We did not get it as the sea breeze, that blows all day long, sent it back to the land again, but that night, when the wind turned and the land breeze blew, everything was drenched with rain. As we neared the shore we passed close to the wrecks of several ships, that had been caught by a blow and driven in upon the rocky shore.

We landed at a tumble-down stone pier, littered with bales of goods, casks, old iron, rotting timber, and half-clad darkies.

The Roadstead, Jacmel.

A man in rainbow uniform escorted us to a shed, where a dozen officials with a copy of the passenger list checked off our names, and after warning us that the harbor was closed after six at night, allowed us to wander about the city. We first visited the post office—a great bare room furnished with a table where letters were stamped and sealed, and a desk for the postmaster. It was only a detail, but some one had stolen the weights from the scales and small stones had been substituted. An oil stove was used for heating the wax and a pewter spoon for a seal, and our attention was called to both several times by proud citizens who were acting as guides and avidly accepting cigars, or indeed anything we could be induced to part with. We bought some stamps, saw the mail for Aux Cayes deposited in a meal bag and thrown in a corner for delivery in the distant future and departed.

The market came next. Through swarms of beggars, goats, swine and filth that overflowed the gutters and covered the narrow roadway, we waded to see the place where the city got its food. It was a great rambling building, in which half-clad negroes sold corn, beans, rice, flour by the cup, queer confections, stripped tobacco leaves, and sulphur matches. These last mentioned seemed to be on sale everywhere.

Then one of the Port officers turned up and claimed he had not seen my passport. That meant a cigar or a tip, so I gave him a Haitian dollar so torn and black and dirty that it hardly held together. But he was afraid of it and declined it; so we compromised on a nickel and a long black cigar.

On the crest of a hill in the middle of the town is the city prison. Its huge barred gate was fastened by a rusty padlock,

Haitian Lighters.

the key to which was two feet long. The sentry, assisted by a muscular prisoner, unlocked the gate and admitted us for a consideration. The outer court was crowded with the most forlorn, tattered, yet cheerful wretches that I have ever seen. The inner prison, a big room with thick stone walls, was packed with men and women who crowded to the grated door and windows, begging, cursing and quarreling while the guards who kept no sort of order, jabbed at them with their antiquated muskets and cursed back constantly and vociferously. In a pit in one corner of the court yard were two crazy prisoners chained side by side. Everywhere was filth indescribable. It is hardly necessary to say that we did not tarry long in this bedlam.

Down the dirty, crowded streets with their high-sounding French names, we slipped and waded, and suddenly came upon the one wholesome spot in the city. It was a French Catholic school, run by the Sisters of Charity. Here the children were neat, clean, orderly and very bright. Here lies the hope of Haiti.

We were very glad to get back to the ship, bathe, fumigate and forget. And then we received another surprise. Off from the shore came a boat rowed smartly, and up the ladder came visitors for the captain—men dark, vivacious, elegant, and ladies

clad in Paris gowns. They were the upper-class Haitians, and would pass for wealthy and cultured French anywhere. But how they manage to exist in their filthy cities, even in suburban villas, and keep clean and well is a mystery.

We got away that night for Aux Cayes, and dropped anchor in the harbor the next morning. A crowd of port officials in a power boat run by kerosene, and adorned with a crooked stove pipe, from which poured clouds of black smoke, came alongside and boarded us. By advice of counsel we locked our cabins and kept them locked until the visitation was over. Thus we re-

Typical Haitians.

tained our extra shoes, bath-robes and toilet articles. When we had taken on some casks of honey, and were all ready to sail word came that passengers were expected, and in the long wait that ensued we explored the city.

It was different from Jacmel, and cleaner. More than one-half of it had burned down not long before, and that, in spite of

Haitian Washerwomen.

the fire department, was the clean part. Few Haitian cities have risen to the civilized heights of fire departments. But Aux Cayes had, and it was O. K. Those gold helmets of the firemen! —a bit battered, to be sure, but how they shone! And the sentinel at the door of the firehouse, what a proud handsome figure he was! The equipment for fire fighting? Well, there was a French hand-engine that properly manned, could throw several gallons of water a minute fully twenty feet, that is, if they had hose. But the gold helmets and the uniform! That was what the people were proud of! That was what they paid for, or at least owed for.

We met a traveled Haitian here, a man who had lived about nine years in France, and he showed us much that was interest-

Villa of Wealthy Haitian.

ing. A bank in a fine building all its own, and a big department store run by Germans that was a marvel in the completeness of its equipment.

Back to the boat late in the afternoon we came, and found it crowded with passengers for Port au Prince. The captain predicted stormy weather, and wanted to get away. But the health officer had not brought our papers. For two hours the big whistle roared at minute intervals, and then gave it up. Finally four hours late they came—and they had been ready all day! Had we sailed without the papers it would have meant five days' quarantine at the next port, and that was what the officials desired.

I forgot to say that it was here in the opulent olden time of the French occupation that Alexander Dumas, Sr., was born.

I hope that I am not giving the impression that there is nothing good in Haiti, that it is a country of filth, tatters and degeneracy only. That is very far from the fact. The coast cities are awful, and the people—that is the lower class—ignorant and shiftless. But the country itself, as soon as one gets a little way inland, is wonderfully beautiful and of exceeding fertility. It is also healthful. Indeed, the cities themselves do not breed the pestilences that one would expect. With an incomparable climate, a rainfall often of over 100 inches, and many excellent

Haitian Excursionists of the Better Class.

harbors, the time is sure to come when schools, churches and industries will have their effect, and the Black Republic under proper leadership will be sanatized, industrialized and saved.

(To be continued.)

INTERNATIONAL ASSOCIATION FOR TESTING MATERIALS.

FROM September 2nd to 7th, the sessions of the Sixth Congress of the International Association for Testing Materials, were held at the Engineering Societies building, New York. They were attended by nearly 800 chemists, engineers of tests, privy councilors, railway directors, collegiate teachers, and directors of official testing stations.

In order to facilitate the work of the Congress, it was conducted in the following sections:

(a) Metals and Metal Products.
(b) Concrete and Building Materials.
(c) Organic Materials.

Among the papers presented were five of particular interest to the rubber trade; two of them being of a general nature and three of a special character, as follows:

"Fundamental Principles for the Organization of the Public Testing of Materials," by Dr. A. Martens, director of Royal Testing Station, at Berlin, Gross-Lichterfelde.

"Some Apparatus for Tension Tests of Rubber," by P. L. Wormeley, physicist at the United States Bureau of Standards, Washington, D. C.

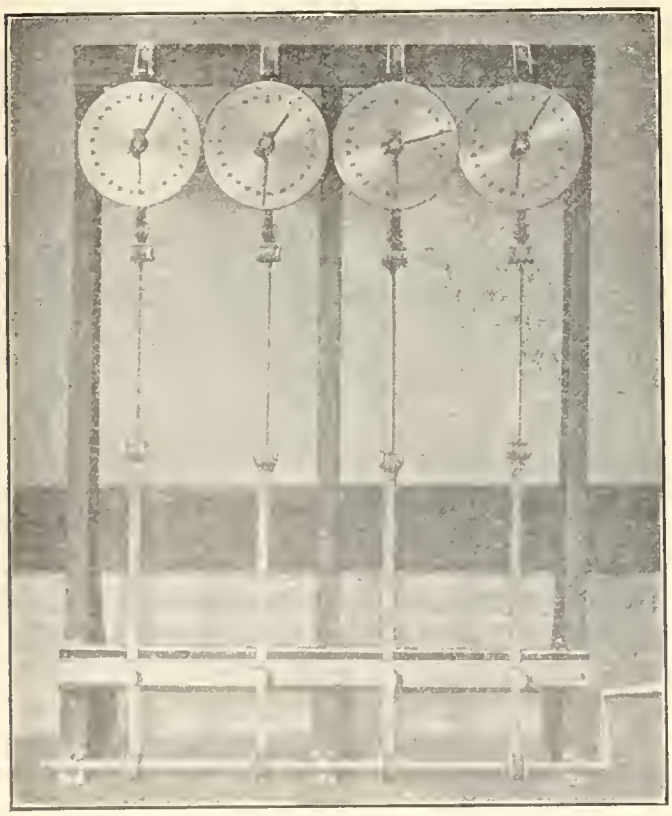
"Report on the Actual State of Rubber Analysis," by F. W. Hinrichsen, chemist at the Royal Testing Station at Berlin, Gross-Lichterfelde.

"The Present Status of the Mechanical Testing of India Rubber at the Royal Testing Station at Berlin, Gross-Lichterfelde," by Karl Memmler, engineer at the station.

"The Austrian Testing Station at Vienna," by Ernst Reitler, director of the bureau.

RUBBER TESTING IN GERMANY AND AMERICA.

AN opportunity has recently been afforded rubber experts in this country, to become fully acquainted with the latest developments in rubber testing. Several papers were read at the recent New York Congress of the International Association for Testing Materials, among which special interest attached to those of Professor Karl Memmler, of the Royal Testing Station, Berlin, Gross-Lichterfelde, and of Mr. P. L. Wormeley, of the United States Bureau of Standards, Washington, D. C.



Apparatus for Stretching Rubber.

Professor Memmler has long been engaged in the solution of the various problems affecting rubber testing, having in conjunction with Professor Schob, submitted a report to the Copenhagen Congress held 1909. Later, in collaboration with Professor Hinrichsen, he produced a work on "Rubber Testing," which brought the question up to the point it had reached in 1910.

While the subject aroused further interest, through the exhibition of apparatus at the laboratory's stand in the London Rubber Exhibition, the expected stimulus was not given to the mechanical testing of rubber. It was therefore, deemed advisable to lay the essence of the results newly obtained, before the present year's New York Congress of the association. These results were largely in connection with the ring test, and differed materially according as stationary or traveling rings were employed. The methods of manufacture likewise affected the results, while the influence of the dimensions was noticeable in the results of tensile strength tests.

Machine for Testing Tensile Strength of Rubber.

Although the field of experiment has been considerably widened since the Copenhagen Congress, it has not yet been found possible to bring forward definite and perfectly elaborated methods for the mechanical testing of soft rubber; owing to the peculiar physical and mechanical properties of this material, and its manifold technical uses. A committee of the German Association for Testing Materials is engaged on the points at issue.

The India Rubber World in the issues of October, 1911 (page 23); December, 1911 (page 107); January, 1912 (page 160), and May, 1912 (page 385-6), has reported upon the various features of the question, which has been advanced a stage by the results upon which Herr Memmler has reported, of the work of himself and his colleagues.

TESTING APPARATUS.

With a view to facilitating and expediting the work of rubber testing, a number of machines have been developed by the United States Bureau of Standards. In Mr. Wormeley's paper, to which reference has been made, he has described two kinds of apparatus for stretching rubber, and two for testing tensile strength. Effective illustrations are annexed to the paper, which also, like Professor Memmler's, deals with the influence of the form of test specimens on the results of tension tests.

News has been received of the death from yellow fever on July 28 of F. E. Mellinger, of the Ermila plantation, Mexico. Mr. Weis, of Huamqueller, Mexico, died of the same disease on August 18.

The accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.

Eighth International Congress of Applied Chemistry.

THE Eighth International Congress of Applied Chemistry was held in New York from September 6 to 13th, under the presidency of William H. Nichols, Sc. D., LL. D. In the course of the proceedings, which took place in the Great Hall of the College of the City of New York, six lectures of general character were delivered by the following leaders of chemical thought from various countries:

England, Professor Perkin; Germany, Professor Bernthsen, Professor Duisberg; Italy, Professor Ciamician; France, Professor Bertrand; Norway, Professor Eyde.

The meetings of the 24 sections, into which the Congress was divided, were held at Columbia University. In the section devoted to rubber the following ten papers were read:

L. H. Baekeland, New York, "On Condensation Products of Phenols and Formaldehyde."

Paul Bary, Paris, "Application of Osmosis to the Deresination and the Reclaiming of Rubber."

C. Beadle and Henry P. Stevens, London, "Investigation into the Nature and Properties of *Hevea* Latex."

C. R. Boggs, Boston, "A Direct Determination of Rubber Applicable to Specifications on Vulcanized Rubber."

J. G. Fol. Delft, "On the Relationship Between the Amount of Resins and the Viscosity of Rubber Solutions."

Eduard Marckwald, Berlin, "Treatment of Rubber."

Clement and Riviere, Paris, "Researches on Cellulose Acetate."

B. Setlik and J. Zofka, Prague, "Analysis and Tests of Rubber-Coated Fabrics."

Lothar E. Weber, Boston, "The Action of Resins in the Vulcanizing of Rubber."

G. Stafford Whitby, "On Some Preliminary Observations Regarding the Causes of Natural Change in the Latex of *Hevea Brasiliensis*, and on the Depolymerization of Caoutchouc and its Conversion."

In the section for Coal-Tar Industry the following paper was presented:

W. H. Perkin, Manchester, "A Study of Syntheses in the Terpene Group."

THE SYNTHESIS OF RUBBER.

AN INTERVIEW WITH DR. DUISBERG, MANAGING DIRECTOR OF THE BAYER COLOR WORKS, ELBERFELD, GERMANY.

FOLLOWING the notable lecture delivered by the famous German chemist, Dr. Duisberg, at the Congress of Applied Chemistry, he courteously accorded an interview to a representative of THE INDIA RUBBER WORLD, in which he expressed himself further regarding the highly successful results achieved in the celebrated works at Elberfeld over which he presides, in the solution of synthetic rubber.

"In presenting the case relative to synthetic rubber, we should not overlook the fact that William Tilden was the true discoverer of the new product, for he observed its presence in a bottle in his laboratory in 1892. This you will note was about ten years after he had completed his experiments. Unfortunately he omitted to note the exact physical and chemical conditions under which the synthetic rubber was formed, and was therefore unable to duplicate his experiments. At all events his method was not a commercial one.

"The results published by Dr. Fritz Hofmann, of Elberfeld, state the exact conditions under which the new material may be prepared. He made observations as to the time and temperature required, and the concentration of the solutions needed for its proper preparation. Thus he was the first to describe a new and useful process for the preparation of synthetic rubber, and must therefore be regarded as the inventor of this process. In proof of his contention that his process is new and useful and technically possible, he has had rubber goods manufactured from the new material, and has applied tests to determine its commercial value.

"The production of synthetic rubber is one of the greatest successes, and yet it was one of the most difficult problems of the chemical industry. I am proud of the fact that its production was successfully accomplished in the works at Elberfeld, and that I was able to follow every stage of this important discovery. Perhaps you would be interested to hear how the whole thing happened, especially as much that is misleading has appeared in the press.

"Caoutchouc made from the milky sap of numerous species of trees and shrubs and the grotesquely formed lianas by various coagulation processes, on being suitably treated with sulphur or sulphur compounds, *i. e.*, by vulcanization, acquires its valuable and characteristic properties. The synthetic method took quite a different route. The very complex molecule which rubber doubtless possesses was broken up by heat, *i. e.*, by dry distillation, into a maze of all kinds of gases, oils and resins. A colorless fluid resembling benzine, to which the investigators gave the name "Isoprene," was also obtained. Bouchardat, in France, first expressed the belief that this isoprene, obtained in very small quantities, and in an impure form by the dry distillation of caoutchouc, might be closely and intimately related to caoutchouc itself. As far back as the eighties, the Englishman Tilden claimed to have prepared artificial rubber from isoprene by treatment with hydrochloric acid. Tilden, though he worked strenuously for years, did not succeed in repeating the experiments. Other investigators were likewise unable to confirm the results. Dr. Fritz Hofmann, of Elberfeld, in 1909 succeeded in polymerizing the isoprene molecules into the complex rubber molecule. Somewhat later Harries* discovered independently another method of arriving at the same result. Everyone is now in a position to repeat this exceedingly simple experiment himself, but in order to obtain Hofmann's results, it is necessary to employ *pure* isoprene.

"The practical value of this rubber, of which many samples have been made, has been tested by the highest authorities in this branch of the industry, whilst Harries, whose labors extending over many years, prepared the soil for Hofmann's synthesis, has carefully examined the chemical constitution of the substance.

"The matter appears very simple, intelligible and clear, but the difficulties which have been overcome were great indeed, and those which still remain to be surmounted, in order to produce a substance equal to Pará rubber in quality and capable of competing with cheap plantation rubber costing only 25 cents per lb., are still greater. The end in view is this: that artificial rubber may soon play as important a role in the markets of the world as does natural rubber.

"I have employed articles made of synthetic rubber, and for some time have used automobile tires made of this material. Yet, if you ask me to answer you honestly and truly when synthetic rubber will bring the millions which prophets see in its exploitation, I must reply that *I do not know*. Surely not in the immediate future, although synthetic rubber will certainly appear on the market in a very short time."

*See article on Synthetic Rubber in Germany, on page 11 of this issue.

DR. PERKIN ON THE SYNTHESIS OF RUBBER.

ONE of the noteworthy features of the Congress of Applied Chemistry, just held in New York City was a lecture by Dr. William H. Perkin, Professor of Chemistry at Victoria University, Manchester, on his researches in the field of rubber. It will, therefore, be of interest to note some comments which he made on this subject in the course of a subsequent conversation with Dr. Frederic Dannerth, secretary of the Rubber Conference. Dr Perkin's remarks are interesting, as they lack all flavor of resentment at the attacks of his critics.

"Dr Duisberg," he began, "has prepared at the factory in Elberfeld synthetic rubber on a considerable scale, and has supplied some very valuable information concerning its physical properties. It was shown in his lecture that automobile tires made up from synthetic rubber outlasted similar tires made with the best Up-River fine Pará. I heartily agree with Dr. Duisberg in this assertion, and fully appreciate the fact that an auto tire which has been run over 10,000 miles and shows so little wear as the tire exhibited by Dr. Duisberg is worthy of serious attention. I think many will agree with the doctor from Elberfeld that cheap synthetic rubber will be put on the market at a price which will enable it to compete with plantation rubber possessing the same properties.

"In the years 1883 and 1884 William Tilden, then professor at Mason College, Birmingham, England, prepared large quantities of isoprene from turpentine. Some of this he used for his experiments on isoprene at that time, and the remainder he either bottled up or sealed up in tubes which were set aside.

"On looking at these specimens in the year 1892 he found—to his great astonishment—that this isoprene had become polymerized to a rubber-like substance which we now know as 'synthetic' rubber. The specimens exhibited by me in my lecture were the original products prepared by Tilden, and those undoubtedly contained synthetic rubber. This is proved by the fact that by mixing the specimens with acetone true synthetic rubber is precipitated. We must not forget that Tilden worked under conditions far less favorable than those which face us at the present day. So that we should not wonder at the fact that some of his methods were less refined than those at present used in research work in this field.

"In answering your question as to a definition for synthetic rubber I would suggest: 'Isoprene, polymerized to a rubber-like substance.' Since Tilden, in 1892, had polymerized isoprene to a rubber-like substance, which he proved was capable of vulcanization, it is obvious that he had synthetic rubber in his hands in 1892. This you will note was seventeen years before Hofmann published the results which he obtained in the Elberfeld factory.

"An attempt has been made to underrate these observations made by Tilden on the basis of the difference between discovery and invention. In this connection it is interesting to note the attitude of Professor Bernthsen of the Badische Fabrik in Ludwigshafen, Germany. He says, 'If there is any difference between the invention and the discovery of synthetic rubber it is obviously a small one, and in discussing a matter of this importance Dr. Duisberg will no doubt wish to avoid any misinterpretation of his remarks. The factory in Ludwigshafen is not at this time desirous of publishing its results."

Continuing his comments, Dr. Perkin further said: "I viewed with considerable interest the wonderful specimens of manufactured rubber goods made from synthetic rubber. First, the tire which had been subjected to the practical road test of 10,000 miles, and a new tire recently vulcanized. In addition to these exhibits we certainly all admired the hemisphere of raw synthetic rubber of unusual density and translucency. This hemisphere was said to weigh about 60 pounds, and was made from isoprene by the sodium polymerization method. Isoprene, as most of us know, boils at 37 degrees Centigrade, so that it is rather difficult to transport it or keep specimens of this material in other than sealed containers.

"From all present indications a refinement of the present methods of working will make the ultimate price of synthetic rubber so low that it will compete with the plantation rubber having similar properties. We should be careful, however, not to be too sanguine and by our prophecies make possible a manipulation of the stock market in either direction. I note that previous remarks on the possibility of synthetic rubber have awakened in the fertile minds of stock market manipulators thoughts which no scientist ever had.

"There is one fundamental discovery connected with the Manchester method for the production of synthetic rubber. It is the observation by Professor Fernbach of the Pasteur Institute of Paris that it is possible to ferment starch—or even sawdust, in such a way as to obtain large yields of butyl alcohol and acetone at prices far below the present market on these materials. Of the three methods described for the synthesis of rubber which I described in my London lecture, there is one which appears to be of direct commercial importance. Briefly summarized it is as follows: (1) Take ethyl alcohol, which may be easily oxidized to acetaldehyde. (2) Condense this by means of potassium carbonate to aldol. (3) Convert the aldol (quantitatively) into butylene glycol. (4) Convert the butylene glycol into di-chloride. (5) Then pass this over soda lime and produce butadiene. (6) This when treated by the sodium method, yields a synthetic rubber equal—if not superior—to that obtained from isoprene. The work which has been accomplished at Manchester by me may be summed up by saying that a rapid and satisfactory method of polymerizing isoprene into normal rubber of five carbon atoms has been found. The problem of producing isoprene cheaply has not yet been solved."

A BRAZILIAN VIEW OF ARTIFICIAL RUBBER.

IN discussing the subject of artificial rubber in a recent issue, the "Folha del Norte" of Pará, remarks that the ideal pursued by modern chemistry, is to replace syntheses—derived from natural products, by laboratory syntheses, identical in quality with the original articles.

At various times, the journal remarks, it has been announced to the world that the synthesis of rubber was an accomplished fact. In all cases the result has been purely theoretical, or has led up to the question as to what would be the expense involved by carrying out the process on a large scale. Reference is made to the interest aroused in July, 1911, by the announcement that the firm of F. Bayer & Co., the well-known manufacturing chemists, expected to be successful in the work of producing synthetic rubber, to which it had long been devoted.

The importance of this statement was generally recognized; it being a well known fact that German chemical manufacturers regarded the production of the first pound of synthetic rubber as the point to be aimed at. The cost of making tons of it would have to be the subject of further investigation.

While recognizing the injury which the production of a perfect substitute for rubber would do to the natural article, it is urged that such a disaster would never extinguish the Brazilian rubber industry. Reference is made to the opinions expressed by chemists of eminence, to the effect that no artificial product can ever be substituted for Pará rubber; the former being lacking in the necessary qualities of resistance, elasticity, and homogeneous composition.

While this article was apparently written before the public announcement of the Perkin process, it is none the less interesting as showing how the question of synthetic rubber is regarded by the South American rubber industry.

Synthetic Rubber in Germany.

IN the early part of this summer, the question of synthetic rubber was dealt with at the Freiburg Congress of the Association of German Chemists, by two of the most noted authorities on the subject. Dr. Carl Harries, of Kiel, and Dr. Fritz Hofmann, of Elberfeld, respectively treated the matter from a scientific and a technical standpoint.

Dr. Harries, in amplification of his previous utterances on the subject at Dantzig, recalled the fact that the basic material for the production of synthetic rubber is isoprene, a relatively simple carbo-hydrate, belonging to the butadeine order, and which has been obtained from the dipentene in turpentine. He regarded the problem of the cheap production of isoprene as having now been solved, as well as that of butadeine or erythrene.

The influence of alkaline metals on butadeine was discovered by Dr Harries in the summer of 1910. According to his experiments, by enclosing butadeine in a tube with sodium wire, the butadeine after several hours completely disappeared; a substance resembling rubber adhering to the wire. He also found that isoprene was much more easily changed into rubber by sodium, than by mere heating. Regarding the substance thus obtained, Dr. Harries, however, remarked:

"These so-called 'sodium rubbers,' although physically acting quite like rubber (for instance, permitting of vulcanization) are not identical with other products, which correspond with natural rubbers."

WHAT IS MEANT BY ACTUAL RUBBER.

In dealing with this question, Dr. Harries takes the position that the isoprene product must, like natural rubber, have tough and elastic properties, must be soluble (neither too slowly nor too easily) in freshly prepared ether, benzole or chloroform; and must, when kept for a certain time, gradually become hard to dissolve. He adds that from the above comparison of natural rubber with synthetic rubber from isoprene, he has come to the conclusion that both are in a chemical sense identical; the products of the polymerization of the same basic carbo-hydrate (dimethylcyclooktadiene). Which exact isoprene formula corresponds most closely with natural rubber, is, he remarks, still an open question; but he leaves aside for the present the consideration of sodium rubbers, there being still uncertainty as to their composition, and their not being identical with other products, admittedly corresponding with the natural substance.

FUTURE OF SYNTHETIC RUBBER.

Dr. Harries remarks in conclusion:

"A wide field of chemical investigation is still offered here . . . which may in the future be developed in the same way as the chemistry of dye-stuffs. For every special purpose, its particular synthetic rubber will be manufactured. . . .

"While the country has been viewing with anxiety the gradual usurpation of German possessions by foreign nations, industrial chemists have been quietly carrying out developments, which will compensate our Fatherland, by rendering possible the domestic manufacture of one of our most important colonial raw materials."

TECHNICAL ASPECTS OF SYNTHETIC RUBBER.

The paper read by Dr. Fritz Hofmann dealt with the technical aspect of the question of synthetic rubber; his position as Director of the Laboratory of the "Farbenfabriken" of Elberfeld (which establishment has occupied a leading position in the recent investigations and experiments), naturally limiting his statements to facts of a more or less generally known character.

In the first place, he dealt with the powerful elements at work in developing the yield of Malayan rubber.

Against these powerful forces, there has been arrayed a small band of chemical experts. When the work of these pioneers commenced, there was but little prospect of a successful issue. While the possibility of transforming isoprene into rubber by polymerization, was referred to in technical literature, its advocates had grown discouraged. Even Tilden gave up working upon the subject, failing to see the prospect of a successful result. Individuals being thus unequal to the task, it had to be taken up by large chemical establishments, which besides abundant capital, had the necessary staff of expert chemists. As many as 300 are with the "Farbenfabriken" of Elberfeld, to the director general of which (Privy Councilor Duisberg) Dr. Hofmann paid a warm tribute of appreciation. Without the encouragement of his example, the apostles of synthetic rubber must long ago have had to give up the contest.

DR. HOFMANN'S RESEARCHES.

Dr. Hofmann's attention had been drawn to the subject about six years ago, through reading a paper by Professor Dunstan of London. As he discovered by the literature on the subject, that isoprene was a constitutent of synthetic rubber, he perceived that in order to make any progress it would be necessary to obtain isoprene itself by synthesis, rather than, following the method hitherto in vogue, to obtain it by the dry distillation of rubber. This latter form of producing isoprene had been experimentally employed nearly a quarter of a century ago by Kondakow, but the quantity was too small to be of service. Hence the necessity which Dr. Hofmann found of producing isoprene on a large scale, in the highest degree of purity. The fulfillment of this apparently simple requirement was, however, attended with much difficulty. After two years' experimenting the right path was found. As a basic material he had chosen coal, which in this respect did not disappoint the expectations to which it had given rise. Dr. Hofmann exhibited samples of the intermediate products between coal and rubber, with a table showing the sequence of the reactions of his process. Acting on the principles thus enumerated, Herr Coutelle, one of his colleagues, succeeded in March, 1909 in producing several quarts of pure synthetic isoprene. The "Farbenfabriken" thus had at its disposal the desired process; the technical practicability of which was no longer to be doubted. This process, Dr. Hofmann added, rested upon a strictly scientific foundation; he and his colleagues having been convinced from the start, that only such a basis for their work merited consideration.

ACTION OF HEAT UPON ISOPRENE.

Although isoprene had thus been produced, the troubles of the experts engaged in its production were not over. The first question was: Out of this liquid resembling benzine, to form a tough, elastic and "nervy" colloid, resisting all the influences to which it would normally be subjected. A trial of muriatic acid for this purpose only resulted in an oily chloride, but no trace of rubber. Another experiment was with light, in accordance with the statement of Wallach, that it would change isoprene into a substance resembling rubber. However, after patiently waiting eighteen months the only result was that the contents of the bottle had assumed the consistency of a thin solution of sugar. Under these circumstances all possible (and impossible) physical and chemical agents were let loose on the isoprene, but it would not thicken.

Finally, Dr. Hofmann found in heat the power necessary for producing the desired result. There was nothing new in heating isoprene, but the result was new. It was also found that the polymerizing effects of heat were promoted by certain chemical additions.

SYNTHETIC RUBBER PRODUCED.

The first rubber produced by polymerization was obtained in August, 1909, in the laboratory of the Elberfeld "Farbenfabriken."

under the direction of Dr. Hofmann. In September, 1909, Dr. Hofmann submitted the new material to Dr. Gerlach, director of the Continental Caoutchouc and Gutta Percha Company, of Hanover, who was the first to confirm the fact that the product was really rubber.

COMPETITION WITH PLANTATION RUBBER.

While further experiments were in progress, with a view to perfecting the successful method, the advance in rubber prices of the spring of 1910 took place. As Dr. Hofmann remarked, had the high prices of that time been maintained, the manufacture of synthetic rubber on an extensive and highly profitable commercial scale would have been ensured. He added that when the prospective increased supply from Malaya becomes an accomplished fact, prices will doubtless fall to one-half their present level. Thus, it is remarked, the producer of synthetic rubber must so lay his plans, that his product may compete in price and quality with natural rubber. While diligent efforts are being made with that end in view, progress is only at a snail's pace. Good things cannot be forced. The best reaction must be found; the determination of which is necessary before rational work is possible.

With reference to Malayan production Dr. Hofmann remarked:

"The bulk of the Eastern rubber plantations have not yet reached the productive stage. But in a few years this situation will have entirely changed. What is to be expected from Asiatic plantations, in what quantity and quality, is illustrated by samples of the rubber from that quarter, and still more, by the balance sheets of the few older companies, which already show the full utilization of their plantations."

SYNTHETIC RUBBER IN THE WORLD'S MARKETS.

Dr. Hofmann remarked, in conclusion:

"Give us the 36 years the plantations have been at work, and I think synthetic rubber will occupy an equal position with natural rubber in the world's markets. . . . The further development of serious work as to synthetic rubber should be as quiet as possible, without beating of drums, or alarming newspaper articles. The samples exhibited here show that we have progressed to a certain point, but we have really no cause for claiming anything remarkable."

FUSEL OIL AS BASIS OF SYNTHETIC RUBBER.

GERMAN CRITICISM OF PROFESSOR PERKIN'S SYNTHETIC PROCESS.

As was naturally to be expected, in view of the strenuous rivalry that has existed during the last three years between the English group of scientists and the German group of chemists, in their pursuit of a practicable and economical process of making synthetic rubber, the German chemists have not been slow to discover flaws in the English synthetic process, recently set forth by Professor Perkin, of Manchester, in his famous address of June 17.

Entirely apart from the lack of success which has so far attended the financial flotation of the English synthetic rubber enterprise, a number of German writers have found much to discuss in regard to the scientific aspects of this new English solution of the old synthetic problem.

The "Gummi-Zeitung" urges the necessity of devoting attention to the scientific and technical aspects of the question. Reference is made to a statement that in order to produce 10,000 tons of synthetic rubber by the fusel oil process, it would be necessary to plant 1,000,000 acres in potatoes to supply the necessary quantity of starch.

In discussing the subject a leading German authority on fermentation remarks that:

Professor Fernbach, of the Pasteur Institute, Paris, would seem to have discovered a micro-organism which yields large quantities of normal butyl-alcohol from starch or its derivates, such as grape-sugar. Such bacteria had already been discovered at an earlier date, for instance, by Pereire and Guignard in the Paris water supply. But, perhaps, it is suggested, the Fernbach microbe is in a position to produce a larger yield.

This *n*—butyl-alcohol is evidently the "fusel oil" of the prospectus, which is qualified as an unsuitable and unscientific designation. Real fusel oil contains isobutyl-alcohol in the proportion of 10-24 per cent., and *not* normal butyl-alcohol.

It is regarded as completely excluded from consideration that any amyl-alcohol can be produced from starch by bacteria, a supposition to that effect having been disproved by Ehrlich. Of course it would be of technical importance for the synthesis of rubber if a higher yield actually resulted from the Fernbach process. This point, it is remarked, is not clear from the prospectus, and is considered doubtful.

Fernbach claims that under certain circumstances over 42 per cent. of the starch used in the compound is changed into a high-grade alcohol. Of this proportion about two-thirds is butyl-alcohol.

On the above basis it is calculated that out of 100 per cent. starch there would be approximately only 30 per cent. of butyl-alcohol. This, it is added, would be a very small result; the question arising: What is to become of the rest of the starch? On this depends the technical utilization of the process.

WHAT IS HIGH-GRADE ALCOHOL?

This question arises in connection with the preceding estimate. In the opinion of the fermentation expert, whose views have been quoted, these terms seem to conceal the facts. To use his words:

"The chemical and general public are apparently to be made to think that the valuable higher homologues of alcohol are meant, and in the first place, amyl-alcohols! Such is, however, not the case. Were it so, the authors of the prospectus would certainly have underlined the word 'amyl-alcohol' a hundred times."

As amyl-alcohol is much more valuable than butyl-alcohol for the production of isoprene, surprise is expressed at the absence of mention of the former in the prospectus. From this fact the evident conclusion is that the so-called "high-grade alcohol" is nothing more than ordinary concentrated alcohol, probably the chief product of the starch germs or bacteria, while the butyl-alcohol is probably a kind of sub-product obtained in much smaller quantity. Butyl-alcohol further produces butyric acid.

Whether the quantity of ethyl-alcohol obtained in addition to the butyl-alcohol will make the process very lucrative is doubted.

PRODUCTION OF ACETONE.

On this subject it is remarked:

"This substance has hitherto not been found to result from any process of fermentation. Fernbach's work in this direction must be questioned, until exact scientific proof has been adduced. Acetic acid, it will be remembered, is a sub-product of the decomposition of starch. The authors of the prospectus may have thought to utilize this acid in the form of acetone, through transformation into lime salt and distillation."

In conclusion, doubts are expressed as to how any one could figure out a profit from the whole process.

Commenting upon the above statement, Dr. Frank, of Berlin, adds:

"These expert opinions coincide in all points with those of Dr. Marckwald and myself on the matter. The fundamental point is, and remains, that there are no real technical results nor products. Moreover, as far as can be seen, it is not amyl-alcohol (thus a basis for isoprene), but butyl-alcohol (the basis of butadiene), that is formed. The rubber from the latter has so far not proved satisfactory in anything.

"The only patents which present actual prospects are probably those based on the utilization of petroleum products, and of the gases resulting from coal-tar distillation."

India Rubber in the Navy.

THE manufacturers of rubber wares may take both a patriotic and a business interest in the battle line of our navy. While none of our war craft are arrayed in india-rubber armor, as has been seriously proposed in years past and, in a way tested, still there are plenty of ways in which this material fits into the workings of our fighting ships and makes them the better able to give and to take the blows of modern ordnance.

Our dreadnoughts and our super-dreadnoughts are virtually compact towns of substantially a thousand busy artisans and supervising officials. Apart from this, these vessels are mobile forts of high speed and exacting requirements, calling for continual expert care to keep them in the state of high efficiency now demanded by the present-day standards. Below and back of their rigid walls of gray-painted steel lie hundreds of mechanisms and auxiliaries of varying power, and this busy community of a thousand persons has plenty to do daily in making repairs and in keeping each of these fighters in trim to defend at brief notice the dignity of the Stars and Stripes. A modern battleship typifies the national state of pretty nearly every science and every contributive art. She is not only a fighting machine, with her burden of powder and shot and shell to make her fearful to the foe in the hour of strife, but she is the comfortable and the healthful home of her caretakers—the men who stand ready to make her guns do more than roar defiance and who are willing to lay down their lives in that service if the occasion requires. The keynote of all discipline and every act is EFFICIENCY, and in no community of a similar size ashore, or even in any factory, are the requirements of the personnel so exacting or generally so high.

One of Our Latest Dreadnoughts, the "North Dakota."

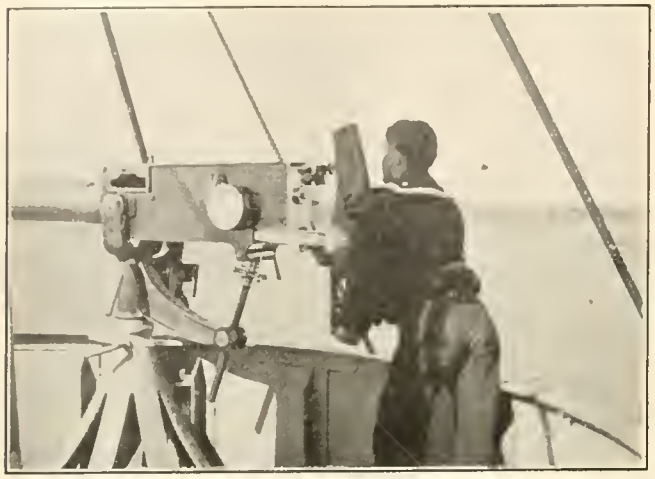
Let us see something of the part that india-rubber contributes toward the attainment of these splendid results. To begin with, the internal spacing below the armor belt is sub-divided into numerous water-tight compartments—some of them isolated and many of them intercommunicating. To make a passageway possible through the water-tight bulkheads, sliding and swinging doors are provided which, when closed, are also water-tight, and to make this certain the steel panels are jammed tight against rubber seatings which effectually prevent the water in one flooded compartment gaining admission to the flanking neighboring one. In addition to this, there are hatchways and manholes in some of these sub-divisions which must likewise be made secure against either the admission or the egress of water, and, again, india-rubber gaskets or collars make this end certain. Under some conditions, both the air and the sunshine are free to enter through skylights and airports, but there are days when either the weather or the state of the sea make it necessary to close these openings securely, and once more rubber seatings make this possibe. Water is not welcome inside of a fighting ship when it comes aboard through accidental openings, because while it may do no present damage, it may be the means of working insidious harm. Sturdy as steel is, still rust is its ever threatening foe, and moisture has a way of eating into the vitals of a plate and sapping its strength.

A man-of-war is subject to sudden and tremendous strains when her guns are fired, and no part of the supporting structure must be weakened by oxidation. Hence rubber plays an all-important part in keeping out water where it may otherwise find access to hidden places and do harm. There are many hundreds of pounds of sheet rubber employed for this purpose alone aboard each modern battleship, and the exigencies of this service call for fairly frequent renewals.

This, however, is not the only strictly structural direction in which rubber has a mission aboard our battle fleet. In the bath-rooms and the toilets of the officers, rubber tiling is laid; at the top and at the bottom of ladders and gangways there are non-slipping treads to give added steadiness to officers and men hurrying up and down between decks and over exposed places in bad weather and when the sea is running high. Rubber treads are also placed in the working places and on the floors of the turrets, so that the gun crews may have a firm footing in their exacting tasks.

But rubber has a still more refined and, we may say, important use in connection with the expert handling of the fighting ship's guns. The modern battle practice requires the gun pointers to keep the muzzle of the weapon continually bearing

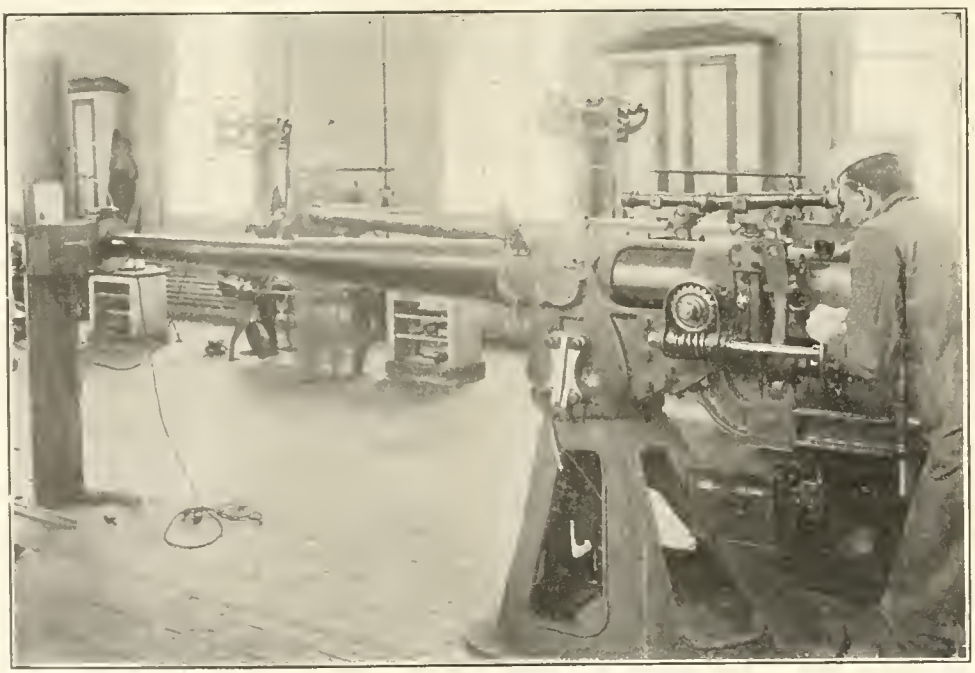
upon the target, and that they may do this they are provided with telescopic sights against which one eye of each pointer is pressed during the active working of the rifle. Despite the utmost effort to reduce shock and vibration, when firing, still these telescopes are forcibly jarred by each discharge and the attendant recoil.



Rapid-Fire Gun, Showing Rubber Cushion on Shoulder Piece.

To protect the gun pointer's eye from injury, a soft rubber cup is fitted to the telescope, and against this his brow and cheek bone rest in action. But for this cushioning it would be dangerous if not impossible for him to hold to his work for any length of time. On more than one occasion this rubber cup has become detached in the heat of rival target practice, and the gun pointers have stuck to their task even though the harsh eye piece of the telescope cut to the bone upon their brows and cheeks. It is easy to see how important is the role that rubber plays in the fighting perfection of our modern dreadnoughts and, in fact, all of our battle fleet.

The bulkhead doors in a battleship—even those above the water line—are of steel and are heavy, and in a rolling sea they are hard to control unless one be sure upon one's feet; therefore rubber treads are placed on the deck each side of the door to give the passer a better hold.



Rubber Eye Guard on Telescopic Sight.

Deep down in the bowels of the ship where the engines have their place safe from the reach of an enemy's shot and shell, and throughout the branching leads of the steam pipes from the boilers, india-rubber has many fields of usefulness. The layman must not forget that coal and fresh water on a fighting ship are at a higher premium than they are ashore, and every effort is made to conserve these factors, vital not only to the mobility, but to the very life of a man-of-war. In factories and commonly ashore, exhaust steam is freely vented into the surrounding air, and a leaking stuffing box or a dripping joint in a steampipe is of but little concern. For the factory both coal and water in plenty are generally near at hand and refinements of economy are not essential.

In the navy, however, on the other hand, things are quite to the contrary—escaping steam means energy wasted and a loss of so much coal and fresh water. To make up for this dissipated heat and moisture, coal must be burned in order to distil fresh water from the sea, and an actual monetary prize is now offered to the engineering force for all savings in the consumption of fresh water and coal. One very important means to this end is seeing that all sliding parts are steam-tight and that no leaky joints in either the feed or exhaust systems shall permit the escape either of precious water or still more precious steam with its charge of heat. Rubber packing finds, therefore, valuable employment in pistons, valve stems, stuffing-boxes and pipe joints in every direction, and only the best products of this description are acceptable for this service in the navy. Steam pipes are led everywhere throughout the organism of a modern battleship, and manifold auxiliaries with their moving parts demand the use of rubber packing in one form or another. Nothing else has yet been found capable of assuring the same degree of efficiency.

But steam is not the only source of power aboard ship, even though it is the fundamental fountain of energy. Compressed air is used for various purposes, such as supplying the motive force for the dreaded automobile torpedo, for blowing the smoke and the burning fragments of powder bags out of the big guns, and for refrigerating service in the various cold storage compartments. Compressed air has a very penetrative habit, and only good joints will keep it within proper confines. Here, again, india-rubber helps out.

But the type of energy which best indicates the remarkable up-to-dateness of the modern fighting ship is electricity in its wonderfully varied applications and uses in the fleet. There is no other single structure in the world—not even excepting the best-equipped technical institute that has electricity in daily employment in as many ways as one will find aboard our dreadnoughts, and even upon craft of lesser military might. Electric auxiliaries do quite 90 per cent. of the work that used to be done by the brawny sailorman of years ago, and do it far better; and in addition do many other things which are quite beyond either manual power or human agency. Electric wires spread from keel to truck and from end to end of a man-of-war like a veritable network of sentient nerves, carrying energy and speeding directive messages of many kinds. Powder and shot are trollied

from their storage places and carried up to the breeches of the waiting guns and rammed home in the bores by electric power. The turrets are turned and the guns elevated and depressed by electric motors. Electricity runs the great cranes that raise the boats from their resting places and lower them over the sides

A Submarine in Surface Trim.

The Three Circular Hatch Covers—Two Light and One Dark—Show Where Rubber Gaskets Are Absolutely Necessary to the Safety of the Boat Submerged.

into the water. Electric winches do a manifold service in helping to coal ship and load the stores aboard. Electricity provides the energy for the arc lights in the firerooms and engine-rooms, and the many hundreds of incandescent lamps both inside and outside of our men-of-war. Masthead lights, the running lights and the red and white Ardois signals that flash out their messages from ship to ship when darkness falls are all electric. So, too, are the powerfully inquisitive searchlights and the decorative strings of glow lamps with which the naval ship is dressed upon occasions of festivity.

But these are not the only ways in which electricity serves a valuable end in the fleet. There are dozens upon dozens of call-bells, buzzers, gongs, etc., which facilitate exchange of signals and which tell of the presence of hidden fire and unwelcome water, and announce just where these troublesome elements have appeared. Battle ranges are transmitted from the masthead stations to every fighting position below among the guns; orders and signals are exchanged between the fire and enginerooms and the bridge, as well as from the commanding officer's fighting station and every important division of the throbbing craft below him. There are electrical revolution indicators, indicators showing the angle of the rudder, the heel of the ship, the action of the turret hoists, and a log which registers the speed of the vessel—also electrically controlled. But these means of communication and information are not all—one of our big battleships has an installation of something like sixty telephones. Some of these are in positions which require that they shall be water-tight. In this widespread use of electricity and the many, many miles of connecting wires and cables, rubber is the prime insulating material, and rubber also serves the further end of insuring water-tightness in some of these fields of service.

Where hard rubber is used in connection either with construction or installations, the Government requires a very high insulating property, and the material must be capable of standing a five steam test for one hour without changing shape or form. We must recognize that insulation aboard a man-of-war is a far more serious problem in its relation to the life of the craft than upon a merchant vessel. Quite apart from the dangers of electrolysis, a grounded current may lead to a short circuit in the neighborhood of a magazine, and it requires no imagination to picture the dire consequences of such a misfortune. It is to guard against this, as well as the consequences of a bursting steampipe or the flames of battle, that the Government is so exacting in its specifications. Thus we see how india-rubber not only contributes to electrical efficiency, but how it also safeguards the fighting ship.

Down in the sick-bay of our dreadnoughts we have a miniature duplicate of a modern hospital and its associate clinic. Here we find rubber in the various forms which the surgeon and the physician demand in their day's work as well as for the uses to which the nurse also puts it in the treatment of his patients. It would merely mean the recital of a long list to cover rubber in its different forms as here employed. The dispensary of a battleship is virtually a drug store on a small scale, and we must leave to the imagination of the reader what this means so far as india-rubber is concerned.

There are two things on a fighting ship which no commanding officer can look upon with equanimity—these are fire and dirt. That the decks may be kept clean, there are hundreds of feet of hose, and at numerous places throughout the craft there are other coils hung ready to quench a conflagration. But these are not the only ways in which rubber hosing is employed on shipboard. Every fighting craft has one or more suits of rubber diving dress and its associate air lines. The work cut out for the divers calls for their service in examining the vessel's bottom, stopping leaks from without and examining the propellers and other under-water fittings as well as searching for lost

Navy Diver Preparing for Under-Water Work.

anchors and torpedoes. The Government will accept nothing but the best in the equipment of these rubber suits.

For the comfort of the sailor and the deck officers, there are rubber boots and rubber rain clothes; and when the weather is

summer-like and fair the officers wear canvas shoes with rubber soles. That the chairs and portable furniture may not slide threateningly when the ships roll in a heavy seaway, rubber castors are provided to help hold them in place. Rubber bumpers or stops either hold or check the force of a swinging door, and in dozens of other directions rubber in one form or another serves some useful purpose with which we have daily counterparts in our own domestic life ashore.

On board of a submarine, rubber has not the same manifold uses that it has upon a battleship, but where it is employed it is very much needed and must generally be of the best of its kind and form. Bad as the aftermath of a leak may be upon a surface ship of war, its menace is far more serious within a submarine. Not only must all valves be tight, but the hatches which form the passageways in and out of the submarine must certainly be secure against the admission of the sea when the boat is running submerged. Salt water in the storage batteries means the evolution of a poisonous gas—a gas which is capable of quickly overcoming and killing a submarine's crew. As boats of this sort are driven electrically when running under water, this part of their equipment is a large and important one. Rubber is employed as an insulator in the conduits and their connections, as well as in the storage batteries themselves. Short circuits are apt to be even more immediately dangerous in a submarine than in a battleship—hence the insulating rubber must not only be of the best, but more generously employed in these subaqueous craft.

There are many other directions in the navy where india-rubber in some form fills a useful office, but enough has been said to suggest how varied and how valuable are the parts this material already plays in the construction and the administration of our battle fleet.

RUBBER MANUFACTURES IN MARINE WARFARE.

LEAVING aside the various staple purposes for which rubber goods are used by the navies of the world, the "Gummi-Zeitung" calls attention to a number of rubber specialties, the uses of which in marine warfare are not generally recognized.

These objects are mostly defensive in character, including the blockade of harbors, the closing of mouths of rivers and other waters, the fortification of islands and other purposes. Blockading constitutes an extremely important feature of marine warfare, being effected by laying mines, by torpedoes, exploded from the land; by closing the waterways; and by other means.

In laying mines, cables are among the chief requirements. Insulation is effected by strips of rubberized cotton cloth, while rubber rings of various sizes are used in the insulation of the mines. The latter, coming more or less into contact with salt water, must be made of a good quality of rubber, with properties of resistance. The cables which connect the mines, or are necessary for their explosion, are of copper wire, likewise insulated with rubber. Ground cables are used on stony bottoms, placed in insulated hose, with an internal diameter of two-fifths of an inch. This hose is also protected by a thick rubbered covering wound round it, such as is used of late in compressed air hose. Cables were at one time protected by spiral wire or cords, but the danger of rusting, after various trials, led to the abandonment of this plan.

When high voltage currents are used in laying mines, those engaged in the work wear rubber gloves, while rubber garments serve to protect them against tempestuous weather.

Among the most recent improvements in mining, is the use of rubber hose, the interior of which is filled with explosive acids. This plan has been adopted as being preferable to tubing; this "mine-hose" having a diameter of about 2 inches. In its manufacture rubber substitute has been used for increasing the lightness.

This hose, which as a rule is about 100 feet long, costs the equivalent of $187.50. As the blockade of a waterway usually requires about 36 mines of this kind, an idea can be formed of their costly nature.

Another feature in naval warfare affecting the use of rubber, is the employment of torpedoes. In the torpedo itself, the rubber insulation is a point of extreme importance. The acids are conveyed to the gun-cotton through small rubber hose inside the torpedo. Hard rubber is likewise used for various purposes in different parts of the torpedo. Cables with rubber insulation are important adjuncts in torpedo warfare.

In the forts defending the entrances of harbors, rubber is used in various ways. Speaking-tubes convey the instructions for firing, while the gun-sights are fixed in rubber supports. For the prevention of concussions, rubber rollers and buffers are used. Hard rubber is used in various ways in guns, the wheels and other parts of the mechanism being rubber-covered. The mouths of the guns are now covered with rubber, instead of, as formerly, with leather; the use of leather having led to rusting. In very damp positions the use of rubber for covering the mouths of guns has been found of practical advantage, as it thoroughly excluded damp. These covers, or stoppers, are, moreover, expensive. For 8-inch guns they cost the equivalent of $20, and for 17-inch guns about $50.

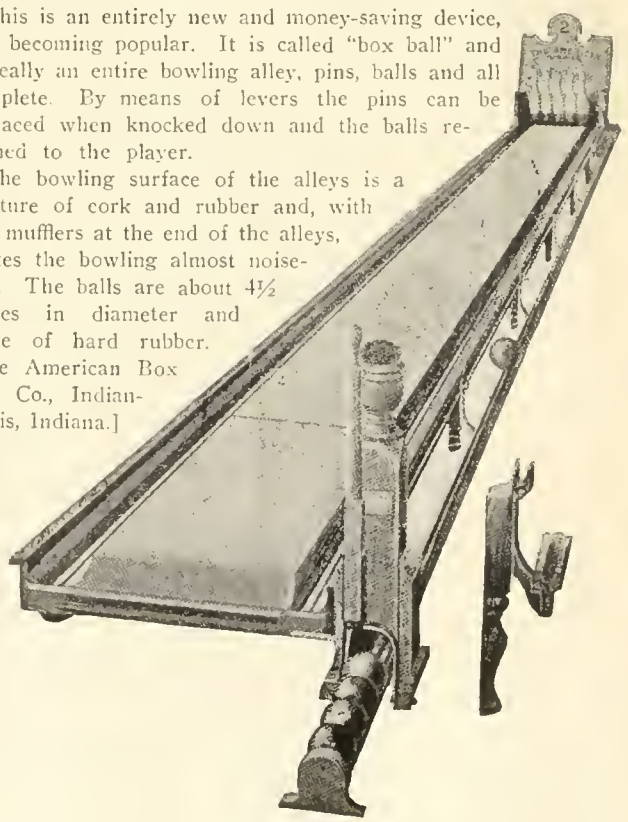
Besides forts and artillery depots, warships also carry mines for aggressive or defensive operations.

In conclusion, the anticipation is expressed that the use of rubber manufactures in marine warfare is destined to increase, to the benefit of that industry.

HARD RUBBER BALLS ON SOFT RUBBER ALLEYS.

This is an entirely new and money-saving device, and becoming popular. It is called "box ball" and is really an entire bowling alley, pins, balls and all complete. By means of levers the pins can be replaced when knocked down and the balls returned to the player.

The bowling surface of the alleys is a mixture of cork and rubber and, with ball mufflers at the end of the alleys, makes the bowling almost noiseless. The balls are about 4½ inches in diameter and made of hard rubber. [The American Box Ball Co., Indianapolis, Indiana.]



A RUBBER BOWLING ALLEY.

Mineral Rubbers.

AN ARTIFICIAL OR MINERAL RUBBER.

NEARLY six years ago the English manufacturers of rubber goods became deeply interested in a new substitute for the natural caoutchouc. An English inventor believed that he had hit upon a method of turning wheat into that commodity, so rapidly growing scarcer. This in spite of

Exposed Side of Elaterite Ledge.

the fact that over three hundred patents had, up to that time been taken out in the British Patent Office on substitutes for rubber. But somehow or other the new substitute failed to gain the place in the rubber world that was expected of it.

Now it seems a bit curious that men of an inventive turn should have thus been racking their brains when there lay to their hands a mineral substance, commonly known as "mineral rubber," which, even in its raw state had many of the characteristics of crude rubber. Elaterite is the scientific name for this substance. In color, elasticity, and other qualities it brings strongly to mind the distinctive characteristics of India-rubber. It was first discovered at Angers, in France. Later deposits were noted at Castleton, in Derbyshire, England, in the lead mines of Odin, at Alteland, South Australia, in Wasatch County, Utah, and elsewhere. The Wasatch deposits will be considered presently in another connection. In the Coorong district of South Australia a substance is found which, known as Coorongite, is believed by some to be practically the same as elaterite. Other chemists declare it is a vegetable product; the genuine elaterite being a mineral substance. This elaterite varies, according to the locality in which it is found, in quality and consistency. Sometimes it is as thick and unyielding as frozen tar. Commonly, however, it is fairly soft, and sticky. It is a hydro-carbon, generally dark-brown in color. Sometimes it goes under the name of elastic bitumen. Though so closely resembling rubber, practical chemists found no way of putting it to commercial use in that line, though other valuable uses had been found for it. All at once, however, this situation was changed with the finding of a new substance, now called tabbyite, in Wasatch County, also the home of elaterite. This peculiar name was given the substance in honor of old Chief Tabby, of the Unita Indians, who directed chemists to this important find.

Elaterite, it has been said, is a hydro-carbon. Tabbyite is also a carbon, belonging to the resinous group. A combination, or, rather, an amalgamation of the two appears to have formed an artificial rubber, difficult to distinguish from the genuine. A chemical analysis shows the following proportions of constituents: Carbon, 87.12 per cent; hydrogen, 12.88 per cent. The essential characteristics of rubber are also there, such as elasticity, texture, color, etc. If the compound be touched with fire the odor of burning rubber very promptly offends the nostrils.

In making this compound two parts of elaterite to one of tabbyite are used.

The finer grades of rubber, it is true, have not been produced. The chief material so far manufactured has been for matting, belts, insulation covering, etc.

SOME TYPES OF MINERAL RUBBER.

THE term "mineral rubber" as used has but little significance in determining the quality which it represents. The base of practically all known so-called mineral rubbers is asphaltic.

Mineral rubber should be classified in such a way that the chief characteristics could be easily distinguishable, so that a manufacturer could determine which one would be most suitable for the purpose for which he might want to use it. In making such a classification the essential qualities of each different grade, both physical and chemical, should be determined.

For a manufacturer to take one quality of mineral rubber and

An Elaterite Vein.

expect to use it in different grades of compound that he may wish to make, with equally satisfactory results, is as much folly as it would be to take one grade of any other ingredient that he wishes to incorporate in a compound and expect it to work as well in one compound as another.

The nature of mineral rubber being asphaltic means that they are all of them hydrocarbon compounds. It is a well known fact that any hydrocarbon will, when subjected to sufficient heat, throw off gaseous matters. If the temperature at which a compound will throw off these gaseous products is below that which is used in the vulcanization, it will be detrimental in such compound. As these gases must of necessity secrete themselves somewhere, and if the compound is one which is vulcanized in a mold or any air-tight compartment, it naturally follows that the gas will cause the compound to become porous.

Now taking the same class of compound and using a hydrocarbon therein that would not show any gaseous products at or below the temperature at which the compound was vulcanized, this result would not follow.

Again there are those so-called mineral rubbers which are produced by the treatment of asphalts segregated in the fractional distillation of petroleums. Subsequent to the segregation they are treated to a heating and drying process, by pumping in a current of air; sometimes accompanied by steam. This is pumped into the compound in the process of the so-called oxidization, or drying up of the compound. It is a well established fact that this class of hydrocarbons, exposed to atmospheric conditions do not have the wearing qualities that the asphalts have, which have not been thus treated; the theory, which is founded on practice, being that the life of an asphalt depends upon how long it will resist oxidization when exposed to atmospheric conditions. The treating of the asphalt for the purpose of oxidizing it, prior to use, simply shortens the life of the same proportionately to the amount of oxygen which it takes in and the amount of oxygen it takes to destroy it.

Transporting Tabbyite and Elaterite from the Wasatch County, Utah, Deposits.

It would follow that in the use of these qualities of hydrocarbons in rubber compounds, the same result would be obtained, *i. e.*, a rubber compound which contained a mineral rubber, produced by the oxidizing process, would have a shorter life than a rubber in which a mineral rubber was used which had not been previously treated by an oxidizing process. It would therefore seem reasonable for the rubber manufacturer to know and determine the quality of his hydro-carbon as definitely as he does the quality of his reclaimed rubber or other ingredients used in his compounds.

There are other grades of hydro-carbons which contain various quantities of paraffine and sulphur, such elements being contained in the natural asphalt which do not determine themselves until sufficient heat has been applied for decomposition to take place and free these elements.

It is of importance to know at what point such decomposition takes place, as, should it take place at a temperature less than that used in the vulcanization of a rubber compound, wherein such hydro-carbon was used, it would have a very detrimental effect upon the compound, and unless a manufacturer does know at what point this decomposition will take place, he cannot determine what this effect will be except through the channel of experimenting. If he knew, he would then be able to determine wherein he could use the hydro-carbon safely.

There is no doubt that this so-called mineral rubber can be used advantageously when properly applied, and there is no reason why a rubber manufacturer should not give to the producer of mineral rubbers the same closse attention which he does to the producers of the different grades of rubber, and insist that the producer of the hydro-carbon give him definite information relative to its constituents.

It is true that many of the rubber factories today have well equipped chemical laboratories, but it is doubtful if there are any of them that are equipped to properly test a hydro-carbon. Chemical analysis means but little in this class of materials, the important question being what this chemical process will do under conditions essential to use in the manufacturing of rubber compound.

Too many mineral rubbers are sold based solely upon the question of price, and too many rubber manufacturers have attempted to use them from this same standpoint, subsequently decrying them because they did not do all that was expected; whereas if they had known what the action would be when the mineral rubber received the treatment given it, they would have known as well that they could not secure satisfactory results.

There is probably no other place in the world where hydrocarbons are given the close study which they receive in the manufacture of the so-called rubber roofings. The surface of these roofings is composed of a compound purely asphaltic, and its life depends on the quality.

This class of manufacturers must of necessity know what the constituent elements of the compound are, and what are its actions when treated under the processes which they use. This means that practically every asphaltum that they use, is tested by a fractional distillation process either in their own laboratory, or by the firm which supplies them with the material being able to satisfy them that their reports relative to the products are correct.

If the rubber manufacturer will insist upon having a knowledge of his hydro-carbon along these same lines, he can without doubt use various grades of them advantageously in the different qualities of compounds which he manufactures; but for him to say

that he can secure the same results from a mineral rubber which will easily begin to decompose at approximately 200° Fahr., and which, owing to its soft and pliable nature will absorb a great amount of so-called dry fillers, that he can secure by using a mineral rubber that will not decompose at any temperature at which he vulcanizes, and which will not absorb a great amount of dry fillers, owing to its own density, would be as great folly as it is to say he can take a piece of acraflake rubber and produce an equally satisfactory result in all cases as he can with Up river Pará.

There is a place in rubber compounding for all grades of mineral rubbers. There is a wide difference in the qualities of the different mineral rubbers, and it is as important to know what these different qualities represent as to know any other branch of compounding.

Mineral rubbers have qualities that no other ingredients which rubber manufacturers use contain. They are impervious to moisture, more impervious to the action of acids and alkalis, and most of them have a very definite di-electric strength, and a longer life than any other ingredient excepting some of the dry fillers that enter into rubber compounds.

Rubber manufacturers can well afford to investigate these; they are a new article in commercial use for the present age, although history shows they were in use four thousand years ago, and they are in good condition at the present time.

Properly applied they will give life to a rubber compound and at the same time in almost every instance will give a reduced cost, on equal quality basis. Lowell F. Lindley.

NEW SUBSTITUTE FOR HARD RUBBER.

In fulfilment of its mission, the Philadelphia Commercial Museum has for some time been investigating the merits of a new substitute for hard rubber, discovered by a Philadelphian. The discoverer claims that he can take any waste fibrous substance, and convert it into a substitute equal, and in many cases superior, to hard rubber itself.

Although its properties have apparently only recently been noticed in the general press, it seems to have been undergoing, during the last two years, a series of detailed tests by well-known professors and engineers, both privately and at the Museum itself.

The earliest of these tests seems to have been that made at the Philadelphia Commercial Museum, October 19, 1910, with a view of showing the breaking down or puncturing voltage of the new fiber in comparison with other insulating materials. According to the report of Mr. G. R. Henderson, consulting engineer of the Baldwin Locomotive Works, who had attended the tests, they indicated that the puncturing voltage of the new fiber, with a thickness of .162 inch, was 45,000; as compared with records for hard rubber of 40,000 for .127 inch, and of 50,000 for .200 inch. The results with thinner samples were for the new fiber 20,000 with a thickness of .073 inch, as compared with 25,000 for hard rubber, with a thickness of .065. These tests are quoted as indicating that the new fiber is nearly, if not fully, equal to the best hard rubber. Tests of new material showed that it combines the mechanical properties of red fiber, with the electrical properties of hard rubber

In a report on special tests of samples of the new insulating material, Professor Worrall E. S. Temple of the University of Pennsylvania, stated on November 1, 1910, that it completely outdistanced fiber, as well as the ordinary grades of rubber. Technically it showed up superior in toughness to rubber; withstanding, moreover, acid and boiling tests far better than the fiber samples tested, and being comparatively simple to mold. Subsequent tests made later in the month confirmed the above estimate of the new material.

Mr. Ernest L. Rowe, a well-known electrical engineer of Philadelphia, reported on December 12, 1910, that from the exceptional insulating qualities of the new material, he considered it superior to either porcelain, ordinary fiber, or hard rubber; adding that, in his opinion, the demand for it would supersede the present demand for hard rubber and fiber.

The next step was the circulation in March, 1911, of a statement accompanied by the above-named reports, to several hundred corporations, inviting them to attend a public test in April, 1911. This invitation was officially issued by the Commercial Museum, in whose hands had been placed the presentation of the new substance. In addition to these public tests, there were in 1911 a number of the most severe acid tests for storage battery purposes, with the most gratifying results.

Finally, in December, 1911, a further test was made at the Philadelphia Commercial Museum, before a score of experts, including those already named. The test was surrounded by secrecy and did not reach the press for some months; the result being, however, arrived at, that the production of a successful imitation of hard rubber was possible.

While the new material was thus being tested experimentally, its commercial possibilities were also being studied by the Museum. A special despatch from Austin, Texas, to the Boston Transcript, in February, 1912, reported that the new substitute would be obtained from green cotton-bolls, which are now worthless, but would thus acquire a value of 3 to 4 cents per pound. It had been pointed out by Dr. W. P. Wilson, Director of the Philadelphia Museum, that it had long been known that these unripe bolls (representing about 15 per cent. of the total) contain a sticky substance, akin to rubber; generally supposed, however, to have no commercial value.

Little machinery is required to produce the new material. It is claimed that all that is needed to supply America, and, in fact, the world, with hard rubber products, is to establish a few central plants in the cotton fields of the South. Before a group of the most prominent electricians, the inventor is said to have made his product from old waste materials, within twenty minutes; with no other mechanical aid than a cheap hand-press.

It is understood that the new material, as yet unnamed, is not yet being manufactured for this market. Large concerns are said, however, to have tried it. The progress of the new discovery will be watched with interest by the rubber industry. The British Consul at Philadelphia has forwarded details of the tests to the Commercial Intelligence Branch of the English Board of Trade; the facts being thus disseminated through the British and Colonial press.

The India Rubber World has known for some time regarding this new rubber substitute, the claims made for it, and its endorsement by a number of expert engineers and chemists, but has refrained from making any mention of it, in the hope that further and larger samples might be forthcoming which might be put to some practical manufacturing test. Up to the present time, however, as far as can be ascertained, this new substitute has not been made in sufficient quantities to enable any manufacturer to put it to practical use. The information regarding it as detailed above, is given for the benefit of those who are interested in the general subject of rubber substitutes.

MALAYAN COMPANIES' RETURNS.

The returns of six leading Malayan companies for the eight months ended August 31, compare very favorably with those for the corresponding period of last year. Exact figures are:

Eight months to August 31	1911. pounds.	1912. pounds.
Anglo Malay	461,966	516,760
Pataling	196,230	281,118
London Asiatic	188,294	406,309
Golden Hope	162,488	85,760
Selaba	115,104	196,676
Bikam	54,906	97,630
Total	1,078,988	1,584,253

The First Rubber Exhibit Ever Made.

IT may seem a waste of energy to some people, when standing in the immediate presence of a great, live, spectacular exposition, like that now filling three floors in the Grand Central Palace, to hark back 61 years to the first rubber exhibit ever made; but a mention of that early exhibit is of value not only historically, but to people intimately associated with the rubber industry it will certainly not be devoid of interest.

Of course, it was Goodyear who made the exhibit. Not very much can be said about the rubber industry 61 years ago without mentioning Goodyear. The first general world's exhibition was held in the Crystal Palace, London, in 1851. Goodyear had taken out his patent for the vulcanization process only 7 years before, but he had made wonderful advances in rubber production, not only in the line of soft rubber goods—footwear, clothing and fabrics—but he had also made tremendous strides in the production of hard rubber, for which process his brother, Nelson, had taken out a patent in 1848.

Of course, Goodyear's name was known in England, and something was known regarding his exploits in rubber, but still in those days, as even at the present time, Englishmen were a little slow to accord recognition to American achievements. The thing had to be proved before they evinced any great interest in it; and Goodyear determined to prove to the English what he had been doing in the new rubber industry. Consequently he decided to make a memorable exhibit at the great Crystal Palace Show. Though he was in wretched health—which, as a matter of fact, was his chronic condition, for his brain was at least five times too active for his body—and although he had to hobble around on crutches, he entered into the preparation of the exhibit with even more than his accustomed energy and determination. He spent $30,000 on his Crystal Palace display; an unprecedented sum in those days, and a sizable sum for any entrant to spend at any exhibition, even at the present time. His exhibit was known as "Goodyear's Vulcanite Court" and it consisted of a suite of covered rooms, where everything was made of rubber—the walls, the roof, the ornamental cornices, the carpet on the floor and all the furniture. It was a wonderful display of rubber possibilities.

Goodyear's Exhibit at the Crystal Palace Show, London, 1851.

There were chairs of rubber; there were bureaus made of rubber; and boxes and shawl cases made entirely of rubber or rubber veneered. There was a fine display of rubber combs, something that Goodyear had just perfected, and in which he was trying hard to interest the public. There were buttons made of rubber—a distinct novelty at that time; and in addition there were many musical instruments made entirely of hard rubber. There were also rubber canes and cutlery with rubber handles. Rubber balloons of all sizes, inflated with hydrogen gas, were floating in the air. A rubber balloon is, of course, to us an old story; but at that time it was a distinct novelty and naturally appealed greatly to the populace.

The accompanying illustration reproduced from a wood cut made at the time, gives some little idea of the artistic and highly ornamental character of this famous rubber court.

This exhibit was esteemed of such importance that when the Crystal Palace was moved to Sydenham and made a permanent institution, the Goodyear Vulcanite Court was moved with it and made a regular feature of the museum.

It was only natural that the English people should flock to see the rubber exhibition. It was the most striking novelty in the entire show, and Goodyear's name was on everybody's lips. He was given the "Grand Council Medal," the greatest distinction that the exhibition authorities could bestow upon him.

It is not to be wondered at, in view of the tremendous success of Goodyear's London exhibit, that he should have determined three years later, when the *Exposition Universelle* was held in Paris (November, 1854), to repeat his display on that occasion; though the expense of the Paris exhibit was not as great as the earlier one, amounting only to $20,000—this smaller expense being attributable largely to the fact that he still had a considerable part of his London "Court" intact. His display, however, was considerably larger than on the earlier occasion. In fact, at the Paris show he had two distinct rubber courts. This increased area came about largely through Goodyear's intense patriotism. The Frenchmen had not allotted very much space originally to American exhibitors. The American committee applied for more space, which was conceded. They then discovered that they did not have exhibitors enough to fill this new territory, and they appealed to Goodyear. He determined that American reputation for enterprise should not be permitted to suffer if he could prevent it. Consequently he took double the amount of space he had intended, and erected a second court.

His exhibit there created a greater furore even than the earlier one in London. It stood in the very center of the exposition, and all Paris, to say nothing of the rest of the continent, flocked to see this wonderful rubber revelation.

In addition to the articles shown in the London show he had some elaborate rubber furniture very handsomely inlaid, which naturally attracted much attention. Besides the rubber carpets on the floor, he had in this exhibit many rubber pictures on the wall—landscapes and portraits artistically painted on hard rubber panels. The Emperor himself, Napoleon III, was greatly interested. An amusing incident connected with the Emperor's visit was given in some detail in the April number of The India

Rubber World, and need only be briefly alluded to now. The Emperor's visit to the exhibit was made early in the day during Goodyear's absence. There was a pile of large round rubber balls standing in one of the courts. The Emperor, whose mind was more or less contsantly on matters military, viewed this pile with great interest, and turning to a companion said: "I have always thought that rubber could be used in warfare as a means of defence, but it never occurred to me that it was suitable for projectiles; but there you see a pile of rubber cannon balls." The pile was really one of footballs, but nobody ventured to set the Emperor right.

The French were greatly impressed with the Goodyear exhibit. He was not only given the "Grand Medal of Honor," but that greatest of French distinctions, the "Cross of the Legion of Honor," was bestowed upon him.

Tremendous strides have been made since that day in the rubber industry. The entire value of the American rubber output in 1851 was less than $1,000,000; today it is over $220,000,000; but though it would not be impossible, it certainly would be quite difficult, to reproduce today the wonderful rubber exhibit that Goodyear presented to the English people at the Crystal Palace in 1851, and again with notable additions repeated three years later in Paris. Still there is much in the present rubber show that Goodyear would never have dreamed of.

Earlier Rubber Expositions.

WHILE, of course, the interest of the rubber trade now centers upon the great aggregation of rubber exhibits brought together in Grand Central Palace in New York, at the same time, it may not be out of place, as a matter of comparison if for no other reason, to glance very briefly at the three earlier rubber exhibitions; one—somewhat local in its character—held in Ceylon in 1906, and the other two of an international nature, held in London in 1908 and 1911.

THE CEYLON RUBBER EXHIBITION OF 1906.

ALTHOUGH exhibitions, international, local, and sectional, had long been held in connection with other branches of industry, it was reserved for Ceylon to start in 1906 the series of rubber exhibitions, the latest of which is now opening its doors in New York.

Leading officials took a prominent part. Sir Henry Blake, G. C. M. G., the governor of Ceylon, opened the exhibition,

Sir Henry Arthur Blake, G.C.M.G.

attended by a military escort; likewise acting as its president; thus anticipating the position he subsequently filled in London. Among other well-known names intimately associated with the exhibition, were those of Dr. J. C. Willis, director of the Botanic Gardens; Mr. M. Kelway Bamber, Government Chemist, and the Hon. Mr. E. Rosling.

Prizes were offered for the best samples of Pará in biscuit, sheet, crepe, worm and scrap; for *Castilloa* and Ceara in different forms; and for Rambong (*Ficus*). With a view to a more extensive scope than would have been afforded by Ceylon alone, the competitors were divided into two sections. One of these competitions was limited to Ceylon exhibitors, while the other also included competitors from other countries.

In commenting at the time upon the probable effects of the Ceylon Exhibition of 1906, The India Rubber World said:

"One result of the exhibition will be to promote interest among planters in scientific plantation methods, to the end that better returns and larger profits will be made. . . .

"Another result of the holding of the Ceylon exhibition will place a higher estimation in public opinion upon rubber planting, and lead to the more intelligent consideration of the subject by investors."

Who will deny that these predictions have been fulfilled and that the seed thus sown has germinated and fructified in the immense extension which has since marked the rubber industry?

It is of interest to note that Malayan planters participated in the competitions to which they were admitted and carried off honors in friendly rivalry with the Ceylon rubber growers.

THE LONDON EXHIBITION OF 1908.

WHILE the Ceylon Rubber exhibition of 1906 had been confined to the products of Southern Asia, its natural sequence was of the much broader scope displayed in London two years later. The "First International Rubber and Allied Trades Exhibition," held at Olympia, the largest exhibition building in London, took place during the two weeks ending Saturday, September 26. As an illustration of the attention given to the matter by the London press, it is of interest to recall the fact that the "Times" came out on the morning of the opening day with an advance notice of the show, resulting from the "press view" of the previous Saturday afternoon, occupying several columns. Not a single important feature was overlooked. Special interest was likewise displayed by the financial and scientific press, as well as by the leading metropolitan and provincial journals.

One reason for this attention was the growing interest taken in rubber by investors, many of whom had by that time made money in rubber, while others, whose holdings were of more recent date, were anxious to gain information as to the prospects of their being equally fortunate, when the younger plantations matured.

Another cause of the success of the exhibition was the intelligent maner in which it was brought to the notice of the public. Never, perhaps, was an exposition of such an international character, and on so large a scale, organized with so little direct government aid from any quarter.

CEYLON.

Following up its local exhibition of 1906, Ceylon had a comprehensive exhibit ready for display. It comprised the products of some 30 plantations, covering every kind of rubber produced in the colony. The Botanic Gardens sent two *Hevea* trees of two years' growth and one of three years'.

STRAITS SETTLEMENTS AND MALAYA.

The exhibits from the Straits Settlements and the Federated Malay States occupied a special section; having been contributed by the government, a number of leading estates, and by the botanic gardens at Singapore and Penang. A picturesque feature was an old Malay house from the Malayan Planters' Association. There were many specimens of rubber, mostly *Hevea*.

AFRICA.

Africa was principally represented by British East Africa, with exhibits illustrating cultivation as well as experimental work.

DUTCH INDIES.

The Dutch government had appointed a commission to secure adequate representation of Holland and her colonies. Samples and graphic illustrations of rubber at various stages were contributed by the official body referred to. These represented the products of a number of leading plantations in Java and Sumatra.

An interesting exhibit was that of the Haarlem Colonial Museum, including rubber and gutta percha from the Dutch Indies, as well as balata from Surinam.

BURMA.

Specimens of native rubber-yielding creepers were shown, in conjunction with samples of *Hevea* and other plantation rubber.

SOUTH INDIA.

South India was represented by an exhibit of the Penyar Rubber Co., of Travancore.

While the Eastern Hemisphere was thus well represented, the Western made an equally good showing, in accordance with its recognized position as a source of rubber.

BRAZIL.

The principal representation of Brazil was made by the Associação Commercial do Amazonas, of Manáos, with the support of the Amazonas State government. Seventeen lots represented the various grades of Brazilian rubber. In all the Brazilian rubber exhibit amounted to about 10 tons; the largest lot being one of 1½ ton of fine rubber from the river Acre.

In order to give the exhibit the appropriate "local coloring," complete outfits of the apparel worn by the *Seringueros* and full sets of tapping tools supplemented the rubber exhibit proper.

MEXICO.

A collection of important samples had not reached in time for the exhibition, so that the principal rubber exhibit was that of the Mexican Rubber Co., of London. Ed. Maurer, of New York, made an exhibit of guayule from some half dozen companies.

WEST INDIES.

Exhibits from Trinidad, Dominica, British Guiana and St. Lucia, had been arranged by the West Indian Committee, London, after having been prepared by the permanent exhibition committees of the various colonies.

Such were the principal features of the exhibition as regards rubber. The various accessory features of rubber plantation requisites, scientific apparatus, rubber works machinery, plantation machinery and appliances, and factory supplies were likewise fully represented.

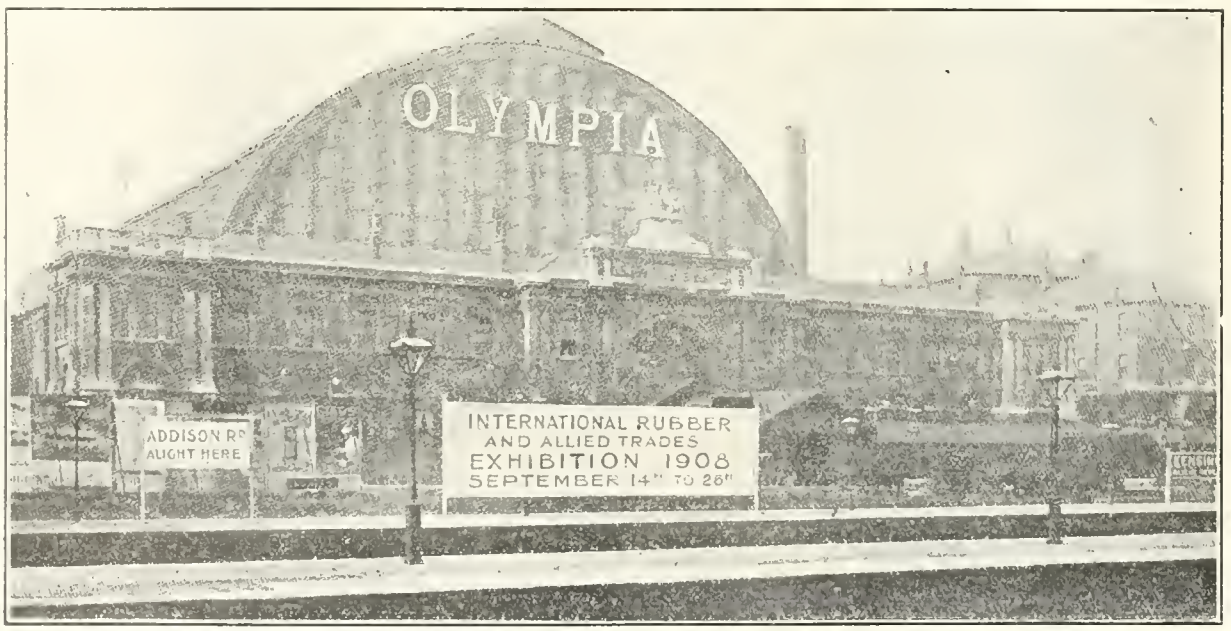
An important feature was the "rubber conference," in which a number of the leading rubber scientists from all countries took part.

SECOND INTERNATIONAL RUBBER AND ALLIED TRADES EXHIBITION.

NOTHING afforded more convincing proof of the success of the London Rubber Exhibition of 1908 than the fact of its repetition on an enlarged scale three years later in 1911. That triennial rubber exhibitions are destined to become a feature of the rubber trade is illustrated by that system forming part of the newly enacted Brazilian legislation.

Though on account of its recent occurrence, the consideration of the London Rubber Exhibition of 1911 belongs rather to present than past history, that occasion calls for a brief retrospect, as an introduction to that now opening in New York.

While the 1908 exhibition had been held at Olympia, situated in the residential West End quarter of Kensington, that of 1911 took place in the northeastern part of the city at the Royal Agricultural Hall, Islington, which was admirably adapted for the purpose. It was within a short distance of the busiest manufacturing and trading districts of the British metropolis, being thus convenient for the daily visits of business men interested in crude or manufactured rubber. "Mincing Lane" was within less than half an hour's drive.



FRONT VIEW OF THE BUILDING WHERE THE LONDON RUBBER EXHIBITION WAS HELD IN 1908.

Under the presidency of Sir Henry A. Blake, ex-Governor of Ceylon (who had presided over the 1906 Ceylon exhibition), and the management of Mr. A. Staines Manders, coupled with the

work of Miss D. Fulton as secretary, there was the organization necessary for the ultimate success which crowned the efforts made.

The general arrangement by countries was on practically the same lines as those of the 1908 exhibition.

CEYLON.

Twenty-four plantations contributed about 4,500 pounds of samples representing *Hevea* in all its various forms, as well as Ceara and Castilloa. Sections of rubber trees and tapping tools were shown by the Ceylon Research Committee and the Royal Botanic Gardens.

STRAITS SETTLEMENTS AND MALAY STATES.

From these possessions came 100 lots of rubber, weighing 2,000 pounds, comprising those varieties mentioned in regard to Ceylon, as well as others, such as *Ficus*.

SOUTHERN INDIA.

Eight estates from this quarter participated with samples and photographs.

BRITISH AFRICA.

The British East Africa Protectorate, the Uganda Protectorate and the Gold Coast Colony sent exhibits of their products.

WEST INDIES.

Trinidad furnished samples of *Castilloa* and *Hevea*, together with tapping tools and other requisites of rubber cultivation, Jamaica and Dominica being also represented. British Guiana sent samples of Balata and *Hevea*, with special publications.

BRAZIL.

A remarkable collection was furnished by the State of Pará, as well as by the Musee Goeldi, while the Commercial Association of Manáos exhibited 385 la rge pelles of fine and 91 balls of Caucho. Ceara rubber from Southern Brazil also constituted a feature of interest.

MEXICO.

An attractive exhibit was the miniature rubber factory exhibited by the Intercontinental Rubber Co.

DUTCH INDIES.

From 150 estates in Java, Borneo and Sumatra came a large number of rubber samples, including *Hevea*, *Ficus* and *Castilloa*.

GERMAN POSSESSIONS.

Some 350 lots from German East and West Africa and the German South Sea possessions, were mostly from sixty estates, but in part from Government institutions. These specimens had been assembled with Teutonic thoroughness, knowledge and enterprise.

BELGIUM.

Samples, maps and charts illustrated what the Belgian Congo is doing in rubber. Eighty classified rubber samples were contributed by the Antwerp Chamber of Commerce.

FRANCE.

Interesting samples of rubber and a number of photographs were sent in by the Governments of Madagascar, the French Congo and French Cochin-China.

PORTUGAL.

Samples of Ceara from the Portuguese colony of Angola formed an interesting exhibit.

ENGLISH CRUDE RUBBER EXHIBITS.

A graphic summary of the rubber resources of the British Empire was furnished by the Imperial Institute, and was illustrated by a variety of samples. Various exhibits were arranged by rubber share brokers, a crude washing company and the British Murac Syndicate, Limited.

RECLAIMED AND MINERAL RUBBER.

These features of the English and American rubber industry were appropriately represented.

RUBBER MILL AND PLANTATION MACHINERY.

There were twenty-five English exhibitors in this line, in which David Bridge had the most complete assemblage. Among American firms exhibiting were The Farrel Foundry & Machine Co. and The Birmingham Iron Foundry.

Prizes Offered at the 1911 Exhibition.

SUPPLIES FOR RUBBER MANUFACTURERS.

A full assortment of these was furnished by leading companies.

MANUFACTURED RUBBER GOODS.

Much interest attached to the exhibits of the North British Rubber Co. and the Premier Reforming Co.

THE RUBBER CONFERENCE.

This was one of the most valuable features of the exhibition and calculated to render its effects of permanent value to the industry, but the conference about to meet in New York bids fair to surpass its London predecessors.

The Third International Rubber and Allied Trades Exposition.

WHAT IS TO BE SEEN AT THE GREAT RUBBER SHOW.

QUITE a good deal has been heard during the last year by the people at large, and especially by the people in the rubber trade about the big Rubber Exposition, to be held at the Grand Central Palace, New York—Lexington avenue, between 46th and 47th streets—from September 23 to October 3. It is safe to say that practically every one in the rubber trade will attend this exposition, to say nothing of the thousands of people from the common walks of life. It will be an interesting question, therefore, with rubber people generally as to what there is to be seen there.

The Grand Central Palace is probably the best building for exposition purposes in the United States—certainly in New York. It has three floors that can be used for the display of exhibits—the main floor which occupies the entire width and depth of the building, and has an area of 200 by 275 feet, and two additional floors—the mezzanine and the balcony which have the same space, with the exception of the open court in the center which looks down on the main floor. Altogether the three floors comprise 160,000 feet of floor space, which is enough to give adequate display space for the largest expositions that are likely to occur for many years.

The Grand Central Palace, New York.

When entering the building by the main entrance, on the Lexington avenue side, one will discover at once that he is walking on rubber—everywhere the flooring is made of this easy, resilient material. There is rubber on the stairs, in the aisles and in the booths. It was intended originally to have the avenue in front of the building paved with rubber, but a number of difficulties arose and it was abandoned. They are still ahead of us in London in regard to this matter, for there is quite an area of rubber pavement in the great English metropolis—for instance, around the railway stations and in front of some of the finer hotels. When our friends succeed in producing synthetic rubber at 25 cents per pound, rubber pavements will be plentiful in American cities, but with Pará rubber still quoted at $1.25 the progress of rubber pavement laying is destined to be rather slow. But rubber flooring is coming more and more into vogue, as will be seen at the rubber show.

The exposition is divided into three parts, first, rubber manufacture and manufacturing machinery, which will occupy the main floor; second, the allied lines, including reclaimed rubber, chemicals and compounding mixtures on the mezzanine floor; and third, crude rubber, which will fill the third floor or balcony. The first exhibit that the visitor encounters on mounting the broad stairway to the main floor is that of the United States Rubber Co., which stands at the head of the stairs—a most commanding position; to which undoubtedly the company is entitled among American manufacturers, because of its commanding position in the trade—by reason of its huge capital, its large business, and its great number of factories, scattered through this country and Canada. There is nothing conspicuously commercial about this exhibit. The only rubber product which it exhibits is a number of automobile tires made by one of its constituent companies, the United States Tire Co.

The booth of the United States Rubber Co. will occupy 1,800 square feet, and will be divided into two reception rooms, equipped with elaborate mahogany furniture and supplied with a number of stenographers, telephones, etc., for the convenience of visitors.

The general woodwork comprising the exterior will be done in mahogany finish, and the pillars draped in flags, and on the counters set at angles affording the best display, will be pictures of the various factories of the company. The spaces in front of the booth will be covered with rubber tiling made by the New York Belting and Packing Co.

The companies taking part in this exhibit will be the United States Rubber Co., The General Rubber Co., The Rubber Goods Manufacturing Co. and The United States Tire Co.

THE ESSEX RUBBER CO., INC.

The Essex Rubber Co., Inc., of Trenton, New Jersey, displays

a very considerable variety of rubber products, comprising rubber soles and heels, sheet rubber soling, tap soles and heel cushions; also a variety of tire accessories like blow-out patches and tire inner liners. In addition there is a variety of rubber bumpers, "Pyramid" matting, "Radiator" hose, packing, both of rubber and asbestos, and pump valves. To those who are athletically inclined, there are sporting goods which will be of interest, including hockey pucks, rubber quoits, golf clubs with rubber handles, tennis rackets with handles of rubber, and rubber bicycle handle bar grips.

THE HOME RUBBER CO.

The Home Rubber Co., also of Trenton, New Jersey, has an interesting display of water hose, steam and suction hose, and various kinds of valves and gaskets, and a number of automobile tires.

THE INDIA RUBBER WORLD.

There is a superb display of rubber machinery, quite a little of it in motion, on this floor, but before you get lost in this mechanical labyrinth it will well repay you to turn towards the south wall of the building and visit the exhibit of The India Rubber World. It is not as large as some of the others—Brazil, for instance, which has 15,000 square feet, while The India Rubber World has only 20 x 35—but its exhibit differs from any other in that the others could be duplicated, but the exhibit made by this journal cannot be duplicated anywhere on the face of the earth. Of course, the intrinsic value of some of the other exhibits—particularly where expensive machinery is shown, or where there is a large quantity (often running into many tons) of crude rubber—is very large. But in all these instances the exhibits could be replaced if any untoward fate should overtake them. But in the case of these exhibits no replacement could be made; many of them are the only ones of their kind in existence. They are relics of Goodyear's days—some of them being products of his wonderful skill, and some of them reminiscent of the triumphs of his later years. They include the book, made entirely of india-rubber—leaves, covers and all—which Goodyear labored on so long, and of which there is no duplicate. Then there are two fine life-size portraits, one of Goodyear, and one of Daniel Webster, painted on hard rubber panels, by Walsh, a distinguished artist of those days. The propriety of Webster's picture on rubber will be recognized on reflecting that Webster conducted the famous seven years' suit for the protection of Goodyear's patents, and finally won it, receiving as his fee, $25,000, which at that time was the largest legal fee ever collected in this country—though a mere bagatelle to the average lawyer of today.

There are also specimens of hard rubber jewelry made by Goodyear, and the cross of the Legion of Honor conferred upon him by the French Government after his notable display of rubber products at the Parisian Exposition in 1854.

Grand Central Palace—View from Lobby of Grand Staircase.

Grand Central Palace—View of Exhibition Hall.

When Goodyear received his famous cross he was temporarily sojourning in prison for debt; for while a more honest man never lived, his constant pursuit of new rubber triumphs kept him in perennial financial straits. There are other priceless relics also at this exhibit, all of which were kindly put in the temporary possession of The India Rubber World by the Goodyear family.

In addition to these extremely interesting articles, there are several exhibits at this booth that could be duplicated elsewhere, but are not likely to be at this particular show. They were secured by the editor of the paper during his sojourn last winter in the rubber-growing countries of South America, and particularly in Venezuela. They consist of a number of unique designs made from rubber, as, for instance, a miniature rubber tree with a diminutive man tapping it, and various animals, insects and reptiles molded out of balata or gutta-percha. Taking it all-in-all this booth is likely to be voted a very interesting one—not only by rubber men, but by the casual visitor.

THE MANHATTAN RUBBER MANUFACTURING CO.

The Manhattan Rubber Manufacturing Co., manufacturers of mechanical rubber goods with factories, warehouses and executive offices at Passaic, N. J., show their product at the Rubber Exposition. The president of this company is Col. Arthur F. Townsend, and its vice-president, Elliot Henderson. Both of these gentlemen will devote more or less time to the company's exhibit.

The Manhattan Rubber Manufacturing Co. makes a good display of belting, emery wheels and all kinds of rubber hose; but what particularly attracts the visitor is the circular loom busy at work weaving hose.

FARREL FOUNDRY & MACHINE COMPANY.

The makers of rubber machinery are making a fine display of the products of their plants. Some of the machines are supplied with power and can be seen at work. Among the conspicuous displays of rubber machinery is that of the Farrel Foundry & Machine Co., which consists of an 8" x 16" motor-driven experimental outfit, mounted on a continuous bedplate, made up of a washer, mill and calender, as shown in the above cut.

The washer has corrugated rolls, with 6-V cuts to the inch. The washer and mill are equipped with automatic guides and with their patented coil clutch, type G, which gives an instantaneous release and picks up the load without shock. The calender and mill have bored rolls, and are fitted up with steam connections so that suitable temperature may be obtained: whereas the washer rolls are solid, the machine being piped for washing the rubber. Both the mill and the washer run at a speed of 30 r. p. m., and the calender at about 15 r. p. m.

Such an outfit as the above is extensively used in the laboratories for experimental work, and has been found to work very successfully for this purpose. These machines show on a small scale the standard milling equipment used in the manufacture of rubber goods, and are miniatures of the company's larger machines in every respect.

THE TURNER, VAUGHN & TAYLOR CO.

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio, are exhibiting an experimental outfit for vulcanizing rubber goods, which is complete and will be in operation at the exposition. They are represented by L. A. Vaughn and M. A. Pearson. The outfit includes three machines, a washer, a mixing mill and a calender. The washer is a 6 x 12 inch "Vaughn" with chilled iron rolls, one corrugated and one with an ordinary smooth tool finish. The mixing mill is also a 6 x 12 inch "Vaughn," with chilled iron rolls, having faces ground and polished. On this machine is demonstrated the quick-removable adjusting screw and nut—an exclusive feature on these mills. Both the washer and the mixing mill have automatic guides, gear guards and all brass journals. The calender is an 8 x 14 inch three-roll "Vaughn," with chilled iron rolls, having faces ground and polished.

In addition to the machines described above, the fact might be mentioned that the line shaft is driven by an electric motor through a pair of cut herringbone gears and a patented multiple band clutch.

THE ADAMSON MACHINE CO.

The exhibit of the Adamson Machine Co., of Akron, Ohio, embraces a comprehensive line of automobile tires, molds, cores, models, prints and photographs. The head of this company is Alexander Adamson, recognized as a rubber machinery expert, whose newly erected plant at Akron, Ohio, is regarded as one of the most completely equipped of its kind in the country. This is exhibit No. 16.

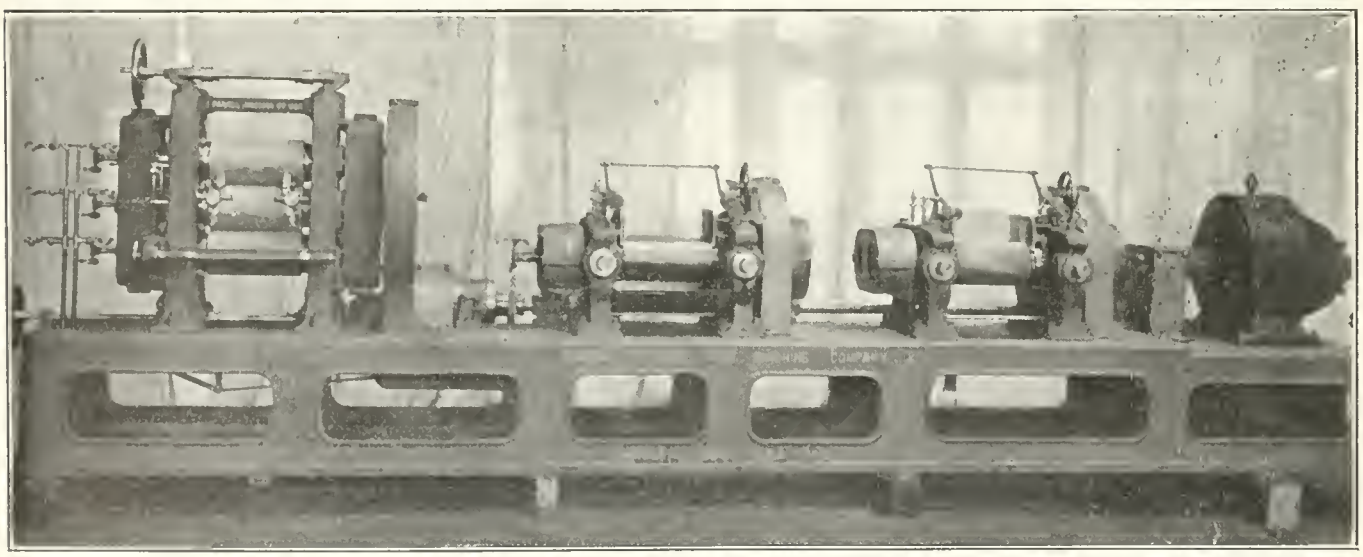


Exhibit of the Farrel Foundry & Machine Co.

THE UNITED SHOE MACHINERY CO.

Exhibit No. 19 is that of the United Shoe Machinery Co., which concern practically controls the shoe machinery interests of this country. They are making an exceedingly interesting exhibit of their various machines, some of which are adapted for certain classes of rubber manufacture.

The United Shoe Machinery Co., also has machinery in motion, which proves to be a drawing feature.

JOHN ROYLE & SONS.

One of the most important mechanical devices used in rubber manufacture is the tubing machine. Specialists in the production of these are Messrs. John Royle & Sons, Paterson, New Jersey. This concern, which is one of the oldest and best known among the producers of rubber machinery, has specialized in tubing machines for thirty years and has achieved notable success in their production. Official recognition has been given the Royle product by the granting of patents on tubing and insulating machines aggregating more than 100. This is exhibit No. 22

J. P. DEVINE CO.

Exhibit No. 25 is that of the J. P. Devine Co., of Buffalo, New York, who are showing their famous Vacuum Chamber Dryers for rubber, compounds and other materials used in the manufacture of rubber goods, Vacuum Rotary Dryers for whiting and other chemical compounds used in vulcanization; Deresinating and Solvent Recovering Apparatus. Mr. Devine is a recognized expert on matters pertaining to Vacuum Systems. The exhibit is in charge of Chas. Devine and F. Howard Mason.

THE HOGGSON & PETTIS MANUFACTURING CO.

The Hoggson & Pettis Manufacturing Co., New Haven, Connecticut, specialists in rubber tools and devices, are showing calender roll engraving, rolls of all descriptions, dies for cutting and dies for marking, and hand tools of various descriptions, such as rollers, stitchers, gauges, etc. Exhibit No. 113.

WERNER & PFLEIDERER CO.

The Werner & Pfleiderer Co., Saginaw, Michigan; Cannstatt, Berlin, Vienna, London, Milan and Moscow, are exhibiting their well-known Universal Rubber Washer and Universal Kneader. Both of these machines are extensively employed in rubber mills throughout the world. The manager of the American plant is Mr. Emil Staehele. Exhibit 27.

THE VICTOR BALATA AND TEXTILE CO.

The Victor Balata and Textile Belting Co., 51 Beekman street, New York City, are showing balata belting for power, elevating and conveying purposes; fasteners, joints, lace leather for all purposes, balata cement, gum, and a special car lighting belt for axle-driven generators. This is exhibit No. 28.

THE CURTIS & MARBLE MACHINE CO.

The Curtis & Marble Machine Co., Worcester, Massachusetts, are showing their well-known brushing machine, mill sewing machine, measuring rolls and dials, and winding bars for pasteboard tubes; also photographs and drawings of various other machines of interest to the rubber trade. Mr. Charles Marble is the president of this concern. Exhibit No. 29.

THE BUFFALO FOUNDRY AND MACHINE CO.

Exhibit No. 30 is that of the Buffalo Foundry & Machine Co., Buffalo, New York, which company will display their vacuum dryers, reclaiming apparatus, fabric impregnating apparatus, expansion tanks, vacuum pumps and laboratory devices, which will be among the very interesting exhibits of the show. The attendants in charge of the exhibit are E. G. Rippel, sales manager; H. E. Jacoby, New York City representative; E. G. Sleeper, New England representative; O. S. Sleeper, chief engineer, and H. D. Miles, president.

THE BUREAU OF STANDARDS.

The Bureau of Standards, Department of Commerce and Labor, Washington, District of Columbia, U. S. A., exhibits its official testing laboratories, which are equipped to investigate and test a wide range of materials, including mechanical rubber goods. New methods of testing are in process and new types of machines are being developed for the purpose of investigating the properties of crude and manufactured rubber. This is exhibit No. 31.

UNITED STATES RUBBER RECLAIMING WORKS.

The United States Rubber Reclaiming Works, factories at Buffalo and offices at 277 Broadway, show a complete line of the company's product in addition to a working exhibit, reflecting the operation of a reclaiming factory. This exhibit, which is No. 104, is in charge of Mr. Clarence Loewenthal.

E. H. CLAPP RUBBER CO.

The E. H. Clapp Rubber Co., with factories in New England and New Jersey, and offices at 49 Federal street, Boston, Massachusetts, show samples at exhibit No. 105 of standard grades of reclaimed rubber and a varied line of articles containing their product.

NEW JERSEY RUBBER CO.

The New Jersey Rubber Co., offices at 120 Franklin street, Boston, Massachusetts, have an interesting exhibit, No. 106, of insulated wire, hard rubber goods, mechanical rubber goods and products manufactured from reclaimed rubber

AMERICAN WAX CO.

The American Wax Co., works at Baltimore, offices at 105 Summer street, Boston, Massachusetts, show "Amax" mineral rubber and merchandise into which it has been incorporated. The exhibit, No. 100, will be in charge of Mr. William C. Coleman, the general manager of the office.

J. W. COULSTON & CO.

J. W. Coulston & Co., importers and manufacturers of dry paints and colors, 80 Maiden lane, New York City, are showing a comprehensive line of golden and crimson antimony, barytes, bone black, black hypo, green oxides, Indian reds, Tuscan reds, siennas, ultramarine blue, umbers, vermilion (English), chrome, tile and zinc yellows, zinc oxide, red green and white, and zinc sulphide (lithopone).

GEORGE A. ALDEN & CO.

George A. Alden & Co., 77 & 79 Summer street, Boston, Massachusetts, manufacturers of the famous mineral rubber known as "Emarex," are making a most interesting exhibit including a tread mill, the floor of which is made of "Emarex," and over which two sharply shod horses are plodding their weary way daily without making any perceptible effect on the flooring. Mr. George Watkinson, one of the best known rubber men in the trade is in charge of the Emarex exhibit, which is No. 100.

RUBBER REGENERATING CO.

The Rubber Regenerating Co., of Mishawaka, Indiana, show, at exhibit No. 101, reclaimed rubber by alkali, acid and mechanical processes. This company is said to employ 1,000 hands in addition to the laboratory force of 30 chemists.

MONATIQUOT RUBBER WORKS CO.

The merits of "Naturized" rubber are effectively displayed by the Monatiquot Rubber Works Co., of South Braintree, Massachusetts. It is claimed that the peculiar nature of the processes used in its manufacture constitute an advance in the art of reclaiming waste rubber. While a relatively young concern, the demand for its products has necessitated frequent addition to its productive capacity.

THE LOEWENTHAL CO.

The Loewenthal Co., of 481-483 Washington street, New York, is known as one of the largest scrap rubber dealers in the world. It has offices and warehouses in New York, Akron and Chicago, as well as representatives throughout the United States. It is estimated that the average yearly tonnage handled by this company represents about 35 million pounds of domestic and foreign scrap

PFALTZ & BAUER.

As agents for the well-known "List" Chemical Factory of E. de Haen, Seelze, near Hanover, Germany, Pfaltz & Bauer, of 300 Pearl street, New York, make a special exhibit of golden and crimson sulphuret of antimony and other compounding ingredients for the rubber industry.

LEHMANN & VOSS.

In harmony with its position as one of the largest German chemical factories, the firm of Lehmann & Voss, of Hamburg, makes a thoroughly representative exhibit of its various products, specially intended for the rubber industry. In addition to the various forms of magnesia and other salts, there is a full display of the numerous coloring and filling ingredients made by the firm; all being finely bolted and of uniform quality. One feature of particular interest is that stock is carried by the New York representative, Mr. R. Bardewyck, No. 5 State street.

THE AMERICAN ASPHALTUM & RUBBER CO.

The American Asphaltum & Rubber Co., of 600-619 Harvester Building, Chicago, makes a special exhibit of its "Pioneer" M. R. Hydro-Carbon, which has achieved an international reputation for its high percentage of purity. Another important feature is that the quality and melting point are always uniform.

The Canadian offices are: The Canadian Mineral Rubber Co., Limited, Winnipeg and Toronto; the London offices being the Canadian Mineral Rubber Co., Limited, 32 Victoria street, Westminster, S. W.

Meyer & Brown, successors to A. P. Morse & Co., are showing samples of crude rubber. Exhibit No. 215.

DUTCH GUIANA CULTURE CO.

Exhibit No. 217, of the Dutch Guiana Culture Co., with headquarters at the Harris Trust Co., Chicago, Illinois, is an interesting showing of *Hevea* trees at different ages, including the process of tapping, and samples of rubber grown in Dutch Guiana. The president of this company is L. C. Lawton, of Chicago, Illinois.

HENDERSON & KORN.

Henderson & Korn, 82 Beaver street, New York City, have an attractive booth of tropical design, decorated with Indian hunting equipment and basket work collected at the headquarters on the Rio Negro. The exhibit consists of samples of a few standard grades in which this concern deals.

The United Malaysian Rubber Co., are showing samples of Jelutong, and their booth, No. 221, has attracted the attention of a great many visitors. The agent of this company in New York is J. Warren Bird, 2 Rector street.

THE NEW YORK COMMERCIAL CO.

The New York Commercial Co., 605 Dun Building, New York City, one of the most important crude rubber organizations in the world, is showing samples of crude rubber from wild and planted trees, Jelutong, crude and deresinated; gutta percha, crude and reboiled. It is probable that no exhibit at the show is being more generally visited.

E. V. Wilcox.

Edward G. Salmon.

William Shakespeare.

This company issued a very artistic invitation to sundry members of the trade to visit its exhibit. This invitation is handsomely engraved and is sent out with a personal card of the sender folded in tissue paper, all enclosed in an inner envelope in addition to the addressed envelope, the whole thing being quite after the style of an invitation to a fashionable wedding or other high society function.

RUBBER TRADING CO.

The Rubber Trading Co., 38 Murray street, New York City, is one of the largest and the best known of the crude rubber importers of this country. Their exhibit is naturally of interest to buyers of crude rubber. The president of this company is William T. Baird, who looks after the office management, while the vice-president, Robert B. Baird is one of the best known and most popular crude rubber salesmen in the trade. Associated with the Rubber Trading Co. are Collier Baird, son of the president, and Robert L. Baird, son of the vice-president.

THE RAW PRODUCTS CO.

The Raw Products Co. are well known successful operators in crude rubber. This business being under the management of Mr. H. W. Pety. Their exhibit is No. 214, and is the center of much interest on the part of visitors.

ACUSHNET PROCESS CO.

The Acushnet Process Co., New Bedford, Massachusetts, are showing an interesting line of high-grade deresinated rubbers and high-grade resins. It is probable that Phillip Endicott Young, president of this organization, will take charge of the company's stand, which is No. 102.

NEW JERSEY ZINC CO.

New Jersey Zinc Co., stand No. 103, show a line of zinc oxides, calling special attention to their "White Seal," a new product, very white and velvety and of remarkable bulk, and certainly very pleasantly named. Lithopone is also included in the product of this company.

TYSON BROTHERS, INC.

Tyson Brothers, Inc., Carteret, New Jersey, show a full line of rubber substitutes and exhibit articles in which their product is used. They are also showing vegetable oils, whitings and a full line of rubber chemicals. Their exhibit is No. 118.

BURMA.

The Government of Burma, India, is represented by samples of plantation rubber from some half dozen leading estates. An illustrated booklet is also being distributed free with a full description of Burma.

THE HAWAIIAN ISLANDS.

An interesting exhibit is that of the Hawaiian Rubber Growers' Association of Honolulu. It includes photographs and literature

WHERE THE HAWAIIAN EXHIBIT WILL BE.

illustrative of rubber cultivation and preparation, as well as samples of rubber in bulk, as shipped to market. There is further shown an assortment of intercrops, which illustrate the fertility of the islands.

THE CEYLON SECTION.

THE CEYLON EXHIBIT.

The Hon. F. Crosbie Roles, editor of the "Times" of Ceylon, was appointed by the Governor of Ceylon to be commissioner for Ceylon at the Exhibition. Mr. Roles is well known in the United States, having been interested in the Ceylon exhibition at the Chicago World's Fair, and later occupied an official position at the St. Louis Exposition, 1904. He participated in the first World's Rubber Show at Peradeniya in 1906, and was a member of the local and London committees at the International Rubber Exhibition of 1911.

Ceylon's Rubber exhibit will be set in the center of a plantation crowded with spice trees. The commissioner has brought a score or more of picturesquely garbed Singhalese rubber workers to New York, for the show, and with them a few Tamils from Southern India, who work on the Ceylonese rubber farms as indentured laborers.

Ceylon has gone to great expense to show New York how its rubber industry is conducted. In the center of the Imperial Ceylonese rubber exhibit, stands an ancient Singhalese temple, such as the tourist sees at Kandy. All the details of growing, gathering and preparing rubber are shown. The Singhalese growers are rivals of the Malay rubber workers from the Straits Settlements, and the two exhibits, both under British royal patronage, are being made as attractive as possible

THE BRAZILIAN EXHIBIT.

Perhaps the most imposing exhibit in the International Exposition, now being held at the Grand Central Palace, is that of Brazil, which covers approximately 15,000 square feet. In the center of this exhibit is a pavilion of Portuguese architecture surrounded by a terrace, on the river side of which is a panorama over 200 feet long, showing the Amazon from Pará to its termination in the Jungle, illustrating the cultivation and handling of rubber—from the plantation to the market. At the south of the pavilion is a colossal figure, the conception, by the way, of Admiral Carvalho, who, in conjunction with Dr. Dahne has been mainly instrumental in promoting the success of the Brazilian exhibit. This gigantic figure symbolizes the wonderful rubber-growing capacity of Brazil.

This figure is a recumbent giant. It is about 35 feet long, and where the head is raised on the elbow the figure stands about seven feet high. The figure reclines very comfortably, looking over the valley of the Amazon, which lies stretched out green before it, showing the great river and its tributaries and the green rubber jungles. This figure, by the way, is covered with rubber, and is called "The Genius of the Amazon."

There is a deal of information to be obtained in this Brazilian section. It has been planned with much care and every evidence of thought. There are a number of charts hung in conspicuous places giving the visitor a great many interesting facts about Brazil. From one chart, for instance, it will be learned that the exports of Brazil in the last 20 years have increased 251 per cent., while the exports of the United States in the same time have increased only 141 per cent. Rubber stands second in point of importance among the Brazilian exports—coffee ranking first, with exports amounting in 1911 to over 12,000,000 sacks (132 pounds to the sack).

Another interesting export from Brazil—of which we know little in the United States—is *mate*, their native tea. In 1910 over 6,000 tons of this product were shipped out of Brazil, going chiefly to Germany, Chile and Argentine Republic. Another product of great value consists of hides—the exports for the last year to the United States alone, amounting to 31,000,000 kilos—or being interpreted, about 68,000,000 pounds.

There are five very life-like figures in this exhibit, illustrating five great industries of the republic. One shows the rubber gatherer; another, the coffee grower; a third, the cowboy; a fourth, the miner; and a fifth, the agriculturist.

Numberless photographs add a great deal to the interest of this exhibit. There are many handsome views, for instance, of the harbor of Rio de Janeiro, the finest harbor in the world, 40 x 60 miles in size, and large enough for the combined fleets of the world.

The north side of the pavilion is devoted to Manáos and its product, and is ornamented by a large painting showing rubber production and transportation. A pyramid of Pará rubber, weighing 30 tons, surmounted by a large sphere of the same material, over 1,400 pounds in weight, is a unique and interesting feature of the exhibit.

DR. PINTO'S CORNER.

Dr. Carlos de Cerqueira Pinto, who has a patented process

for coagulating latex, has a very interesting exhibit in the northwest corner on the crude rubber floor. He has speciments of Pará rubber coagulated in the old way, and a great many specimens of the same sort of rubber coagulated after his method, and he seems to make out a strong case for the superiority of rubber coagulated by the Pinto process. He has samples of rubber which he coagulated five years ago, which has lost none of its elasticity, strength or nerve.

AN ALL-RUBBER PAVILION.

One of the most interesting pavilions on the balcony floor is that of Ed. Maurer, which is composed—panels, pillars, roof, counters, everything that is observable—of rubber sheets. In order to give color contrast, the pillars and panels are covered with a pale yellow rubber, while the roof is covered with rubber of dark brown. It is a very striking exhibit, and incidently, quite valuable from a rubber standpoint.

A CLUB ROOM FOR RUBBER MEN.

In the northeast corner of the balcony floor there is a commodious room 30 x 75 feet, which is devoted to the use and comfort of the exhibitors and their friends. It is a pleasant retiring place where the exhibitor—after answering several thousand questions propounded by inquiring minds—can go and sit down in peace and quiet and get a few minutes' repose.

BRITISH GUIANA.

While British Guiana has not an independent exhibit, an effort has been made to secure representation for the colony, by including a number of rubber samples in the "British Guiana" display of the Imperial Institute.

These samples include a seven-pound sheet of balata from Messrs. Garnett & Co.; a similar exhibit from the Consolidated Rubber and Balata Estates, Limited, and seven pounds of plantation Para biscuits from Mr. William Hodgson, of Plantation Noitgedacht, a sugar estate on the Demerara River.

Biscuits of plantation Pará from Plantation Inschen, a sugar estate, have been sent by Messrs. Barker Brothers. McConnell & Co., Limited, while a similar exhibit has come from the Experimental Station of the Department of Science and Agriculture. Of Sapium rubber, biscuits have been sent from the Banasika Government Reserve and scrap cakes from the David Young Rubber Estate, Limited.

THIRTY TONS OF AMAZON RUBBER

DR. LOBATO, ADMIRAL CARVALHO, AND MR. MANDERS.

EXPOSITION NOTES.

The exhibit of the United States Rubber Co., which stands at the head of the front flight of stairs, will be beautiful by day and by night. It is to be hung with the flags of many nations. It will be lighted at night by the crystal reflection of three great

globes, a very attractive scene to meet the eye of the incoming visitor.

The booth of the Essex Rubber Co., Inc., a little to the left of the front stairway on the main floor, gives an illustration of what can be done in the way of decoration by the judicious utilization of the product of a rubber factory. Covering the top of the railing around the booth, and covering the pillars that support the roof and arranged in various designs on the front of the railing, is a fine display of the rubber tiling made by the company, both in red and white. This exhibit shows what an artistic sense is able to accomplish with material that does not seem particularly promising. In this exhibit there is a very interesting rubber tree standing about four feet high, all of red rubber, which is quite unlike anything that grows in the Amazon jungle, or in the famous 80,000 acre plantation in Sumatra. Its leaves all consist of red rubber soles neatly trimmed and ready to attach to the awaiting uppers.

A FINE HERBARIUM.

At the extreme left of the main floor, against the southern wall of the building, is the stand of THE INDIA RUBBER WORLD, noticeable for many things, but particularly so for several of its conspicuous features. For one, there is a big map, 15 x 20, showing

ENTRANCE TO BRAZILIAN SECTION.

the two hemispheres, so marked that they indicate what parts of the globe are reached by this publication. It will be seen at a glance what a very small part it does not reach.

Further impressing the visitor's mind with the circulation of this publication is a panel 9 x 11 feet, giving a list of the countries in which THE INDIA RUBBER WORLD is read. A panel giving a list where it does not circulate would only have to be one-twentieth part of this size, for barring the North Pole and the South Pole, and a few cannibal islands, it goes everywhere.

The two big portraits, six feet high, painted on hard rubber panels, one of Charles Goodyear, the other of his famous legal contemporary, Daniel Webster, are two other notable features of this exhibit, but perhaps the person in search of rubber information will be even more impressed by the extensive herbarium showing the various botanical specimens of rubber, and extending all around the three sides of the exhibit. There is an excellent light from the large south window, which makes it possible to study these specimens in detail. Seven or eight large photographs of *Castilloa* trees add also to the importance of this booth.

The J. P. Devine Co. displays at the back of its space, two large panels, one giving a list of the American users, and the other a list of the foreign users of the company's machinery.

The Manhattan Rubber Manufacturing Co., the Farrel Foundry & Machine Co., and the United Shoe Machinery Co. occupy the center of the main floor under the open court that reaches up to the balcony so that these three exhibits can be viewed not only from the side but from above.

THE MOVING PICTURE SHOW.

In the southeast corner of the main floor there is a room partitioned off, large enough to seat probably 200 people, where every hour or thereabouts a moving picture show is given of highly interesting scenes to the rubber world. These are colored views, and show the gathering of the latex in the Amazon country and its preparation. Fine pictures are shown of Pará, Pernambuco, Bahia, Rio Janeiro, and other cities. You are taken on a trip across Brazil, from Sao Paulo, to Matto Grosso. You see the new Madeira-Mamoré railway, which recently gave Bolivia its first exit to the outer world. Pictures of the falls in the Madeira river are shown, and many other exceedingly interesting jungle scenes.

THE IMPERIAL INSTITUTE.

On the third, or balcony floor, in the southeast corner, the Imperial Institute of London makes a fine display of a great variety of rubber produced in the British colonies. There is rubber in sheets, in biscuits, in crepe and in balls. There are Ceara rubber, *Landolphia*, vine rubber, and specimens of *Castilloa* from the West Indies. There is also quite an extensive Herbarium of rubber botany. This exhibit is characterized by the excellence in classification and description that one would naturally expect to find in anything pertaining to the Imperial Institute.

The British Malaya space is divided into sections, each section being allotted to a particular province, which is indicated by conspicuous signs, as, Perak, Pahang, Selangor, etc. Here are seen not only specimens of rubber, but many fine photographs illustrative of plantations in the Far East.

EXPOSITION NOTES.

The Philadelphia Rubber Works Co. have a large exhibit of reclaimed rubber, and are represented by their vice-president, J. S. Lohman and several other members of the company.

The Swinehart Tire and Rubber Co. are showing a full line of their solid and pneumatic tires, and also have on exhibition rubber goods made from the latex, which has been treated by a new process by the Brazilian Government, and which it is claimed is superior to the present method of treatment on account of the crude rubber being cleaner, purer and having more life. Their exhibit is No. 14.

Exhibit No. 15 is that of the "India Rubber Review," of Akron, Ohio, which is under the personal supervision of Mr. Theodore Eugene Smith.

Exhibit No. 117 is that of the American Rubber Reclaiming Co., of Germantown, Philadelphia, Pennsylvania, which is showing a varied line of reclaimed stock.

Gammeter-Brodbeck, of Akron, Ohio, operate a general agency for the distribution of rubber manufacturers' supplies—exhibit No. 120.

Muehlstein & Co. are among the prominent waste rubber firms of the country and their exhibit is attracting much attention—exhibit No. 121.

SILVER SHIELD FOR THE BEST WILD RUBBER.

THIS illustration gives some idea of the silver shield offered by Henry C. Pearson, editor of THE INDIA RUBBER WORLD, to the individual or company making the best exhibit of wild rubber at the Exposition. This cut was made from a pencil drawing, as the shield itself was not finished at the time the cut was made. It, therefore, hardly does the design justice, but it serves to convey a general idea of its appearance. The shield is made of sterling silver, stands 15 inches high and is an exceedingly artistic piece of work. It is on exhibition at the Palace.

THE INDIA RUBBER WORLD SHIELD.

CEYLON PRIZES FOR RUBBER IN 1906.

WITH reference to the pioneer rubber exhibition at Ceylon in 1906 (referred to in another column), it is of interest to recall the chief awards on that occasion.

COMPETITION FOR CEYLON ONLY.

Pará Rubber Biscuits; (40 competitors), gold medal, Duckwari Estate; silver medal, Katugastota.

Pará Biscuits, smoked; gold medal, Arapolakande.

Pará Rubber Sheet; (23 competitors), gold medal, Syston; silver medal, Kindesalle.

Pará Rubber, Crepe or Lace; (4 competitors), gold medal, Culloden; silver medal, Heatherley.

Pará Rubber, other forms; (7 competitors), gold medal, Gikiyanakande; silver medal, Culloden.

COMPETITION FOR CEYLON AND ABROAD.

Pará Rubber Biscuits; (8 competitors), gold medal, Duckwari; silver medal, Arapolakande.

Pará Rubber Sheet; (13 competitors), gold medal, Syston; silver medal, Kondesalle.

Pará Rubber Crepe or Lace; (10 competitors), gold medal, Culloden; silver medal, Pataling.*

Pará Rubber in other forms; gold medal, Lanadron,* (block); silver medal, Gikiyanakande.

Pará Ruber Scrap, (32 competitors), washed—silver medal, Vallambrosa.* Hand made—gold medal, Heatherley; silver medal, Kepitigalla.

*Denotes Malayan or Straits exhibitors.

THE HAWAIIAN COMMISSIONERS.

The Hawaiian Islands are comparatively newcomers in the rubber producing world. The Hon. William Williamson, and Wilbur A. Anderson are the official commissioners from the Islands to the Exposition.

F. CROSBIE-ROLES.

HON. WILLIAM WILLIAMSON.

WILBUR A. ANDERSON.

Who's Who at the Rubber Show.

WHILE of course the exhibits of what people are going to the Exposition to see—the manufactured goods, the machinery used in manufacturing these goods, the crude rubber that is the foundation of the whole industry, and various compounds without which the crude rubber would be of no avail—still the personnel of the Exposition is certainly not devoid of interest.

PRESIDENT WILLIAM H. TAFT, PATRON OF THE EXPOSITION.

The patron of the Exposition is William H. Taft, who for the last three and a half years has been president of the United States, and who, according to his campaign manager, Charles D. Hilles, will continue in that difficult but desirable posnion up to the 4th of March, 1917. Mr. Taft had hoped to be present at the opening exercises and to take part in that interesting event but, unfortunately, the President is often a victim to his duties, and he was compelled to remain in Washington just at this particular time. He expects, however, to pay the Exposition a visit during its ten days of duration. Just when this pleasing event will occur cannot be stated at this time, but will be properly announced.

President William H. Taft.

GOVERNOR JOHN A. DIX, PRESIDENT OF THE EXPOSITION.

The President of the Exposition is Governor John A. Dix, chief executive of the great state of New York. Aside from his political prominence, there is great propriety in having Governor Dix officiate in this capacity, because prior to his advent on the political stage he was known as a business man of large interests and conspicuous success. It is, therefore, quite fitting that he should have a prominent part in any notable commercial function in this state. Governor Dix, when he assumed the presidency of the Exposition, fully expected to be present on the opening day and deliver the inaugural address, but the exigencies of his official position rendered it impossible for him to be in New York City on the 23d, and Mayor Gaynor kindly accepted an invitation to make the opening address in the Governor's place.

Governor John A. Dix.

MAYOR WILLIAM J. GAYNOR, WHO OPENS THE EXPOSITION.

While Mr. Gaynor has only a local political position, being Mayor of the City of New York, his fame is national, it might properly be said international, the result not only of the importance of his position as the ruling spirit of the second largest city in the world, but even more the result of his unique and forcible personality. He is possibly the most picturesque citizen in a public position that we have produced in this country since Andrew Jackson, known in his day as "Old Hickory." The willingness of the Mayor to deliver the opening address is most fortunate, because he is at his best in his speechmaking—being full of wise saws and modern instances. But as the Mayor is much given to impromptu speaking it was impossible for this publication to secure his address in advance, but there is every assurance—from past experiences—that it will be well worth hearing

HENRY C. PEARSON, VICE-PRESIDENT OF THE EXPOSITION.

Henry C. Pearson, vice-president of the Exposition, and president of the Conference to be held jointly with the Exposition, hardly needs an introduction to the readers of this journal, which he founded twenty-four years ago, and of which he has been editor continuously ever since. It is safe to say that no one has done more to disseminate rubber information all over the world than the editor of this paper. He has traveled extensively in rubber countries—both in the wild rubber regions of South America and in the plantation districts of the Far East—and has written a number of books giving the result of his experiences and observations.

Mr. Pearson presided at the initial function of the Exposition—

the private view, with an incidental luncheon, given to the members of the press—and he will preside at the various meetings of the Rubber Conference.

A. STAINES MANDERS, THE ORGANIZING MANAGER OF THE EXPOSITION.

But after all is said and done, and after the enumeration of the important officials whose names have been mentionel above, the power behind the throne, the originator and creator of this

THE BRAZILIAN COMMISSION.

The Government of Brazil—to say nothing of the several provinces and various commercial organizations in that country—has sent a large number of distinguished delegates to the Exposition. The officers of the commission are as follows: Count Candido Mendes de Almeida, president; Admiral Jose Carlos de Carvalho, vice-president; Dr. Eugenio Dahne, general secretary.

A. Staines Manders.

Mayor William J. Gaynor.

Miss D. Fulton.

Exposition, is A. Staines Manders, organizing manager. His mind conceived it and his tireless industry has made it possible, and has filled the three great floors of the Grand Central Palace with rubber exhibits from the four quarters of the globe. Mr. Manders is an Australian by birth, an Englishman by citizenship, something of an American by reason of several visits to these shores, and a citizen of the world by reason of the breadth of his activities. He promoted and carried to a successful issue the first International Rubber and Allied Trades Exposition in London in 1908. This was voted so interesting, so instructive and so stimulating to the whole rubber industry that he was requested by rubber interests to repeat the exhibition three years later; and in July, 1911, he brought about the second international rubber show in London, four times as large and complete and successful as the first. And now he has afforded to this country and to the rubber interests of the Western Hemisphere an opportunity to enjoy their first experience of a large and comprehensive rubber Exposition conceived on broad lines, and built on the experience and knowledge acquired in the two London shows.

MISS D. FULTON, SECRETARY OF THE EXPOSITION.

As has been said above, Mr. Manders has been and is the driving force of the Exposition, but the one who holds the guiding reins is Miss Fulton, his secretary. She is a young Englishwoman, the niece of Mr. Manders, who acted as his secretary on the occasion of the two London shows held in 1908 and 1911. She knows, by correspondence at least, everybody in the rubber world—who he is, and what he is doing, and how much of it he does; whether he gathers rubber, grows rubber, or makes it up into the finished product. She has all the rubber people on the globe arranged, classified and systematized. Her knowledge of the rubber trade is encyclopediacal, and better than that, no matter how busy she may be with her multitudinous duties, she is always willing to contribute from her store of knowledge to the earnest inquirer after rubber information.

The commission includes the following members: Jayme de Argollo, commissioner for the State of Bahia; Dr. J. Cardwell-Quinn, commissioner for the State of Minas Geraes; George E. Pell, commissioner for the Commercial Association, Pará; A. W. Stedman, commissioner for the Commercial Association of the State of Matto Grosso; Dr. Manuel Lobato, commissioner for the State of Amazonas, the Federal Territory of Acre, and Matto Grosso; J. Levy, commissioner for the Commercial Association of Amazonas.

The following are among the distinguished visitors from Brazil: Raymundo C. Monteiro da Costa, Manáos; M. Pio Corrêa, Rio Janeiro; Dr. Jacques Huber, Pará; W. S. Gordon, Manáos; Dr. Carlos de Cerqueira Pinto, inventor of a smokeless process for curing rubber.

Dr. Dahne when interviewed by a representative of one of the daily papers, made the following interesting statement:

"Our government naturally takes the very greatest interest in the exhibition. Rubber is second in importance of our natural products, being surpassed only by our coffee. We expect to have about eighty tons of crude rubber in different stages of production and of different varieties. The government has sent up experts in the treatment of crude rubber to demonstrate improvements we have made and to confer with American manufacturers as to possible ways in which our product might be made more serviceable."

Count Candido Mendes de Almeida and Admiral Carvalho, after the expiration of the Exposition expect to make a tour of the manufacturing cities of the East, together with other members of the International Congress of Chambers of Commerce, recently held in Boston. Later Admiral Carvalho and Dr. Dahne will go to San Francisco to choose sites for the Brazilian buildings of the Panama Exposition. After that, the Admiral will proceed to the Canal Zone to look over the great engineering works at that point; for the opening of the Canal will be a matter of tremendous importance to Brazil. The

Admiral, by the way, has served more than 50 years' in the Brazilian Navy.

Count de Almeida is part owner of the "Jornal do Brazil," is a director of the Commercial Museum of Brazil, and occupies

Edward G. Salmon, commissioner for the Imperial Institute, London, England.

C. E. S. Baxendale, representing the Planters' Association of Federated Malay States.

Dr. Manuel Lobato.

Admiral Jose Carlos de Carvalho.

Dr. Eugenio Dahne.

one of the important chairs in the School of Law in the University of Brazil. He is accompanied by his wife and six children.

COMMISSIONERS TO THE RUBBER EXPOSITION.

Among the commissioners from foreign countries are the following:

BRAZIL'S BRIGHT RUBBER OUTLOOK.

The wonderful awakening of Brazil in regard to the development of her vast rubber resources, as indicated by the decrees and regulations recently passed by the National Congress, is commented on at some length on the editorial pages of this issue. The impressive exhibit made by Brazil at the Exposition is an-

George E. Pell.

Leonard Wray.

Pedro de Toledo.

Leonard Wray, I. S. O., commissioner for the governments of British Malaya and Straits Settlements.

F. Crosbie Roles, commissioner for the Government of Ceylon.

Dr. Walter Strong, commissioner for the Province of Moro, Philippine Islands.

The Hon. William Williamson, commissioner for the Hawaiian Islands.

other indication that the great southern republic does not intend to lose her dominance in the rubber world if energy and enterprise can prevent it.

There are more rubber men in New York this week than ever before gathered together in any American city. Some come to show, but more come to be shown.

The Brazilian Dinner.

THE beginning of the functions that always attend so great an exposition as that of the International Rubber, was the Brazilian dinner given on the evening of the 7th of September, the "Fourth of July" of the Republic of Brazil, to celebrate the 90th anniversary of the Declaration of Independence of Brazil from Portugal. The Roof Garden of the Hotel Astor was the place chosen for the banquet. The guests were the members of the Brazilian colony of New York, the officers of the International Rubber and Allied Trades Exposition, and the Brazilian delegates to the exposition.

The repast was such as would have been approved by the most critical epicure. Toasts and speeches were both in English and Portuguese. Dr. Eugenio Dahne, the Brazilian Commissioner, acted as toastmaster. The speakers were Count Candido Mendes de Almeida, Admiral Jose Carlos de Carvalho, Henry C. Pearson, A. Staines Manders, William H. Ukers, and many others.

The guests, some of them accompanied by their wives, were as follows:

Dr. Eugenio Dahne, Commissioner-General, representing the Minister of Agriculture, Industry and Commerce in the United States and Canada.

Count Candido Mendes de Almeida, Director of the Commercial Academy and Commercial Museum at Rio de Janeiro, President of the Brazilian Commission to the International Rubber Exposition, New York, and to the International Congress of Chambers of Commerce, Boston, Chief Editor of the "Jornal do Brazil" and "Revista da Semana," Rio de Janeiro.

Admiral Jose Carlos de Carvalho, Brazilian Navy, Member of Congress, Vice-president of the Brazilian Commission to the International Rubber Exposition, New York.

Dr. Manuel Jacintho Ferreira da Cunha, Consul General of Brazil, and the following members of the Brazilian Consulate: Dr. Garcia Leao, George W. Chester, Victor Ferreira da Cunha, James G. Mee, Adry Werneck and Aluisio Martins Torres.

Dr. Manuel Lobato, Special Delegate of the Governor of the State of Amazonas to the International Rubber Exposition; Dr. Carlos Cerqueira Pinto, Dillwynn M. Hazlett, Candido Mendes de Almeida, Baron de Suassuna, Member of Congress, Brazil; Jose Marcal, journalist, and Dr. Victor Resse de Gouvea.

The following American guests were present: A Staines Manders, Director-General International Rubber Exposition; Henry C. Pearson, Vice-president International Rubber Exposition, Editor INDIA RUBBER WORLD; E. G. Unitt, William H. Ukers, Editor "Tea and Coffee Trade Journal"; Dr Algot Lange; C. A. Green; E. W. Hiscox, and A. B. Lukens.

BANQUET OF THE BRAZILIAN COLONY OF NEW YORK, HOTEL ASTOR.

NOISELESS STREETS.

Efforts are being directed to make rubber pavements non-slipping, and this subject is receiving attention at the Exposition. Mr. Manders has expressed the conviction that with the aid of the American inventor, he will overcome this obstacle. At no distant date, it is expected, the streets of New York and other large cities will become silent and without becoming slippery.

As the "Morning Post," one of the leading London dailies, remarks: "There is a prospect that the day may come, when streets will be paved with rubber, so that the noise and vibration of traffic, which render life in a modern town so disagreeable, will be almost banished."

The Third International Rubber Conference.

PROGRAMME OF EVENTS.

THE Third International Rubber Conference will be held in the Grand Central Palace, on Lexington avenue between Forty-sixth and Forty-seventh streets, New York, from September 24 to September 30, 1912. The Executive Committee has made the following announcement, not only covering the object of the Conference and its general organization, but giving the schedule of the various meetings, together with the names of those who will take part and the subjects which they will discuss. Their announcement is as follows:

Purpose of the Conference.—This Conference has been called for the purpose of promoting knowledge of crude rubber and rubber products.

Membership.—Membership in the Conference may be obtained by registering with the secretary on or before September 24, 1912. Registration cards and numbers will be assigned in the Exhibition Hall at the New Grand Central Palace on and after September 23, 1912. All persons or corporations interested in the production of crude rubber, the manufacture of rubber goods, and the testing of these materials are eligible for membership. Delegates are asked to announce their connections when registering.

Meetings.—Meetings will be held in the mornings beginning at ten o'clock; in the afternoons beginning at two o'clock, and in the evenings at eight o'clock. The evening meetings will be held in those cases where the afternoon business has remained unfinished.

Technical Committees.—The work of the Conference will be done through committees who will be asked to present reports and recommendations at the final meeting.

SCHEDULE OF MEETINGS.

Tuesday, September 24, at 2 p. m.—An address of welcome by the president, Mr. Henry C. Pearson. The topic for discussion will be "Crude Rubber." Special papers:

"Rubber Contracts," by Mr. Arthur W. Stedman.

"The Plantation Industry," by Cyril E. S. Baxendale, Esq., of the Federated Malay States.

"Various *Manihots* Producing Rubber in the Central States of Brazil," by Dr. J. Santiago Cardwell-Quinn, Commissioner.

"Possible Rubber Producers in the Temperate Zone," by Mr. Charles P. Fox, Akron.

"Some Effects of Acclimatization Upon Guayule. *Parthenium Argentatum*," by Francis E. Lloyd, Montreal, Canada.

"The Smokeless Method for Coagulating of Rubber," by Dr. Cerqueira Pinto.

Wednesday, September 25, at 10 a. m.:

"Problems in Vacuum Drying," by Mr. J. P. Devine.

"Manufacture of Dipped Goods," by Mr. T. W. Miller.

"Physical Methods of Testing Rubber and Rubber Products," by Mr. P. L. Wormeley, Bureau of Standards, Washington.

"Factory Management and Organization Methods," by Mr. J. C. Jurgensen (President of the Institute of Operating Engineers), and Mr. Frederic Dannerth (consulting chemist).

DR. FREDERIC DANNERTH.

HENRY C. PEARSON.

CYRIL E. S. BAXENDALE.

Thursday, September 26, at 10 a. m.:

"A Brief History of Fire Hose Specifications," by E. A. Barrier.

Topical discussion on specifications (mechanical rubber goods for railroads, Federal and Municipal Governments), including as sub-topics: Air brake hose, railroad steam hose, fire hose, navy packings and steam packings.

"The Commercial Possibilities of Synthetic Rubber," by Mr. L. E. Weber, Boston, Mass.

Friday, September 27, at 10 a. m.—A report of the transactions of the Navy Conference at Washington, December, 1911, by Mr. E. S. Land, U. S. N. Topical discussion on specifications: (a) Materials for insulated wire; (b) Textile materials (sheeting, duck and yarns).

A preliminary report of activity by the "Railroad Committee" on "Standard Methods of Testing Rubber Products."

At this meeting the Rubber Section of the American Society for Testing Materials will be represented by Mr. E. B. Tilt, of Montreal, and the Rubber Section of the American Chemical Society will be represented by Mr. D. A. Cutler, of New York.

At 7 p. m.—Informal dinner for rubber chemists and engineers. (Place to be announced Friday morning.)

Saturday, September 28, 10 a. m.—Meeting for the presentation of resolutions and recommendation of official methods for physical testing and chemical analysis of crude gum and manufactured rubber goods.

A considerable number of topics for discussion have been forwarded to the secretary by manufacturers, as well as consumers of rubber goods. These will be presented on the appropriate days.

SOCIETIES REPRESENTED.

The following societies will be represented by official delegates:
American Chemical Society.
American Society for Testing Materials.
Society of Chemical Industry.
American Institute of Chemical Engineers.
German-American Technical Society.
Institute of Operating Engineers.

The following bureaus and Government departments will be represented by delegates:
U. S. Department of War.
U. S. Department of Commerce and Labor.
U. S. Department of the Interior.
U. S. Isthmian Canal Commission.

The Official Material Testing Bureaus of the principal foreign Governments.

The Factory Mutual Laboratories of Boston, Mass.

The following Governments will be represented by official delegates:
Federal Government of Brazil.
Federated Malay States and Straits Settlements.
Ceylon.
Hawaiian Islands.
Province of Moro, Philippine Islands.
Burma (India).
The State of Amazonas (Brazil).
The State of Matto Grosso (Brazil).
The State of Para (Brazil).
The State of Acre (Brazil).
The State of Minas Geraes (Brazil).
Bolivia.
Republic of Honduras.
State of Bahia (Brazil).

The president of the Conference is Henry C. Pearson, New York; and the honorary secretary, Frederic Dannerth, Ph. D.

The Executive Committee is as follows: E. S. Land, U. S. N., Washington, D. C.; D. A. Cutler, New York; Dr. Lothar Weber, Boston, Mass.; Dr. W. C. Geer, Akron, Ohio; D. S. P. Sharples, Boston, Mass.; Dr. Eugenio Dahne, Brazil; C. E. S. Baxendale, Esq., Federated Malay States; F. Crosbie-Roles, Ceylon; A. Staines Manders, London; Leonard Wray, Imperial Service Order, Federated Malay States.

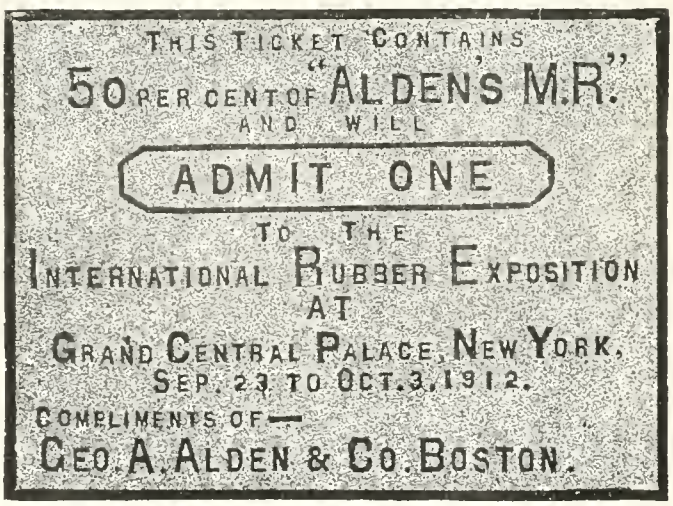
Dr. Cerqueira Pinto.

A. W. Stedman.

F. W. Miller.

RUBBER TICKETS FOR THE RUBBER SHOW.

Any ticket issued by the management and properly authorized will take the recipient into the Rubber Exposition; but George A. Alden & Co., of Boston, have issued a special ticket for the Exposition that is so distinctive that the man who receives one will certainly be loth to give it up at the gate, as it would serve as a fine permanent souvenir of that event. In issuing these to their friends Messrs. Alden & Co., remark: "This being a rubber exhibition, a rubber ticket seems more in keeping than one of mere cardboard; and as our "M R" improves and strengthens all grades of rubber, we have put in enough of it to demonstrate its remarkable properties as a compounding ingredient."



THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

THE Adamson Machine Co. is extending its present machine shop 240 feet, giving a total machine shop length of 480 feet, two stories high, equipped with modern machinery and machine shop conveniences. The company expects to occupy this plant completely by November 1. Mr. Adamson has recently been granted a patent on a hose mold, curing 500 feet or more at a single operation.

This company will be represented at the New York Rubber Exposition by its secretary and treasurer, R. B. Koontz. Mr. Adamson, the president, will be there part of the time. The present shop is crowded with work for rubber manufacturers—not only American, but English, Continental and other foreign concerns.

* * *

The Swinehart Tire and Rubber Co. has offered $150,000 worth of treasury stock to stockholders. Each stockholder will be allowed to take an amount equal to 23 per cent. of his present holdings. This offering is subject to the action of a meeting of the directors at their regular stockholders' meeting to be held September 25. The notice reads, "This action is made necessary by the company's inability to take care of the volume of business with its present capital." The quarterly dividend was reduced from 2 per cent. to 1½ per cent. in anticipation of the increased stock.

* * *

The Goodyear Tire and Rubber Co. plans to increase its auto tire output and working force 60 per cent. within the next year. It has under construction a new six-story factory building 80 x 400 feet, and an addition of two stories to another factory building. It is stated that the approximate cost of these improvements will be $300,000. It is expected that these buildings will be ready for occupancy by next spring. This will increase the working force two or three thousand, which means an increase in Akron's population of four to six thousand. F. A. Seiberling, president of this company plans to take care of the new employes by building houses on 300 acres, comprising several farms, which he has purchased just east of Blue Pond. It is expected that 100 houses will be built on the land at once as an experiment. The employes will be given the privilege of allowing the rent to apply on the purchase price of the home.

* * *

Mrs. Mary Perkins, widow of Simon Perkins, lately deceased, and one of the heaviest stockholders of the B. F. Goodrich Co., has given their old homestead located at the corner of Perkins and Prospect streets to the Association for the Aged, to be used as a temporary home until a permanent structure can be built by the association. C. B. Raymond will act as trustee of the property until it is turned over to the association. It is believed that the gift will place the organization on a permanent basis. Although it was founded several years ago, the trustees through lack of funds have never been able to start the construction of buildings on their property. A number of years ago, Mrs. Louisa Sumner died, leaving a farm of 80 acres located on high ground overlooking the city to the Board of Trustees to be used for a home for the aged. Mrs. Dr. Milligan, Mrs. Henry Robinson, F. A. Seiberling, Frank Adams and a few others have been very active, and by contributions and other means have preserved this excellent location for the purpose desired by the donor.

* * *

On account of the increased railroad traffic out of Akron, caused by the enormous enlargement of the various rubber companies, the Erie Railroad Co. this coming season expects to spend $400,000 to remodel the large yards south of Exchange street and the 40 acre property which it lately bought in Kenmore. Mr. Dunkel, general superintendent of this company said, "We fully realize that we have not kept pace with the growth of Akron. We also realize that Akron is one of the best cities in the State and has shown more growth during the past few years than any other city in the State." Vice-President Stewart of the Erie was in town last week and expressed surprise at the city's growth, and promised the above improvements. The Kenmore property will be developed into new yards. This will give the company a side track extending clear into the city, and will relieve the main track. It will also relieve the shippers by the building of side tracks leading to many of the larger factories.

* * *

The work on the Akron-Youngstown road is being pushed rapidly from Mogadore to the city of Akron. It is expected that this will be completed during the first half of 1913. This, when completed to Mogadore gives the manufacturers of East Akron another outlet and connects closely with the Wabash. It is believed by many that this new road will be controlled and operated by the Northern Ohio, one of the Lake Shore tributaries.

Last summer the Baltimore and Ohio Railroad Co. bought 40 acres of land along its line just north of Akron, which it expects to develop into new yards to facilitate its Akron trade.

The Cleveland, Akron & Columbus Railroad Co., one of the Pennsylvania lines, has, within the last few years, bought most of the land bounded by Mill, Prospect, East Market streets, and the Pennsylvania railroad lines, and has more than quadrupled its capacity for handling Akron freight. It contemplates within the next few years, building a large new office building for the head offices of the company.

* * *

The Akron division of the Philadelphia Rubber Works Co. is increasing its capacity by erecting additions to its present buildings.

* * *

A. H. Noah, former treasurer of the Diamond Rubber Co. has donated to the boys' camp of the Akron Young Men's Christian Association funds to help buy Cottage Grove, a summer resort located on the East Reservoir, six miles from Akron. The site consists of 11½ acres, with 1,156 feet of water front. The equipment to date consists of two tennis courts, a ball ground, three private cottages, bathing beach, large pavilion (the second floor of which is used for sleeping rooms, and the first floor for dining room and kitchen), one launch, steel boats and fishing boats. The camp will be used all the year round and cottages are being equipped with heating apparatus, so that the boys can take "hikes" there, in the winter and remain overnight. Mr. Noah says, "I think that the idea of boys having their recreation together is one of the best plans that can be arranged. There is nothing that will rub the rough spots off the boys more than to meet one another in play and endeavor. All of us have a dirty streak in us somewhere, and there is nothing better in the world to eradicate this streak than to associate with a bunch of clean-cut boys. I think that although any recreation is beneficial, outside recreation is the best, for it strengthens character and body, and these two are in as much need of development as is the mind.

"I am very well pleased with the uses to which the camp has been put, and am equally as well pleased with the bunch of boys who are using the camp. My hope is that when they grow older, they will see it as much their duty to aid the coming generations with either their physical, moral or financial support as we who are here now have done."

* * *

B. G. Work, who has been in Europe for some time, overseeing the building of The B. F. Goodrich plant at Colombes, France, has returned home.

* * *

Miss Irene Seiberling, daughter of F. A. Seiberling, president of the Goodyear Tire and Rubber Co., had a thrilling experience Saturday night, September 7, when a negro burglar, entered their home at 158 East Market street after the family had retired. Miss Seiberling awoke to see a man crawling on his hands

and knees within a few feet of her bed. She demanded what he was doing there. The negro made no response. She ordered him out of the house and with that, took after him. After chasing him out, she notified the other members of the family.

* * *

C. W. Seiberling, vice-president of The Goodyear Tire and Rubber Co., is having plans made for a new residence to cost $80,000. W. W. Sabin, Cleveland architect, has the plans in hand. It will be a two-story brick and stone structure in Colonial style.

* * *

O. C. Barber has just returned from an extended European trip.

* * *

F. A. Seiberling, president of the Goodyear Tire and Rubber Co., has returned from his vacation at the Cheneaux Islands. Mr. Seiberling has planned a magnificent home and a large estate at the northern end of Portage Path, the plans of which are being rapidly completed. To secure his ideal Mr. Seiberling has made an extensive trip through Europe and has carefully studied the various estates, manners and homes of Europe.

L. C. VanVever, of the same company, sailed for England on Sept. 3, to open an English branch and later to open a branch in France and each of the other countries of Europe, and as soon as these branches are fully completed, the foreign possessions of the various European countries will be exploited. It is the plan of the company besides establishing a branch in each one of the leading countries, to establish distributing systems radiating from the central branch of each country.

The new office building of the Goodyear company is completed and occupied. The main floor is used exclusively for executive offices, those of the president, vice-president, secretary and other executive officers being finished in solid mahogany. The remainder of the offices are finished in golden oak paneling. The entrance hall is elaborate and finished in oak. These afford spacious quarters for all departments.

* * *

In order to better cope with the rapid increase in business, the Goodrich company has built a factory at Colombes, near Paris, France. The company runs a touring bureau and furnishes reliable information concerning foreign tours free of charge.

* * *

It is estimated by Akron rubber men that the output of the Akron factories for the year of 1912 will exceed that of 1911 approximately 25 per cent.

THE NEW BRAZILIAN LEGISLATION.

It will be recalled that a decree was signed on January 5 last, by the President of the Republic of Brazil, by which various important measures were sanctioned for the benefit of the national rubber industry. A full extract of the decree appeared in The India Rubber World of June, 1912 (p. 427).

Since then the Brazilian Ministry of Agriculture has issued a series of regulations intended to put into effect the provisions of the decree. An English translation of both the decree and the regulations has been published by the Brazilian Government. It contains amongst other points, the regulations affecting the free entry of machinery, chemicals and other requirements of the rubber industry, of which the booklet contains a full list.

The regulations for experimental stations, rubber refinery and manufacturing establishments are likewise given at full length.

The Inter-Continental Rubber Co. on September 30 paid a quarterly dividend of 1¾ per cent. on its preferred stock, to holders of record September 20.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

THE season of 1912 just closing will mark one of the greatest, if not the greatest, in point of business for local branch houses of the various rubber tire manufacturers in their history. For years this city has been looked upon by the tire manufacturers as an unprofitable city in which to open branch houses, as it was the general opinion that the automobile would not become a necessity, but would remain a luxury on account of the steep hills surrounding the city. These opinions were not well founded, and about the first to see the possibilities of this city as an automobile tire center were the Diamond and the Goodrich companies, which installed branch houses at a big expenditure. It did not take long for other manufacturers to follow these two companies and today the Commercial Club, and other civic organizations boosting trade for the Queen City never fail to call attention to the prominence of Cincinnati as an automobile tire center. Local agents for the various manufacturers are enthusiastic in their expressions of trade for next year and already many improvements are being considered to take care of the expansion of trade that is looked for in 1913.

* * *

The Ohio Retail Shoe Dealers' Association, which held its annual convention in Dayton, Ohio, early in September, has practically declared war upon the "fabric" footwear, especially on shoes made of cravenette cloth. Footwear of cloth and similar materials, it was said, "comes into being with the rising of the sun and ceases to be fashionable by night." Such styles were regarded as a source of trouble and expense. The association renewed its fight against the so-called trust manufacturing rubber footwear, and the committee having in charge the matter of financing a co-operative company to manufacture rubber footwear reported to the convention that plans were about perfected to launch a co-operative company in the near future. Fraudulent advertising, discounts and mail-order houses were assailed, and will be the objects of a relentless pursuit by the dealers from now on.

* * *

Coughlin & Davis, local agents for the Morgan & Wright Co., received an order the other day from a Southerner of pronounced political views. His letter containing the order follows:

"Nashville, Tenn., August 31, 1912.

"Coughlin & Davis, Cincinnati, Ohio.

"Gentlemen: Please send us the following tires:

"One 34 x 4 Nobby Tread, M. & W. Q. D.

"One 33 x 4 Nobby Tread, M. & W. Q. D.

"One 33 x 4 Round Tread, M. & W. Q. D.

"One 34 x 4 Inner Tube.

"Please see that we get Woodrow Wilson tires, as we don't care for the G. O. P. or Bull Moose. Very truly yours,

"Everett Philpot & Co."

* * *

The defeat of one of the Constitutional Amendments to the Constitution of Ohio, voted on by the people September 3, which provided for the issuance of a $50,000,000 bond issue for good roads in the State of Ohio, was keenly felt by local representatives of the tire manufacturers. While Ohio has been expending in the last few years sums in improving the various important highways of the State, yet good-roads experts say that at the rate of improvement it will be years before Ohio will have good roads in all sections of the State, and the proposed amendment was passed by the Constitutional Convention for the purpose of giving the Legislature authority to pass laws for a bond issue that would provide funds for improving the roads immediately. Local tire men say that the condition of many roads in Ohio is directly responsible for the major portion of complaints that come to them by automobile owners who complain of the life of tires.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

BUSINESS in rubber, and its manufacture, is enjoying the same prosperity which seems to be vouchsafed to all other lines of industry. The consumption of automobile tires continues unabated, and the motor section of Boston, Boylston street, Massachusetts and Commonwealth avenues—is busy in spite of the general dilapidation and disorder of the former street, where traffic is terribly constricted, because of the construction of the new subway. Automobile dealers and supply houses report excellent business, even with these drawbacks.

The mechanical business has been and is good. Belting and kindred lines are in excellent demand, and even though the summer in New England has affected the domestic demand for hose, other lines—industrial and fire hose—have sold well; and even now orders are coming in most satisfactorily for 1913 delivery. The rubber clothing business is good. Salesmen now out are cautioned not to promise deliveries for six weeks or two months on orders taken now. Rubber footwear is now waiting for early fall storms, before many more orders are likely to be received, but the mills have orders enough on hand to advertise for makers right along in the "Help Wanted" columns.

* * *

The new Administration Building of the Hood Rubber Co., which has just been completed and occupied, is a model office business structure, and the move of the company in the placing of their business offices and the factory close together is one which is working out most advantageously. This building is a substantially built four-story edifice of reinforced concrete. In fact it is concrete from top to bottom, all the floors and roof, as well as the walls, being of this fire-resisting material.

A walk through the building is one which will give the visitor a good idea of its substantial character. The entrance opens into a roomy lobby furnished with oak tables and chairs. Hence the visitor is conducted to the desired department with the least loss of time.

On this floor are the main offices, all connected with a rubber carpeted corridor, each office enclosed with oak partitions and frosted glass. First is that of the Advertising Department, in charge of Mr. Kimball. Then come the three sales offices, that of Mr. Aldrich, the manager of sales, and those of Mr. Rice and Mr. Dailey, selling agents, the corner office being occupied by Mr. Mason, manager of footwear manufactures. A long aisle running from here to the back of the building separates the handsomely furnished sample room and the large Stenographic Department from the private offices of the Auditing Department, the tire salesroom, while Mr. F. C. Hood, general manager of the company, has his own private business office here. The other half of this floor is occupied by the extensive laboratory, and the basement under that is practically a miniature factory, where experiments are worked out before any novelty or change in manufacture is adopted. In the basement are the Paymaster's and Cashier's Departments, the offices of the Purchasing Department and Storekeeper, and the filing room.

Taking the elevator to the third floor the visitor is ushered to the Bookkeeping Department, where also are the offices of the Superintendent. The other portion of the third floor is devoted to the restaurant and welfare rooms, conducted by the company, for the benefit of the office force. The restaurant is a large and well-furnished room with tables and chairs in mission oak, and here also is the kitchen for furnishing the meals in the restaurant. There is also here a special dining-room for the officers and heads of departments.

On the top floor is the Order Department, where the various details of ticketing the orders for sending through the factory are made out. This floor also contains a large and well-equipped printing office with several jobbing presses, a power press, folders, binders, and addressing machines and other appliances for mailing out the literature printed in this office.

In the building adjoining the Administration Building are located the Cost Department, Sample Department, and a fully equipped hospital which serves without charge all the employes of the company.

* * *

The Walpole Rubber Co. is steadily increasing its business. During the first half of the present year it has done the largest business in its history, showing a gain of over thirty per cent. over the similar term in 1911. A large proportion of this increase is in the tire department, which has necessitated the securing of an additional manufacturing plant at Foxboro, an adjoining town.

* * *

The taking over of the Consumers' Rubber Co. by the Walpole Rubber Co. must redound to the great advantage of the footwear plant. Already a marked improvement is shown in the quality, finish and style of the product of this plant. Mr. Ryder, the new selling agent, is a thorough rubber shoe man. He was for years with the Boston Rubber Shoe Co., and later with the Apsley Rubber Co. He has opened an office and sample room at 508 Brown Building, 185 Summer street, on the same floor with the Walpole Rubber Co., and is showing there some fine samples of overs and tennis lines.

* * *

The Hubmark Rubber Co., which is a selling agency of the United States Rubber Co., constituted to push the sales in New England of footwear specialties bearing this trademark, is entering upon an extensive advertising campaign. Recently it sent out to a large number of retailers one-half of a storm slipper, the shoe being split lengthwise, enabling the recipient to examine the construction thereof. To push the sale of a certain brand of hip-boots it has contracted with over 50 local papers published on the New England seacoast, to issue a series of specially designed and very attractive advertisements, especially directed to fishermen and sailors.

* * *

Several of the manufacturers of rubber heels have made an arrangement whereby they will co-operate to exploit those heels which are provided with the "friction plug," a device of cotton fabric and rubber which, it is claimed, will overcome the tendency of rubber heels to slip on wet ice or pavements. Those interested in the combination include the Elastic Tip Co., Foster Rubber Co., F. W. Whitcher Co. of Boston, the B. & R. Rubber Co. of North Brookfield, Massachusetts, and the Revere Rubber Co. of Chelsea, Massachusetts. The heels thus advertised are the Safety Tread, Catspaw, Velvet, B. & R. and Spring Step.

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R. L. Chipman of Geo. A. Alden & Co., crude rubber importers, is on a business trip to Canada.

* * *

Wallace G. Page, for several years sales manager of the Shawmut Tire Co., is now associated with George S. Van Voorhis in the American Marine Equipment Co., which has built up an extensive business in the sale of automobile tires and accessories.

* * *

The factory recently vacated by the Plymouth Rubber Co., at Stoughton, Massachusetts, has been purchased by the Elwell Rubber Manufacturing Co., of Trenton, New Jersey, who will remove its business to the new address, Stoughton, Massachusetts. The Plymouth Rubber Co. is very busy at its new factory at Canton Junction.

* * *

An increased popularity is noted in rubber-soled shoes. Some manufacturers, who experimented last year by showing one or

two samples, met with so great success that they are now showing, for next spring and summer wear, from half a dozen to a score of samples; while a number of other manufacturers have followed these pioneers. Most of their lines have the molded soles and half heels all in one piece; and these are furnished ready to attach by manufacturers who make a specialty of rubber soles and heels for shoe manufacturers.

* * *

The A. & A. Rubber Co. of South Framingham, manufacturers of rubberized fabrics, waterproof clothing and hospital supplies, will greatly enlarge their plant, not only adding to the original factory, but by erecting another structure. The present factory will be so enlarged as to give extra floorage, 150 by 40 feet, in the second story, and the present building will be paralleled by a one-story factory 150 by 60 feet. This second structure will have a false end, so that if further enlargement is necessary, a very considerable lengthening on the land of the company can be made. President Calvert B. Archer is quoted as authority for the statement that with their present facilities, even when working a day and night force, the company is unable to keep pace with its orders, and therefore the enlargement is found necessary.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

THE Essex Rubber Co., Inc., has arranged for a creditable exhibit at the International Rubber Exposition, New York, scheduled for the week of September 23-30. The company has planned to have the heads of the various departments of the big local plant in attendance at the exposition during the entire show.

W. F. Bainbridge will be on hand to greet those men of the shoe trade who will find it possible to visit the exposition. R. H. Phillips and C. C. Tucker will go over from the local factory and in conjunction with S. Y. L'Hommedieu, the manager of the New York branch, will expound the virtues of the Essex automobile accessories and engineering specialties. T Wesley Wright, manager of the shoe findings department of the local plant, is to have charge of the booth which will exhibit "Soft Spot" heel cushions and the "Tred-Lite" rubber heel.

President C. H. Oakley, who is also the general manager of this concern, expects to spend considerable time in New York during the exposition and will be glad to meet personally interested visitors. The Essex Rubber Co. is one of the busiest concerns in this section, the orders which have been piling in necessitating the employment of the working force overtime. The company is not only doing a big business in America, but finds a ready market abroad for its specialties.

* * *

W. J. B. Stokes, head of the Home Rubber Co. and the Joseph Stokes Rubber Co., who recently returned from a European trip, declares that the outlook for a big export business was never brighter. He visited England, Belgium, France and other countries and spent considerable time with his English representatives.

* * *

The Crescent Belting plant is a busy place just now. The force is working day and night to keep up with the flood of orders sent in by the "Live Wires" on the road for this concern.

* * *

The new stock room of the Empire Rubber Manufacturing Co.'s plant is ready for occupancy. It was built at a cost of $24,000. The old stock room was partially destroyed by the explosion of two giant vulcanizers.

* * *

Although the Empire Rubber Manufacturing Co. and Empire Tire Co. and Crescent Belting and Packing Co. will not have an exhibit at the Rubber Exposition, General C. Edward Murray, treasurer, and A. Boyd Cornell, secretary of the concerns, will be in attendance at the show. General Murray plans to spend several days at the show as does Secretary Cornell.

Carl Claus, one of the ablest engineers in the rubber business, will attend the show as will also Superintendent Abden Lee and Assistant Superintendent Frederick Bechtel.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

THE wire making department recently started at the plant of National India Rubber Co., Bristol, has been almost swamped with orders. The day after Labor Day the company began operations on a night and day schedule and added 150 men to the working force.

Frederick L. Dunbar has charge of the wire department under the supervision of Le Baron C. Colt, agent of the company, who designed it.

The wire making is done in a large room formerly used as a calender department in the mill on Wood street. The company has turned out insulated wire for a long time. Recently it decided to try wire drawing in its own plant on a small scale, and immediately found itself with a large amount of business on hand. The starting on a night as well as a day schedule is the result.

It is said that the working force is to be still further increased by at least 200, and that new buildings for this branch of the industry may be erected in the near future.

* * *

An idea of the value of the rubber industry to the city of Providence can be gained from the assessed valuations made public early in September for the year 1912. The assessed valuation of the property of the rubber companies is $2,111,020, divided as follows: Joseph Banigan Rubber Co., $161,100; Bourn Rubber Co., $147,000; Davol Rubber Co., $400,000; Goodyear Tire & Rubber Co., $50,000; Mechanical Fabric Co., $336,740; Revere Rubber Co., $1,016,180. A tax of $1.65 per hundred is levied upon this assessment by the city, and corporations capitalized over $50,000 also have to pay a tax to the state.

The assessment against the Joseph Banigan Rubber Co. shows a decrease of $149,000; that against the Davol Rubber Co. an increase of $225,000; that against the Mechanical Fabric Co. an increase of $75,000, and an increase of $926,380 against the Revere Rubber Co. Nothing could furnish a surer indication of the general prosperity of the business in the capital of this state.

The total assessment against Col. Samuel P. Colt in Providence is $210,100; against Augustus O. Bourn, $113,640, and against the Joseph Banigan Estate, $1,261,520.

* * *

In the city of Woonsocket, where the two plants of the Woonsocket Rubber Co. and one of the American Wringer Co. are located, rates on gas and electricity are to be reduced. The present rate for gas is $1.20 per thousand cubic feet, and for electricity 1¼ cents per kilowatt per hour. A City Council committee is working on the proposition. Hopes for success are based on a promise made by the Stone & Webster Corporation of Boston that these reductions would be made, if it could secure a charter to merge all its gas and electrical holdings in the Blackstone Valley. This charter was granted at the last session of the Rhode Island Legislature.

* * *

Col. Samuel P. Colt, who went to Europe last July, returned to his home in Bristol on Saturday, September 7. He reached New York on the steamship *Olympic* September 5. In a telegram to a Providence paper he explained that while his trip abroad was primarily for pleasure he had also mixed business in. He stated that one of his tasks was an effort to list $10,000,000 of

first preferred stock of the United States Rubber Co. on the parquet of the Paris Bourse. He expressed the opinion that negotiations were progressing satisfactorily, and that the task would be accomplished in a reasonable length of time.

The $10,000,000 would be the minimum amount, he stated, and would be increased from time to time as the original offering was absorbed.

Col. Colt attended the marriage of his son, Roswell C. Colt, to Miss Dorothy Chipman in London. He was accompanied on his arrival in New York by the newly married pair.

On his arrival in Bristol Col. Colt and his son and the latter's bride went to the colonel's home, Linden place. He entertained a party of friends at his home three days after his arrival.

* * *

An alarm from box 332 in Providence on August 27 started considerable excitement in this city that day. It is the private fire signal of the Revere Rubber Co. (the United States Tire Co.), where the worst fire in many years broke out a few months ago. The blaze was over a boiler in the fireroom and was quickly extinguished, but enough apparatus was rushed to the scene to end a conflagration.

* * *

The largest unit of tax to be paid in the town of Bristol, Rhode Island, this year will be by the National India Rubber Co. The assessment is $6,870.55 on a valuation of $501,500.

Other tax figures made public during the past few weeks are: Augustus O. Bourn, who is head of the Bourn Rubber Co., $26,000; Samuel P. Colt, $239,000; Terrence McCarty, General Manager of the Walpole Rubber Co.'s Bristol plant, $24,700.

* * *

Metal fittings began to disappear from the plant of the Revere Rubber Co. quite regularly late last month. Police inspectors who went to work on the case arrested Edward Abbott, 19, on August 26. Fifteen fittings were found in his possession. He was fined $25 and costs in the Sixth District Court, Providence.

* * *

Elmer J. Rishe, an assistant foreman at the plant of the Walpole Rubber Co., Bristol, formerly known as the Consumers' Rubber Co., was married early in September to Miss Mildred Louise Macauly. In addition to being a foreman in a rubber manufactory, Mr. Rishe is a well-known baseball player.

* * *

Gilbert McCarthy, who for many years was an arctic maker in the Alice Mill of the Woonsocket Rubber Co., died at his home in Woonsocket, September 6. He was 40 years old; was born in Wallingford, Conn., and had been employed in Woonsocket for 30 years.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

MERCHANTS report that there is a decided improvement in the rubber business, and all are agreed that if present prospects continue the present fall will be one of the most prosperous in the history of the business. A heavy and, considering the time of the year, very unusual rain fell for several days last week, reaching all through the northern portion of the State and down far into the San Joaquin Valley. This rain caused an immediate demand for supplies from the wholesale houses, because the dealers were unprepared for such an emergency, and for a few days there was a grand rush everywhere.

* * *

A new company has launched forth with the object of acting as selling agents on this coast for Eastern factories. The name is the Ralphs-Pugh Co., and offices and warerooms have been fitted up at 502 Mission street. This firm is composed of men well known in the rubber business, and has started out in a business-like way. Wm. J. Pugh, for the past thirteen years has been with the Goodyear Rubber Co. It seems that almost all of the men in this business started out and learned it under the guidance and able direction of the proprietors of the Goodyear Rubber Co. Mr. Pugh made a trip to the Eastern factories and returned with a number of good lines. Isaac Ralphs was formerly manager of one of the largest jobbing houses in San Francisco, and although he has never been identified with the rubber trade before, he has been in business here for the past twenty-five years, and is a man of high reputation. W. W. Woodd is also with the new firm, and will look after the selling end of the business. Mr. Woodd also had his training with the Goodyear Rubber Co., having been with that firm for over 18 years. Mr. Pugh has recently started out on his first trip, going to the southern part of the State, and then on his return will make the northwestern trip through Washington and Oregon.

* * *

The western territory over which Joseph V. Selby, during his lifetime, had charge for the Boston Woven Hose and Rubber Co., has since Mr. Selby's death been divided into three subdivisions. Mr. Ryker has been appointed to take care of the territory lying between Bakersfield and the northern State boundary line. Mr. Ring, who formerly represented the company at Denver, Colorado, has been selected to take charge of the Washington and Oregon territory. This district was for some time covered by Herbert Selby, son of Joseph V. Selby, but a few months ago Herbert Selby severed his connections with the company to take a position as sales manager for the Tubbs Cordage Co., of San Francisco. Mr. Lippincott, who formerly traveled for the Boston Woven Hose and Rubber Co., will now be the regular representative for Southern California and Arizona.

* * *

S. L. Plant, of the Plant Rubber and Supply Co., states that business is ahead of last year, and prospects are good for a fair business. This firm has just added a new branch to its factory for the purpose of making mold rubber work—valves, bumpers, etc.

* * *

The San Francisco Fire Commissioners have at last awarded contracts for fire hose for this city. Only four bids were submitted, two of them being eastern factories and two of them local, and the contracts were awarded to the local manufacturers. Most of the eastern factories wrote to the fire commissioners that they would gladly bid and would supply hose that would withstand the test, but they strenuously objected to the fire commissioners laying down the rules as to how they should manufacture their hose. The Bowers Rubber Works was allowed the contract for 20,000 feet of two-and-three-quarter hose. The American Rubber Co. got the contract for the three-and-a-half-inch hose, and those two concerns divided on the one-and-a-half-inch hose. Both of these are local manufacturers.

* * *

E. W. Balding, the general sales agent of the New York Belting and Packing Co., has just paid his annual visit to the Pacific Coast.

* * *

J. E. French, coast manager for the Pennsylvania Rubber Co., has returned from a trip to the Northwest, and while there opened up some important distributing points. He expects excellent business in the tire line this fall.

* * *

Mr. Norton, manager of the American Rubber Manufacturing Co., reports that the new addition to the factory at Emeryville

has been completed, and that a large new belt press has been installed. This factory is also working on a new ribbed-edged automobile tire which is considered very successful.

* * *

The California Rubber Co. has been incorporated in Los Angeles with a capital stock of $5,000. The directors are C. C. Booth, W. D. Walsh and W. C. Earhuff.

* * *

The Portland Rubber Mills Co. has been incorporated at Portland, Oregon. It has a capital stock of $25,000 and the incorporators are J. A. Spencer Smith, H. C. Huntington and G. C. Frisbie.

* * *

The Portland Belt and Manufacturing Co. has been incorporated at Portland by M. P. Klepper, with a capital stock of $25,000.

* * *

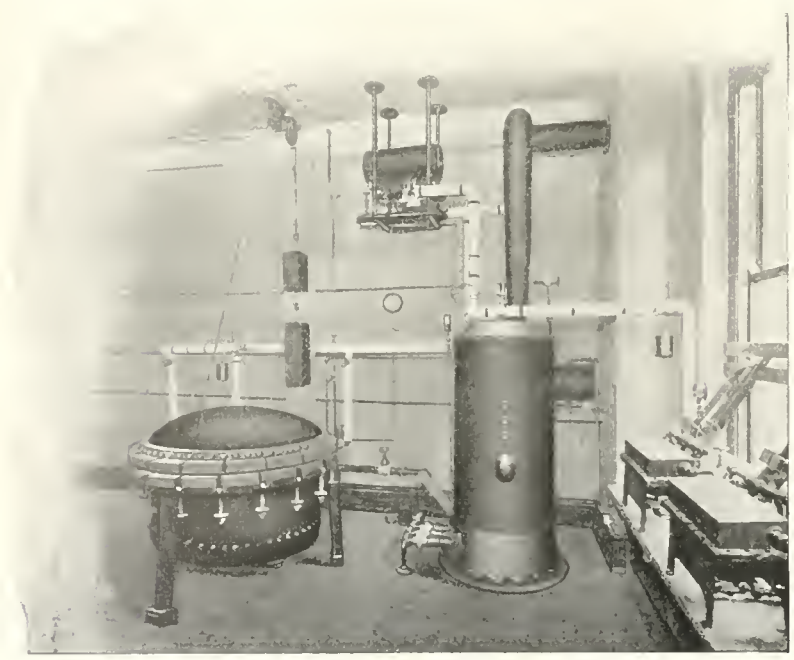
W. H. Halliwell, president of the Halliwell Co., has just returned from a trip to the factories in the East, and while there made a contract for the entire Pacific Coast on Knight tires. The Halliwell stores in Los Angeles, San Francisco, Seattle and Portland will receive the tires in carload lots, and after that by regular shipments, so that within a very short time the entire coast territory will be fully supplied.

* * *

The California League of Municipalities is now holding a public welfare exhibition at Berkeley, California, and many hose manufacturers are displaying their products at the show.

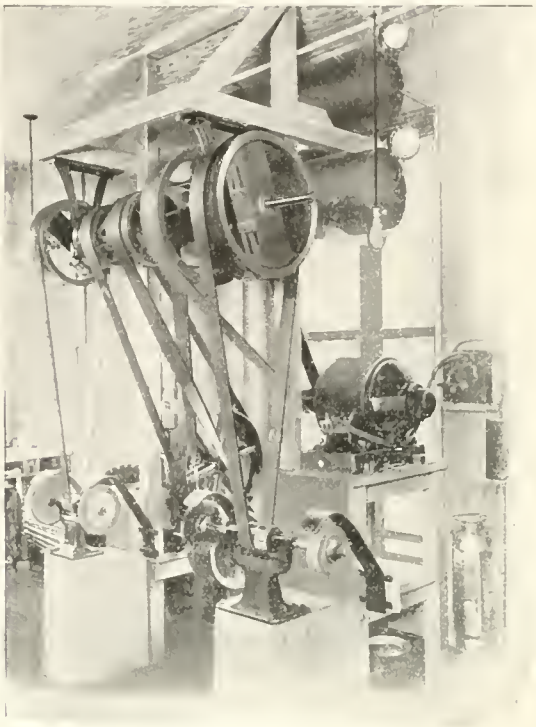
EQUIPMENT FOR REPAIR DEPARTMENT.

THE Fisk Rubber Co., Chicopee Falls, Massachusetts, not only make tires, but they make the wherewithal to keep the tires in repair. The two accompanying illustrations show some of their tire-repair equipment. The larger cut shows the pot heater for retreading tires, and the boiler; while the other cut shows the power bench.



THE FISK HEATER AND BOILER.

The heater is shown on the extreme left with weights attached for lifting the hinged cover. This heater is made of ¾-inch steel, with heavy bolts, and is equipped with traps and reducing valves, making a fine apparatus for curing treads and rebuilding tires.



THE FISK POWER BENCH.

The gas boiler, which appears in the centre of the picture, is a convenient arrangement for producing steam for a repair shop.

The cut also shows two vulcanizers on the extreme right. Pressure for curing tubes is obtained by placing weights on the end of the levers. This gives a positive pressure which is always the same, instead of an uncertain pressure obtained by screwed clamps.

The second cut gives a view of a power bench, which is designed to give maximum efficiency within minimum space. There is a single line of shafting connected with motor and with the various pieces of its equipment. The motor is of sufficient horsepower not only to operate the buffing brushes and wheels, but also to pump sufficient air for shop use and for inflating tires; the air is carried into the tow tanks at the top of the power bench. The retreading or the buffing drum, shown at the extreme left of cut, is rapidly becoming a necessity where retreading work is done. The buffing heads shown in the foreground contain two emery wheels, a wire buffing brush and a rotary rasp. The power bench also contains an air compressor. The cut shows the compact design of the equipment.

A British diplomatic report states that a contract has been signed between the Ministerio de Fomento and Senor A. Elozria, for the establishment of factories in Mexico for the manufacture of all kinds of rubber goods; including motor and carriage tires, waterproof cloth, insulated wire, etc. At least $125,000 must be spent upon the first factory. The materials and plant necessary for establishing the industry may be imported free of duty.

The India-Rubber Trade in Great Britain.

By Our Regular Correspondent.

CLIMATIC conditions have been the reverse of those which obtained in the long, dry summer of 1911, cold and wet having been most persistent. Last year there was a run on garden hose, and extreme slackness in the waterproof garment trade. This year it has been the other way about, and the mackintosh has been in almost daily use—a fact which, if not reflected in an immediate increase of sales, must certainly have shortened the life of those in use, and cause renewals to be sought at an earlier date than would have been the case as the result of a normal season.

THE LATE SUMMER.

Lawn tennis, which I may say is increasing in popularity, and calling for a larger supply of balls than ever, has suffered by the weather; but if the ordinary player has saved on his ball accounts, the wet weather prevailing during many of the tournaments, has led to the use of a greater number of new balls; so I do not suppose that the season's consumption will show much falling off compared with last year. The latest novelty in balls is a corrugated-surface, uncovered white ball, which can be easily washed. This has not been recognized by tournament committees, but private players have spoken highly of it, especially for use on wet lawns, near smoky towns, chiefly because the ball can be so readily washed.

One of the disadvantages of the mackintosh for pedestrians is that in heavy rain the drippings fall on the trousers. Of late this has been remedied by the introduction of loosely fitting trouser overalls. These, made of light double-texture waterproof cloth, are becoming very popular for pedestrians and general country wear, as they are very little weight to carry when not in use. The weather has given an impetus to the sale of top-boots for children to use in gardens. I have come across quite a number of these diminutive boots this summer, and as a patriot was pleased to find that they were made by the North British Rubber Co.

THE CELLULOID DANGER.

The lamentable conflagration in a celluloid workroom, in London, whereby several girls lost their lives, resulted in a good deal of correspondence in the press, and in questions being asked in Parliament. It has transpired that no special regulations were in force with regard to the storage and use of large amounts of this material in crowded localities; but in the future special rules regarding it are to be enforced. It was stated at the inquest that the material used was German, which was cheaper than British, although acknowledged to be more inflammable. One would have thought that here was a golden opportunity to advertise the merits of non-inflammable celluloid, but I did not see any correspondence on the point; though of course there may have been such, which escaped my notice.

Exactly what success has attended the manufacture and sale of non-inflammable celluloid, I do not know, though at least one factory for making it has been established in England. Mr. Worden, in his treatise of last year on the nitro-cellulose industry, refers to the methods for destroying the inflammability as having been attended with varying degrees of success, though he says that the rapid growth of the moving picture industry has invested the topic with increased importance. I believe that Mr. Worden is officially connected with the section in "Plastics," at the forthcoming Congress of Applied Chemistry in New York, and any information which he could announce to the world, by way of bringing the position up-to-date, would I am sure be appreciated generally. As to the cause of the London fire there was no mystery, flaming sealing-wax in the hands of a boy being responsible. Christmas cards were the principal goods manufactured, and the firm have decided not to use sealing-wax in the future in doing up parcels. Whenever there is a conflagration of celluloid goods, there is usually some agitation that the business should be suppressed, and this question was put to the jury, who, however, thought that such business might continue to be carried on in towns, if under proper registration and supervision. We must now await the action of the Home Office, in regard to this proviso.

THE PARAGON RUBBER MANUFACTURING CO., LIMITED.

This new company, which is situated at Sculcoats, Hull, has taken over the rubber manufacturing business of Messrs. Major & Co., Limited, a firm which has been long established in connection with tar distilling, in the Hull and Birmingham districts. The flotation of the Reinforced Rubber Co., Limited, in 1911, will be recalled by some of my readers. With this company Messrs. Major & Co. were connected, the factory being located on their premises. The Paragon Rubber Co. is an extension of the Reinforced Rubber Co., taking over the patents and goodwill of the latter under new management. Messrs. Major, Hanson and Pilling are the directors, and the general manager is E. L. Carbishley, so well known to the trade generally, owing to his past connection with Messrs. Capon, Heaton & Co., Limited, Birmingham, and the Gorton Rubber Co., Limited, Manchester.

Reinforced rubber differs from ordinary insertion, and in appearance is just like ordinary rubber, the fibres of cotton being completely incorporated in the rubber, in a tightly twisted state. The effect is to increase the stability of the rubber, while increasing its specific gravity; thus acting as a restraining influence over undue extension while in work. The works have been fitted with modern machinery for making many classes of mechanical goods, further extensions being contemplated. Rubber-covered rollers are a specialty, the firm having exceptional facilities for producing these accurately and quickly, up to 11 feet long and 30 inches in diameter. In a general way the establishment of a rubber works on the east coast is of interest, it being somewhat strange that rubber manufacturing proper has never had any location in the large Yorkshire towns. There must be a large demand for mechanical rubber goods in an important shipping centre like Hull. The manufacture most prominent in the district is that of oil seed crushing, Hull I believe ranking next to Marseilles as regards this business in Europe.

THE PUTOMAYO AFFAIR.

I do not propose to refer to this matter again at length, but feel constrained to mention one point in the interesting leading article in the August number of The India Rubber World. The credit for the exposure of that wretched business belongs solely to "Truth," which journal alone was bold enough to print copious extracts from Messrs. Hardenburg's and Perkins' MS. What appeared in other papers was given in a halting way on the authority of "Truth"—*palmam qui meruit ferat.* As indicating how public feeling has been stirred in this country by the disclosures, I may say that a town meeting to discuss the matter was called by the Lord Mayor of Manchester, on the request of many prominent business firms; and it is stated that the Blue Book has been sold out,—a fact which must have startled the purveyors of government literature. With regard to further action the position is that the government has promised to appoint a Departmental Committee to inquire into the affairs of the British Amazon Co., Limited, and the responsibility, or otherwise, of the directors thereof for what has taken place. It

is a pity that The India Rubber World has not a wider circulation among the British public, as the map given in the August number is a great improvement on what has been given in our daily and weekly press.

THE LITHERLAND DEVULCANIZER EXPLOSION.

The Board of Trade Report, embodying the result of the inquiry, held last December, into the explosion which occurred at the Northwestern Rubber Co. works in October, 1910, has now been issued. I have already given the Commissioner's findings at the inquiry, and the final report shows practically no alteration. Although no one at the works was found culpably negligent, reference is directed to insufficient engineering control. The cause of the explosion was hydrostatic pressure, due to over-filling of the devulcanizer; and an improvement has now been effected by the Boiler Insurance Co. whereby this cannot occur in the future. Referring to the future working of these devulcanizers, the commissioners say that they are satisfied from the evidence, that they cannot be said to be worked under safe conditions, without some safety appliance which must be automatic. Beyond that it must be automatic, they did not propose to make any definite recommendation as to what form the safety appliance should take. The matter is evidently to be left to the discretion of those who use high pressure devulcanizers, and it will be interesting to see how it develops. In an editorial in the March issue of The India Rubber World a plea is put forward for the utilization by rubber works of the services of the consulting engineer, and it certainly would seem, in the light of the four or five accidents in recent years due to plants using high pressure steam, that rubber factories, where no regular engineer is employed, should employ the consulting engineer to a greater extent than is now customary. The inspectors of the Boiler Insurance Companies in England do admirable work, of course, but it is outside their province to instruct or give advice; nor in most cases have they any detailed knowledge of the rationale of the operations involving the use of high pressure steam. I propose on a later occasion to say more on the particular question of automatic safety appliances, and shall conclude the present notice by mentioning that the Board of Trade Report refers to the boiler which exploded, as being the property of the London & North Western Rubber Co., Limited, U. S. A., of Canal Bank, Litherland. In another sentence the superfluous "London" is omitted; thus indicating some slackness in proofreading.

IMPROVED DOCK ACCOMMODATION FOR RUBBER IN LONDON.

Advices from London state that owing to the rubber business of the port having tripled within the last five years, improved dock accommodation is about to be furnished. This will be effected by the transfer of the warehousing of rubber from St. Katherine's Docks to London Docks.

A special warehouse is to be set aside wherein, under ideal conditions, rubber can be received, sampled and stored against delivery to consumers. The change will provide largely improved facilities compared with those available hitherto. This innovation is, needless to say, greatly appreciated by Mincing Lane.

THE CAB TIRE SHEATHING FOR ELECTRIC CABLES.

The St. Helens Cable and Rubber Co., Limited (London, England), have been making a cab tire for the last 9 or 10 years which has proved very serviceable, and they have recently begun the manufacture of a rubber sheathing for electric cables. As they are making this out of the same quality of rubber used in their cab tire they call it the "Cab Tire Sheathing"—which explains why they have selected this particular name for their new production.

STATISTICS OF RUBBER SUPPLIES AND CONSUMPTION.

THREE statistical tables, which have recently been issued, merit special attention and comparison: That of S. Figgis & Co., of London, for the calendar year 1911 (A); Hecht's returns (issued by Messrs. Hecht, Levis and Kahn of Liverpool) for the rubber year ending June 30, 1912 (B); and the recent estimate for 1913 of the Rubber Plantation Investment Trust (C).

In table A production is shown as 88,000 tons and consumption at a like amount; while in table B are summarized Hecht's figures, which for the year ending June 30, 1912, indicate production as 95,262 tons and consumption as 99,564 tons. Finally in table C the estimate for 1913 is 91,000 tons for production and 103,000 tons for consumption.

From a comparison of these tables, the estimate for 1913 (C) it will be remarked, shows the Brazilian quantity at the same figure as the report (A) for 1911—39,000 tons. Plantation rubber, which including Borneo and Rangoon may be taken as representing about 18,000 tons in table A, appears in the estimate of table C as 28,500 tons, this increased estimate being more or less in proportion to the increased supplies now coming forward. As table C does not include anything for Guayule, though figuring in table A, its estimate might therefore properly be regarded as representing about 100,000 tons for 1913, against 88,000 for 1911, and 95,262 by Hecht's figures for 1911-12. South American and plantation rubber as shown in table C constitute between them over two-thirds of the world's estimated rubber production for 1912.

The increase of consumption as shown by the three tables is more or less in harmony with the estimated increased supply being for 1911, 88,000 tons; for 1911-12, 99,564 tons; and for 1913 (estimate) 103,000 tons. American consumption, it is satisfactory to note, comes in for an increased estimate; the quantity of 42,000 tons shown for 1911 being 47,500 tons in the estimate for 1913. Thus the United States is expected to continue taking about one-half of the world's production of rubber. That this is now the case is shown by the official returns of imports for the fiscal year 1911-1912, which show a quantity of 55,000 tons, as compared with the latest estimate for 1913 of 47,500 tons. Hence this country is keeping ahead in the rubber procession, with more than three times the consumption of England, according to the English table appended (table A).

TABLE A—PRODUCTION AND CONSUMPTION FOR 1911.
(S. Figgis & Co., London.)

Production 1911, Actual.	Tons.	*Consumption* 1911, Actual.	Tons.
Brazil	39,000	America and Canada	42,000
W. Africa	15,000	England	12,000
E. Africa, Penang, Borneo and Rangoon	5,500	France	8,000
Assam, Madagascar, C. America and Mexico	2,500	Russia	8,500
Guayule	9,200	Italy	2,000
Plantation	14,000	Japan and Australia	1,500
Malaysian and extracted for Jelutong	2,800	Germany and Austria	14,000
Total	88,000	Total	88,000

TABLE B—HECHT'S WORLD'S FIGURES, 1911-12.
(Summarized.)

	Para Grades.	*Medium Grades*	*Totals.*
Arrivals (production)...*Tons*	40,953	54,309	95,262
Deliveries (consumption)	44,194	55,370	99,564

TABLE C—PRODUCTION AND CONSUMPTION FOR 1913.
(Estimate of Rubber Plantation Investment Trust.)

Production 1913 (Estimated)	Tons.	*Consumption* 1913 (Estimated)	Tons.
South America	39,000	America	47,500
Plantation	28,500	Great Britain	15,000
Africa	15,000	Germany	15,000
Central America	5,000	France	10,000
Assam, Rangoon, Borneo	2,500	Russia	7,000
All other sources	1,000	Belgium	1,500
		Various countries	7,000
Total	91,000	Total	103,000

COMMENTS UPON MESSRS. HECHT'S FIGURES.

In a circular summarized by the *Kölnische Zeitung*, it is maintained that the figures quoted in table B are inaccurate and should be as follows:

Production 91,135 tons instead of 95,262 tons.

Consumption 90,071 tons instead of 99,564 tons.

Hence it is argued that the heavy increase in the world's consumption has been surpassed by the world's production.

The point of greatest interest in the circular is the statement that Messrs. Hecht's estimate of present visible supply is insufficient, and instead of 10,181 tons should be 14,734 tons, to include rubber afloat for various destinations; to which, it is claimed, should be added about 2,000 tons undeclared Pará rubber stocks in Liverpool, and 1 to 2,000 tons in the export places of the East.

VISIBLE STOCKS.

In the estimates of visible stocks (June 30, 1912) the figures stand as follows:

	Hecht.	Suggested Correction.
Pará	6,817	6,970
Medium plantation	3,364	7,764
	10,181	14,734

The difference in Pará grades, it will be noticed, is slight, while in medium and plantation grades the figures stand thus:

Hecht's quantities are:

	Tons.
London	1,872
Liverpool	281
U. S. A.	402
Lisbon	350
Antwerp	343
Rotterdam	116
	3,364

To these figures, it is claimed, there should be added:

	Tons.
Hamburg	400
Bordeaux and Havre	250
Afloat for London	2,150
" " Liverpool	250
" " Lisbon	200
" " Rotterdam	100
" " U. S. A.	250
" " Hamburg	300
" " Bordeaux & Havre	200
" " Antwerp	300
	4,400
Stock as shown	3,364
Stock of medium and plantation, as suggested	7,764

FIVE YEARS OF GERMAN RUBBER GOODS EXPORTS.

STATISTICAL returns of the total exports of German rubber manufactures for the years 1907 to 1911 show the equivalents of the following totals:

TABLE A.
TOTAL GERMAN EXPORTS OF RUBBER MANUFACTURES.

	Weight.	*Value.*
1907	10,502 tons	$15,487,500
1908	10,638 "	13,326,750
1909	11,050 "	13,792,500
1910	13,251 "	16,652,500
1911	15,773 "	18,529,000

While the total value of German exports of rubber goods has thus increased within five years from 15½ millions to 18½ millions of dollars (or about 20 per cent.), that of the United States exports for the same period has advanced from 6¼ millions to 11 millions of dollars, or 80 per cent.

GERMANY'S LARGEST CUSTOMERS.

The four largest foreign customers of Germany in this branch are Great Britain, France, Italy and Austria, which countries took between them about 36 per cent. of the German exports in that line for 1907, and 42 per cent. for 1911.

The separate comparative details for the years 1907 and 1911 are shown in Table B:

TABLE B.
PRINCIPAL EXPORTS OF GERMAN RUBBER MANUFACTURES.

	1907.		1911.	
	Tons.	*Value.*	*Tons.*	*Value.*
Great Britain	2,214	$3,275,750	3,597	$4,254,000
France	432	946,625	897	1,437,000
Italy	249	442,000	815	1,106,250
Austria	496	889,250	709	1,025,750
Total	3,391	$5,553,625	6,018	$7,823,000

That the quantity has increased 85 per cent. while the value has only gained to the extent of 40 per cent. is probably attributable to the lower cost of crude rubber during the latter part of the five-year period.

UNITED STATES TRADE WITH GERMANY'S LARGEST CUSTOMERS.

Although only about half the size of the German rubber goods trade with the four largest foreign customers of that country, that of the United States has increased at double the rate during the five years named, as shown by Table C:

TABLE C.
UNITED STATES COMPARATIVE EXPORTS OF RUBBER GOODS.

Great Britain. 1907.		
Belting, hose and packing	$ 107,731	
Boots and shoes	320,595	
All other manufactures	1,216,490	$1,744,816
France.		
Belting, hose and packing	$ 18,968	
Boots and Shoes	53,676	
All other manufactures	40,093	$ 112,737
Italy.		
Belting, hose and packing	$ 598	
Boots and shoes	49,203	
All other manufactures	95,930	$ 145,731

Austria-Hungary.		
Belting, hose and packing	$ 1,975	
Boots and Shoes	23,499	
All other manufactures	13,093	$ 38,567
Total		$2,041,851
Great Britain. 1911.		
Belting, hose and packing	$ 186,839	
Boots and shoes	631,421	
Tires	1,231,894	
All other manufactures	1,115,092	$3,165,246
France.		
Belting, hose and packing	$ 3,319	
Boots and shoes	75,885	
Tires	194,008	
All other manufactures	118,775	$ 391,987
Italy.		
Belting, hose and packing	$ 2,181	
Boots and shoes	74,856	
Tires	18,369	
All other manufactures	43,792	$ 139,198
Austria-Hungary.		
Belting, hose and packing	$ 8,676	
Boots and shoes	19,376	
Tires	329	
All other manufactures	9,658	$ 38,039
Total		$3,734,470

Grouping the results the following position is shown:

TABLE D.

EXPORTS OF RUBBER GOODS TO FOUR LEADING MARKETS.

	1907.	1911.
Germany	$5,553,625	$7,823,000
United States	2,041,851	3,734,470

Thus, while Germany has gained at the rate of 40 per cent. the United States has progressed in more than double that proportion. American manufacturers should be thereby encouraged to persevere in their efforts to catch up with their German competitors in the export field.

UNITED STATES TRADE WITH GERMANY.

American imports of rubber manufactures from Germany, which in 1907 represented $1,028,746, afterwards dropped by degrees, amounting in 1911 to $438,302. United States exports to Germany of rubber manufactures meanwhile rose from $475,478 in 1907 to $711,831 in 1911.

NEW PATENT LEGISLATION IN HOLLAND.

Official announcement has been made of the going into effect on June 1, 1912, of the new Dutch law referring to patents. The patents issued under its provisions cover Holland, with its colonies and dependencies. It has a retroactive effect, extending back for a year.

In view of the increased cultivation of rubber in the Netherland Indies, inventors of planting machinery will doubtless see the advantages of availing themselves of the new Dutch law.

"SUPRA RUBBER."

During the quest after synthetic rubber, a product, named by the inventors "Supra Rubber," seems to have been obtained by the syndicate, which is said to promise a fair degree of success. This is a filling substance to be used in conjunction with high-grade natural rubber. Samples of a compound, reputed to have been composed of 50 parts supra rubber to 100 parts of fine Para, have been shown and have proved to be strong and resilient. As the estimated cost of "supra rubber" is six pence per pound, its possible use as a filling has a practical interest, apart from its association with the general question of synthetic rubber.

THE FRANZ CLOUTH COMPANY 50 YEARS OLD.

On the 11th of September last the firm of Franz Clouth, Coln-Nippes, Germany, attained a full half century, and commemorated that event with various exercises. On the evening of the 10th, the night before the company's birthday, a memorial service was held at the grave of the company's founder, Mr. Franz Clouth, who died two years ago. On the next day a celebration was held in the auditorium of the Civil Casino, which was attended by the members of the Clouth family, employes of the firm, a deputation of workmen and the local authorities, together with representatives of the manufacturing industry and of commerce. These exercises were followed by a luncheon, and in the evening a banquet was given at the Zoological Gardens, after which there was an informal gathering of those interested in the firm and their many friends.

ASBESTOS AND RUBBER COMPOUNDS.

THE question of asbestos and rubber compounds has recently been discussed in the "Gummi-Markt," with special reference to "Vulcan-Asbestos" and "Ite" compounds.

"VULCAN-ASBESTOS."

This insulating material is a gummed felt, composed of asbestos fibers, with coloring and filling substances. In consequence of the regular distribution of the asbestos fiber, a felted slab is obtained, which meets the highest electro-technical requirements. Subjoined is the method of producing these slabs:

The washed rubber, as shown in the annexed compound, is kneaded in a kneading mill, with 77 pounds of light benzine; while the other ingredients are added by degrees. The mass is kneaded until a uniform solution is produced, which process may last two hours. Only then is the asbestos fiber, ground to the fineness of flour, slowly added; the whole being then kneaded for an hour. As soon as the mass has become thoroughly mixed it is laid out in large frames, the benzine is evaporated in a vacuum cabinet and the slabs dried. The latter are then placed between plates of zinc under the hydraulic press, at a pressure of 284½ pounds per square inch. Finally, the pressed slabs pass through the glazing calender, and are ready to be used for the manufacture of magnet-spools, rollers, sounding boards, etc. The vulcanization compound follows; it being also possible to vulcanize the slabs in the press, under hydraulic pressure.

RECIPE FOR COMPOUND.

	Grams.	Pounds.
Massai	2,500	5.5115
Colombia	2,500	5.5115
Odorless rubber substitute	2,000	4.4092
Reclaimed rubbers	2,000	4.4092
Sulphur	2,500	5.5115
Golden sulphide of antimony	4,000	8.8184
Kaolin	4,500	9.9207
Sulphate of baryta	4,000	8.8184
Japan red	4,500	9.9207
Zinc white	4,500	9.9207
Linseed oil	1,000	2.2046
Calcined magnesia	500	1.1023
Asbestos fiber	16,000	35.2736
Burgundy pitch	1,000	2.2046

"ITE" COMPOUNDS.

It is remarked that the demand for ordinary rubber packing slabs has declined in proportion to the extent to which a tendency has been displayed for the use of superheated steam and higher steam pressures. At a pressure of 12 atmospheres (about 160

pounds to square inch) and a temperature of 180 to 185 degs. Cent. (356 degs. to 365 degs. Fahr.), ordinary rubber packing cannot be any longer used, as it will not stand the strain. To meet these requirements, new compounds were found necessary. These acquired the name of "Ite" compounds, on account of most of their designations terminating in "ite," as the special mark of certain firms; such as "Klingerite," "Moorite," "Metzelerite," "Cooperite," etc. Within a relatively short time, particularly in Germany, there has arisen a keen competition in these compounds; what was at one time a specialty having now become a staple, to the disadvantage alike of producers and distributors.

In principle these "Ite" compounds consist of a felted mass with a foundation of asbestos. Siberian asbestos bears high temperatures better than the Canadian material. Long fibers are necessary; asbestos waste not being suitable.

The special compounds for "Ite" slabs, generally contain mineral substances, such as kaolin, baryta, oxide of iron, etc. Rubber is employed in limited quantity, chiefly as a binder. Balata is also used. Such compounds produce a packing, tough and flexible in character and as tenacious as leather; unaffected by pressure or heat. The rubber employed is first dissolved in benzine; the fluid mass obtained being divided into two parts and mixed with the powdered substances to be added; a uniform pulp being thus obtained. The asbestos fiber is then added; the whole being kneaded long enough for the whole mass to become felted. The better the fiber is carded before being mixed, the more regular is the mixture.

After having been thus prepared, the mass can be brought into slabs in different ways; or it can be rolled advantageously in separate layers, with tempered cast iron calenders. The ends of the slabs can be placed together, so that sheets of 10 or 15 feet can be produced. In some factories, sheets of 15 feet can be made without the need of joining the separate slabs.

The pulp coming from the mixing machine is rolled between cold cylinders; being taken up on a cloth which carries it to the rolling mill, where the sheets are pressed. As soon as the desired thickness is attained, the slab is cut off and removed. The cylinders can be heated or used cold. Finally the sheets are pressed in order to obtain hard slabs.

INTERNATIONAL COMPARATIVE STATISTICS.

An interesting result is presented by a German statistical return, showing the comparative German, English and French imports and exports for 1910 and 1911. Converted into American equivalents, the figures stand:

GERMANY.

	1910.	1911.
Imports	$2,232,990,000	$2,386,195,000
Exports	1,868,665,000	2,025,452,500

ENGLAND.

	1910.	1911.
Imports	$3,460,042,500	$3,470,850,000
Exports	2,196,075,000	2,316,837,500

FRANCE.

	1910.	1911.
Imports	$1,793,332,500	$2,040,165,000
Exports	1,246,760,000	1,184,415,000

For comparison with the above figures the following returns for the United States for the calendar years 1910 and 1911 will be of interest:

UNITED STATES.

	1910.	1911.
Imports	$1,562,904,151	$1,533,067,130
Exports	1,829,022,929	2,058,413,224

RUBBER RESIN AND ITS USES.

In connection with the subject of its railway classification, Herr Badermann has summarized the chief features affecting the production and uses of rubber resins.

From the latex of the *Djera costulata*, found in quantity in Borneo and Sumatra, a raw material exudes which, according to its origin and port of shipment, is generally known as Jelutong. Its composition is about as follows:

Water	70 per cent.
Resin	20 " "
Foreign matter and albuminous substances	2 " "
Rubber	8 " "

After the extraction by pressure of the greater portion of the water, the mass is treated in closed boilers with a solvent, the composition of which is a trade secret. The resin and foreign matter are separated from the solid rubber by allowing the fluids to escape. The solution of resin is then conducted into an apparatus, by means of which first the water and then the resin solvent are removed by distillation, the residue left in the still consisting of resin and of the impurities separated.

The Chemical Testing Bureau at Berlin in its report upon rubber resin as compared with imported resin, states:

"We have not maintained that rubber resin equals American pine resin in all its possible uses, but have concluded that it competes with the ordinary rosins of commerce in the art and varnish industries."

One firm at Magdeburg, Germany, had asserted that the product of distillation of rubber resin had an unpleasant odor. Upon this point the report adds that all rosin oils obtained by distillation (unless intended for use in axle lubricants) have to be freed from their odor by chemical purification. The distillate of rubber thus treated is an extremely viscous product, with an agreeable odor, which fully competes with rosin oils of different origin.

With respect to the objections which have been urged as to the use of rubber resins in the varnish industry it is pointed out that after solution a small proportion is again precipitated; but not, as has been asserted, the largest part. This action is, however, more or less shown by all rosins used in the varnish industry. Every rosin needs to stand a long time for clarification before it is ready for use.

JAPANESE CRUDE RUBBER IMPORTS.

By Our Regular Correspondent.

OWING to the recent publication of fuller official details, the estimates already published of the comparative Japanese crude rubber imports for 1910 and 1911, are now available in more complete form, as shown below:

SOURCES OF JAPANESE CRUDE RUBBER IMPORTS.

	1910		1911	
	Pounds.	Value.	Pounds.	Value.
British India	54,175	$ 45,112	121,160	$ 118,355
Straits Settlements	892,928	617,012	1,223,071	691,651
Dutch India	119,593	70,317	132,173	80,703
Great Britain	311,559	474,727	426,013	467,696
Germany	13,845	20,621	4,588	3,563
United States	85,476	121,797	112,170	126,363
Other countries	103,342	156,397	35,689	41,678
Total	1,580,918	$1,505,983	2,054,864	$1,530,009

The increase thus shown for 1911 of about one-third in quantity, owing to the fall in prices, only resulted in about the same value as in 1910. Considerably increased attention was paid in Japan to the crude rubber trade, as a result of the advance witnessed in 1910 in the crude material.

Of the total quantity imported by Japan in 1911, the largest

proportion consisted of planted Pará rubber from Malaya, constituting over 60 per cent. of the whole. Receipts from Great Britain amounted to about 20 per cent. of the total; principally consisting of hard-cure Pará rubber produced in Brazil, with a small proportion of African grades. Imports from Germany and the United States were of the same general character as the British shipments.

It has been asked why Japan does not import direct from Brazil, and thus purchase more advantageously. Such an idea is, however, of a visionary character, as London and the other crude rubber points form a central market, whose operations influence prices throughout the world; thus establishing a universal standard of value.

Of the imports from Dutch India, the largest proportion consisted of Borneo rubber; Jelutong and gutta-percha being likewise represented. Some Borneo rubber was shipped via Manila, as well as through British India.

Prices of Pará rubber in Japan displayed less fluctuations in 1911 than had been the case in 1910, varying in the monthly average for 1911 per 100 pounds, as follows:

January	$118.18	July	$113.40
February	156.87	August	113.40
March	173.88	September	120.96
April	139.86	October	117.18
May	136.08	November	108.62
June	158.76	December	113.40

While Japanese imports of crude rubber amounted for 1910 to 2,054,864 pounds (or an average of about 170,000 pounds a month), the returns for this year show a falling off, the latest available figures for 1912 being:

	Pounds.
February	58,152
March	80,183
April	67,260
May	99,799

Distribution of Japanese Rubber Imports.

By the subjoined table the respective shares in rubber imports of the two principal Japanese trade ports are shown:

Distribution Between Japanese Ports.

	1910		1911	
	Pounds.	Value.	Pounds.	Value.
Yokohama	1,026,266	$1,062,016	1,044,199	$ 794,342
Kobe	554,652	443,967	1,008,240	732,933
Other ports	.....	.....	2,425	2,734
Total	1,580,918	$1,505,983	2,054,864	$1,530,009

The chief interest of the above figures lies in the fact that Kobe has almost doubled the quantity of its rubber imports, while those of Yokohama have remained stationary. Such a result is due to increased consumption of rubber by the European firms located at Kobe, including the Dunlop Rubber Co. (Far East), Limited, and the Ingram Rubber Manufacturing Co. of Japan. Many of the Japanese rubber manufacturers at Kobe, Osaka and Kyoto helped in using the augmented receipts at the port of Kobe.

European Rubber Companies in Japan.

Kobe is the seat of the chief European rubber manufacturing companies domiciled in Japan, to whose increased consumption is attributed the recent development of crude rubber imports at that port.

The Dunlop Rubber Co. (Far East), Limited, was established at Wakinohama, Kobe, in 1908, with a capital of $435,000. Its principal manufactures are automobile, cycle and jinrikisha tires, as well as mechanical rubber goods. The works cover an area of 2½ acres, the power equipment consisting of one engine and two boilers (each of 250 H. P.). Nine hundred hands, male and female, constitute the working staff.

Most of the officials are English, including the experts, the manager being Mr. B. V. Williams.

The Ingram Rubber Manufacturing Co., of Japan, was established at Shiriiki, Hyogo, in 1908, by Mr. Arthur Ingram, son of the president of the Ingram Manufacturing Co., London. During the following year it was converted into a stock company. Its manufactures include surgical and mechanical goods. The area of the works is three-fourths of an acre, 350 male and female hands being employed, while the mechanical equipment includes four engines and two boilers (each 70 H. P.). Mr. Tom Parker is works and shop manager. The plant is now being removed from Shiriiki to Wakinohama, Kobe, where the Dunlop Rubber Co. are situated. It is contemplated for the two companies to each get motive power from the same engines and boilers, with the result of effecting great economies.

A third European rubber company, established at Wakinohama, is the Premier Greer Cycle & Motor Manufacturing Co., of Japan, Limited, with a capital of $150,000. The manager is Mr. J. L. Newman.

German Rubber Imports.

According to the most recent German statistics, the total of crude material imported by the rubber industry during the year 1911 represented 31,042 tons, as compared with 34,061 tons for the year 1910. The separate classification of this total was as follows:

German Crude Material Imports.

	1910.	1191.
Rubber ..... *tons*	18,705	19,959
Gutta-percha	8,694	3,507
Balata	773	774
Scrap	5,143	5,937
Rubber substitutes	746	865
Total ..... *tons*	34,061	31,042

The shortage of 3,000 tons in crude material shown by 1911, as compared with 1910, is caused, it will be seen, by a falling off in gutta-percha, of 5,000 tons, partially offset by an increase of 1,200 tons in rubber and of 800 tons in scrap.

By another table are indicated the sources of supply, which throw light upon the development of the German crude rubber trade.

Sources of German Rubber Imports.

	1910.	1911.
Brazilian Rubber ..... *tons*	5,686	6,811
Other South American and Central Rubber..	939	1,340
African Rubber	7,323	6,455
Asiatic Rubber	2,859	2,717
Mexican Rubber	1,347	2,099
Indirect imports	551	537
Total ..... *tons*	18,705	19,959

Of the quantities credited to African rubber, the proportion from the German colonies is shown in the following table:

German Rubber Imports from German Colonies.

	1910.	1911.
German East Africa ..... *tons*	476	602
Kamerun	1,935	1,805
Togo	129	120
German South West Africa	258	....

Kamerun thus constitutes the principal source of German colonial rubber.

Some Rubber Planting Notes.

THE RUBBER PLANTATIONS INVESTMENT TRUST.

THE report of the above company for the year ending March 31, presented to the third meeting of shareholders, has various features of interest. With a capital of £1,000,000, of which £525,000 is paid up, profits for the year 1911-1912 amounted to £76,575, equalling about 15 per cent.

It would seem that these profits, out of which a dividend of 10 per cent. was paid, were derived from two sources: Investments of about £740,000 in 31 companies; and of about £200,000 in three properties in Sumatra and one in South Travencore. In the aggregate these four properties represented 54,324 acres, of which 10,521 acres are planted. In this way the principle of distributing risks is carried out to the fullest extent.

From a geographical standpoint, the investments in various companies are distributed as follows:

	Per Cent.
East Coast Sumatra	34
Java	27
Malay Peninsula	16¼
Southern India	12½
Ceylon	10¼
	100

The distribution among various crops is shown as follows:

	Per Cent.
Rubber (including coffee interplanted in rubber)	63
Tea	24
Tobacco and other products	13
	100

By the history of the properties owned by the company, the course of rubber prices is indicated. Of the 10,521 acres planted, 5,647 are in tea and 500 in coffee; the balance of 4,374 acres being in rubber, planted as follows:

	Acres.
1908	145
1909	296
1910	534½
1911	1,237½
1912	307
In course of planting	181
Sanctioned for 1912	1,673
Total	4,374

The large amount of planting in 1911 was a natural sequence of the boom of 1910, and it is of interest to note that an even larger amount has been sanctioned for this year.

In dealing with these figures, Mr. E. L. Killick, in the "Financier" of London, criticizes the large proportion allotted to Sumatra and Java. He remarks that the Ceylon companies have an unsurpassed record while it is scarcely conceivable that the profits earned by rubber estates in Malaya will ever be approached elsewhere.

RIVERSIDE (SELANGOR) RUBBER CO., LIMITED.

The yield for the 8 months ended August 31, 1912 was 101,854 pounds; as compared with 29,466 pounds for the corresponding months of 1911.

SCOTTISH MALAY RUBBER CO., LIMITED.

During the eight months ended August 31, the total yield was 101,733 pounds, as compared with 45,495 pounds for the corresponding months of 1911.

DIRECTOR LYNE ON TOUR.

With a view to investigating local conditions, R. N. Lyne, the newly appointed Ceylon Director of Agriculture, and C. Drieberg, Secretary of the Agricultural Society, recently completed a week's tour through the Northwest and north of the island, in course of which they visited Jaela, Negombo, Marawila, Chilaw, Puttalam, Anuradhapura, Jaffna and Vavuniya. From Jaffna a complete circuit of the Peninsula was made and a visit paid to Karativu Kayts Islands.

In the course of the tour the new director had the opportunity of meeting the revenue officers of the different provinces and districts visited, while in Jaffna a conference was held with the officials and others interested in agriculture.

MR. WICKHAM'S IMPROVED SMOKING APPARATUS.

Much interest has been displayed in Ceylon, as to the introduction of H. A. Wickham's "Mocha" smoking apparatus, intended to produce the equivalent of fine hard Pará by means of the "smoke cure." This apparatus is made by David Bridge & Co., whose agents, the Colombo Commercial Co., were, according to latest accounts, overhauling the apparatus just arrived with a view to a demonstration to be shortly held at their works.

It is of interest to note that a preliminary demonstration of the invention, with the small working model B, which has been several months on the island, was recently held at Peradeniya Gardens. This demonstration took place under the personal supervision of Mr. Wickham, in presence of Mr. Lyne, the recently appomted director, and the officials of the Gardens. The model worked very satisfactorily; it being anticipated that as soon as the machines are placed on the local market, they will become popular.

NEW TAPPING KNIFE.

During his stay in Ceylon, Mr. Wickham has also experimented with his now well-known tapping knife and found this likewise answered to expectations in every respect, except that possibly with older trees and hardened bark the spring of the knife would be more useful if it were of a stronger make. It appears that part of the essential working is that there should be a rapid withdrawal after the incision, and that the speed of the withdrawal will depend on the strength of the spring.

It is an encouragement for younger rubber experts to see the "Father of the Rubber Industry" thus at work, introducing his two latest inventions. Both the inventions are the outcome of half-a-century of experience, and unrivalled early acquaintance with the practices of the rubber-gatherers in the home *par excellence* of *Hevea* rubber, Brazil.

SUMATRA COMPANIES.

Figures of the United Serdang Rubber Plantations, Limited, for August show 61,511 pounds, as compared with 21,688 for the same month last year. During the financial year ended August 31 the total yield has been 532,360 pounds, as compared with 218,530 pounds for the preceding annual period.

In the yield of the Salang Rubber Estates, Limited, there has likewise been a considerable increase, the quantity for August having been 14,966 pounds, as against 4,898 pounds in August, 1911.

The Tandjong Rubber Co., whose holdings have just become productive, starts off with crops of 9,899 pounds in July and 11,828 pounds in August.

VALLAMBROSA RUBBER CO., LIMITED.

For the five months ending August 31, the yield of above company has represented a total of 202,000 pounds, as compared with 160,700 pounds for the corresponding period of 1911.

GERMAN VIEW OF MALAYAN RUBBER PRODUCTS.

THE general question of Malayan rubber production has recently been dealt with by the German Imperial Consulate General at Singapore. Attention is drawn to the yields of the last three years:

	Pounds.
1909	7,461,070
1910	14,569,307
1911	23,954,144

Between 1909 and 1910 there was thus an increase of about 100 per cent., while 1911 only showed an increase of 60 per cent. as compared with 1910, the rate of augmentation being slower, and the yield being 15 per cent. below the estimated quantity.

A further increase for 1912 is indicated by the fact that for the six months ending June 30, the exports from Malaya amounted to 18,980,798 pounds, or at the rate of about 38 million pounds for the present year, as compared with 7½, 14½ and 24 million for the three preceding years.

Leaving aside the consideration of the past and present, and carrying on the figures up to 1916, the United States consular estimates, as shown below, acquire special interest:

	Pounds.
1912	36,000,000
1913	48,000,000
1914	66,000,000
1915	90,000,000
1916	130,000,000

While plenty of rubber is thus in sight from Malaya up to 1916, the yield after that date will naturally be more or less affected by the policy now being followed as to new planting. In this connection certain passages in the German consular report are of interest.

The fact that after the product had doubled between 1909 and 1910, the rate of increase for 1911 as compared with 1910 should have descended to 60 per cent. would imply that special causes had been operative in retarding the development of yield.

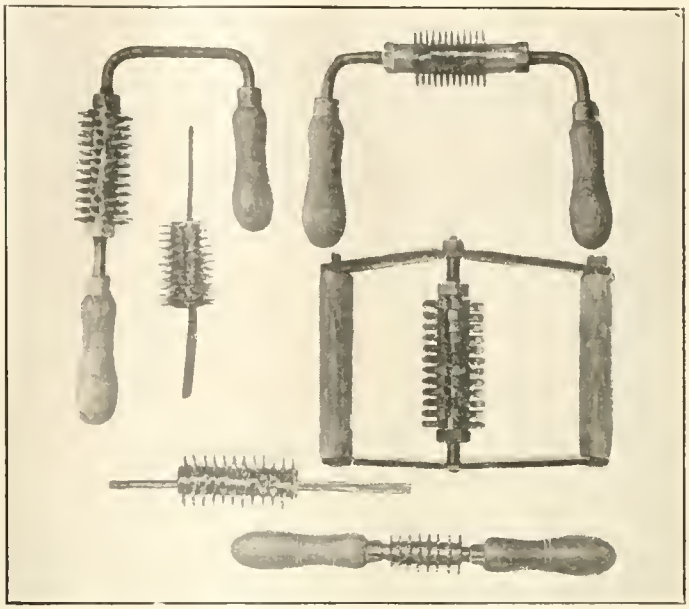
On this subject the German report states: "The plantations quickly recovered from the drought, but more than a year will be required for the rubber industry to overcome the hurtful influence of the 'boom' and to have established a permanently sound financial basis. The number of plantation companies founded during the 'boom,' which, owing to over capitalization, unsuitable soil conditions, unskilful planting, bad management, inaccessible location of the plantations, or labor difficulties, were to be regarded in advance as of deficient vitality, must be more than 100. But there are also a number of old companies, with respect to which a stoppage, or diminution of activity, has to be recorded, chiefly on account of over-tapping the trees, or lack of capital. From the last-named cause several plantation companies have been forced into liquidation.

"The planting of rubber in British Malaya has come to a standstill. There are only a few large companies prepared for further planting. With the others the necessary means are lacking. The total yield will of course quickly increase, as the young trees come into bearing. Well-managed companies will in any case be able to report a steady increase in their yields of rubber, if not of their dividends."

These German official views are calculated to support the ideas of those who consider the future Malayan production as over estimated, in the figures which have been published on the subject.

"PRICKER" TAPPERS FOR "CASTILLOA."

AN exceedingly interesting experiment in *Castilloa* tapping tools is shown in the accompanying illustration. The tool is of the "pricker" type, designed to make a series of incisions by being drawn down the tree, suitable pressure being exerted by the grasp upon the handles. Four types of tool will be noted, and much thought and labor was put upon the device. It was



Various Types of "Pricker" Tappers.

not wholly successful, partly because *Castilloa* Bark is so exceedingly tough, and partly because the rotary prickers made a drawing incision, rather than a direct puncture. The designs were made by the late J. B. Carruthers when he was in charge of the Botanical Gardens in Trinidad, and are a souvenir of last winter's visit to that island by the Editor of The India Rubber World.

DEATH OF A PIONEER MALAYAN RUBBER PLANTER.

Through the premature death at the age of 42 of F. E. Pears, of the Lanadron Estates, after an operation in London, Malaya has lost one of its pioneer rubber planters. After a few years passed in the family soap-making concern, he went to Malaya in 1899, where he obtained a tract of land. This tract was named Lanadron in remembrance of the Cornish village from which the Pears family had originated.

Commencing with the planting of 25 acres in 1899, the estate had by the end of 1909 increased to 11,281 acres, of which nearly half was under rubber. Mr. Pears developed the property from its virgin state into a rubber plantation that has served as a model for many later ventures. He pursued a policy of management which ran the estate ahead of most of its contemporaries and Lanadron rubber was recognized in the home markets as a first-grade product from the beginning. All the improved methods of sanitation and housing which the governments of the Straits and the F. M. S. now insist upon, were carried into effect by Mr. Pears on his own initiative years ago. Recognizing always the importance of an adequate and contented labor force, his coolies were his first care.

Mr. Pears' death is additionally to be deplored, occurring, as it did, a few months after that of his brother, Thomas, in the "Titanic" disaster.

EXPERIMENTAL RUBBER CULTIVATION AT PARA.

SEEING the importance now attached to the question of rubber planting in Brazil, it is of interest to note some facts recorded by Mr. Walter Fischer, the rubber consulting expert, formerly with the United States Department of Agriculture. These facts were gathered by him within the last few years, during his residence in Pará, as director of the Pará Agricultural Experiment Station.

While, generally speaking, rubber planting is backward in the Amazon valley, several companies have lately commenced to go into the work in a practical manner; Mr. Fischer having co-operated in the preliminary investigations and experiments on the subject.

Hevea Nursery, Para Agricultural Experiment Station

In Mr. Fischer's opinion, the safest and cheapest method in the long run is that of planting by stumps, although this plan means an extra year's growth being allowed in the nursery.

The first application of this stump-planting method in the State of Pará was at the Pará Agricultural Experiment Station, and is shown in Fig. 1, representing a model rubber plantation on the Station grounds. The tree where the man is standing, as also the row directly behind him, show a growth of 15 months (April, 1910, to July, 1911) from good-sized stumps; while the tree on the man's left is from a smaller stump and those beyond are seedlings of same age as stumps. The trees in the plot shown are planted 26 by 26 feet, and have been interplanted with mandioca (Cassava).

Fig. 2 shows a nursery of *Hevea* or Pará rubber trees in the above-named Station at Pará. This was the first and only real nursery of *Hevea* in the State of Pará. Modern and northern nursery methods were employed in growing these trees and with great success. In March, 1912, they were just one year old and for planting as "stumps," being thus a step forward.

Para Agricultural Experiment Station.

It is to be regretted that Mr. Fischer's valuable services to the cause of Brazilian rubber planting were interrupted by illness of both himself and wife, which necessitated their return to the States. He trusts, however, at a later date to resume his work in Brazil and to carry further his investigations and experiments.

IMPROVEMENTS AT PORTO VELHO.

One of the most interesting features of the revived "Porto Velho Marconigram," (just reappeared after a cessation of nine months), is a review of current progress at that point. This summary, bridging over the above-named interval, serves to connect the present with the past; thus affording a continuous record of the progress which has been made at this busy port.

Prominent among the works which have been carried out, is the removal of 1,000 feet of soil at the end of the hill on which are situated the engineers' quarters; as well as a good portion of one side of "Igarape Heights." The earth taken out has been used in bringing the Porto Velho Yard to grade; obliterating the marshy place in the southern end of the yard.

The appearance of the warehouse district has been completely altered by the erection of new storehouses for freight and materials along the river front. Notable among the latter is that of the mechanical department. Several new residential buildings have been completed on Boulevard Farquhar and on Wireless Hill.

But the most important event in connection with Porto Velho has been the Madeira-Mamoré railway. When the "Marconigram" suspended publication in September, 1911, about 137 miles were completed. Nine months later, at the date of its re-issue, the remaining 90 miles were closely approaching completion. This line opening up, as it does, extensive business prospects for Eastern Bolivia, has been justly qualified as the master-key to the entire section in which Porto Velho is situated. It is thus of interest to note that the anticipated opening of the line

has been marked by active building operations at that point, as well as by other phases of commercial development, notable among which is the resurrection of the "Porto Velho Marconigram," to which The India Rubber World extends fraternal congratulations and good wishes.

A BERMUDA RUBBER TREE.

The accompanying illustration shows one of the *Ficus elastica* trees which attain such large size in Bermuda. These trees grow to a height of about 70 feet, and are sometimes 15 feet in circumference; while some of the branches in their largest circumference measure from 2 to 2½ feet. Rubber culture has never been attempted in any serious way in Bermuda, but Mr. Arthur E. Friswell, an old rubber man, who was connected with

Ficus Elastica in Bermuda.

the Mechanical Fabric Co., of Providence, Rhode Island, for a number of years, and later with the Goodyear Tire & Rubber Co., Akron, Ohio, and who recently removed to Bermuda, intending to make it his permanent home, has tapped one of these trees 30 years old, and sent a sample of the rubber to this office. It is practically identical with what used to be known some years ago as *Java* rubber.

RUBBER IN ANGOLA.

According to the "Gummi-Zeitung," the first ton of crude *Manihot* rubber was exported from the Loanda district, Portuguese West Africa, in 1911. Two-year-old *Manihot Jequie* trees were tapped for the first time, giving an average yield of about 1¼ oz. Practical results were obtained with a new tapping knife from *Manihot Glaziovii*. The latex is diluted with an alkaline solution, so that its quick flowing is prevented. In consequence the rubber is obtained in transparent pieces, which command a good price. The Angola rubber planters are Europeans with a small capital. *Hevea* and *Manihot* are the trees most cultivated; the latter to a greater extent than formerly. An English syndicate has been formed for the cultivation of rubber in the interior of Benguela, which will also purchase rubber, to be cleaned by machinery.

CENTRAL AMERICAN RUBBER STATISTICS.

In commenting upon conditions and prospects of rubber production in Central America, the "Revista Economica," of Costa Rica, quotes the following statistics of exports for the years 1907 to 1909:

	1907.	1908.	1909.
Nicaragua .....*Tons*	296	284	205
Guatemala	180	146	172
Costa Rica.....	58	42	66
Honduras	45	35	58
Salvador	30	25	30
Total	609	532	531

The importance is urged, for the purpose of maintaining the Central American rubber production, of adopting scientific methods of working. It is added that this does not in all cases imply that methods, which might properly be described as rational in the Dutch Indies or the Far East, should on that account be introduced into Central America for native varieties.

It will be noticed that there was something of a falling off in rubber production in 1908 and 1909 from the figures of 1907. This, however, should not be taken to indicate that the sources of supply are being exhausted, for it is undoubtedly true that there are forests of rubber trees in the various Central American States that have not been touched, and from which considerable quantities of rubber could be taken if they were judiciously operated.

After referring to the difficulties attending the organization of competent agricultural and forest services, the writer in the Costa Rican publication reaches the conclusion that in order to form such organizations, capable of furnishing up-to-date information, it would be necessary to have a rubber bureau, amply endowed, and possessing in its various departments, men of science capable of bringing about a rapid advance in knowledge on the subject of rubber production.

MEXICO'S GUAYULE FACTORIES.

According to a recent consular report, fully 70 per cent. of Mexico's guayule rubber production is worked up in the large rubber plants of the Laguna district, chiefly in the cities of Torreon and Gomez Palacio. There are seven such factories in the Laguna district, which have a combined capacity of a little more than 200 tons of guayule shrub per day. The plant of the Continental Mexican Rubber Co., operated by the Rockefeller-Aldrich interests at Torreon, has a capacity more than equal to that of the other six plants operating in the Laguna combined. This immense plant operates 112 large pebble drums, each of which has a capacity for a little more than a metric ton of the shrub per day, or a combined capacity of about 120 tons. This factory gives employment to about 700 men, and is said to be the largest single plant for extraction of rubber in the world. The output of finished rubber from this one plant in 1911 amounted to between 6,000,000 and 7,000,000 pounds, almost all of which found a market in the United States.

DJASINGA (JAVA) RUBBER & PRODUCE CO., LIMITED.

For July and August there has been a total yield of 13,100 pounds, while the corresponding period of 1911 only represented 3,113 pounds, a more than four-fold increase being thus demonstrated.

LANGEN (JAVA) RUBBER ESTATES CO., LIMITED.

The yield of rubber for August has been 12,500 pounds, as compared with 2,700 pounds for August, 1911. For the 12 months ended with August, the total has been 145,577 pounds; as compared with 8,722 pounds for the preceding annual period.

NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

BRITISH GUIANA AT THE RUBBER EXHIBITION.

READERS of these "notes" who visit the exhibition being held in New York will observe a small exhibit from this colony at the Imperial Institute's stand. After the authorities had succeeded in resisting the steady pressure brought to bear upon them, to induce them to secure a separate exhibit of the colony's rubber at the exhibition, it was resolved to make use of the permission accorded to the Imperial Institute, to exhibit in seven-pound samples, types of British grown rubber.

A more detailed description of the British Guiana exhibits at the New York show will be found in the special exposition section in this issue of THE INDIA RUBBER WORLD.

THE BALATA ASSOCIATION—DISSOLUTION.

At a meeting of the Balata Association held recently, it was resolved to disband. The chairman, Mr. George R. Garnett, pointed out that the Institute of Mines and Forests had recently been strengthened by the addition of various new members, many of them being connected with the balata industry. If the institute could be representative of the whole industry, it would be useless having two associations carrying on practically the same work. This view was endorsed by several members, who paid a tribute to the work performed by Mr. Henry Daley, the honorary secretary. This sudden dissolution is somewhat surprising. It was recently announced that the representatives of the local companies had joined the association and it was thought that it had a long career before it. It was Mr. Henry Daley who created the association and he is about to leave the colony, where he was the last manager of the Essequibo Rubber and Tobacco Estates Company. It is to be hoped that the Institute of Mines and Forests will prosecute the interests of the industry with the same energy as the association.

BALATA FROM VENEZUELA—SUGGESTED REMOVAL OF THE EMBARGO.

At the same meeting, the question of allowing Venezuelan balata to be shipped via British Guiana was discussed. Such transit trade was prohibited about five years ago, in consequence of the depredations of Venezuelans on the British Guiana side of the boundary. Improper bleeding of colony balata, which was shipped as Venezuelan, was rampant. It has since been thought, however, that complete prohibition was a somewhat too drastic remedy, and at this meeting the Balata Association endorsed that view. Some interesting information on the matter was supplied recently by General Federico R. Matthews, late governor of the Venezuelan territory on the British Guiana boundary, who was visiting Georgetown. He stated that there are large tracts of land, rich in balata in the territory, which have no outlet at present. The way over the inland rivers via Bolivia is too long to be profitable. The way via Morawhanna in British Guiana is prohibited. If that embargo were removed a company would be formed to exploit the balata resources of the territory. This embargo and the decline of the industrial enterprises in the northwest district of the colony have reduced the township of Morawhanna to a state of stagnation, and opinion in favor of the removal of the prohibition is growing.

RUBBER TAPPING IN THE NORTHWEST—CURIOUS PERFORMANCES OF *HEVEA CONFUSA*.

At a recent meeting of the Board of Agriculture Mr. Stackdale reported upon some tapping experiments in the northwest district, undertaken in June, July and August. Eighty-nine trees were taken, none under 16 inches in girth. Those less than 18 inches were given two basal cuts and those over 18 inches were tapped after the half herring-bone system. July's returns were better than June's, and August's better than July's. The results with *Sapium* were not very encouraging.

At the same meeting Professor Harrison reported that a sample of *Hevea confusa* rubber exhibited in London last year, had been sent to the Imperial Institute for analysis, which reads as follows: Loss on washing, 1.4 ounces; caoutchouc, 93.3; resin, 1.8; proteid, 4.9; ash, 1.0. The analysis was as good as if the sample was good rubber and worth 4*s* per pound. When first prepared, however, it had no elasticity and would break if pulled, but it had since got a feeble degree of strength. Nothing could be done with the tree, which was very old. The yield was small and the tree would soon run dry. The importance of the matter was that they should keep the tree out of cultivation, so as to prevent it making hybrids with good rubber.

IMPORTATIONS OF RUBBER SEEDS—INTERESTING STATISTICS.

A table has been published in the *Official Gazette* showing the number of Para rubber seed imported by the government between the years 1905 and 1911. Of 366,848 seeds received, 234,598 germinated; the cost of shipment amounting to $2,754.80. In 1905 a sample shipment of 50 seeds was received from Para, Brazil, but none germinated, and in 1906 of 25,062 seeds received from Ceylon, from the Botanic Gardens of Ceylon and Singapore, 2,000 seeds germinated. In 1907 63,850 were imported from the Botanic Gardens of Singapore and Ceylon, and 49,700 germinated. In 1908 of 50,000 seeds imported from Singapore, 43,150 germinated. In 1909 of 30,131 seeds, 21,609 germinated. In 1910 there were two shipments, the aggregate number of seeds being 85,155, of which 59,350 germinated. In 1911 89,679 seeds were obtained from Singapore and Ceylon, and 43,757 only germinated; of a further shipment of 19,921 seeds obtained from Mr. J. H. Richards, 15,024 germinated.

THE OLDEST "HEVEA" IN BRITISH GUIANA.

TIME was when Ceylon boasted only two or three mature *Hevea* trees. Those trees today are giants, are great producers of rubber, and often photographed and described. It is well therefore as a matter of record to show the oldest *Hevea* tree in British Guiana. This tree is already the parent of many others, and some day will probably be historic. Of the figures at the base of the tree, the one at the right is Professor Harrison, Director of Agriculture of British Guiana.

OLDEST *Hevea* TREE IN BRITISH GUIANA.

The Editor's Book Table.

ANNUAL REPORT OF THE UGANDA DEPARTMENT OF AGRICULTURE, for year ending March 31, 1912. Entebbe, 1912. (4to, 36 pages.)

THROUGH the courtesy of S. Simpson, Director of Agriculture, THE INDIA RUBBER WORLD has received a copy of the above-named annual report, dealing with rubber, cotton, coffee, cacao, and the other products of the Protectorate.

According to the details given the area planted with rubber is extending rapidly, the *Hevea* tree leading the way. The area planted in the various rubber trees are:

	Acres.
Hevea Brasiliensis	3,000
Manihot Glaziovii	750
Castilloa elastica	85
Funtumia elastica	24
Total	3,859

The total acreage of the European plantations in Uganda is about 6,000 acres, of which nearly 4,000 are thus in rubber; there being about 2,000 in coffee and 200 in cacao.

Rubber exports have been approximately as follows:

	WILD RUBBER. Pounds.	PLANTATION RUBBER. Pounds.
Year ending March 31, 1909	42,600	.....
Year ending March 31, 1910	94,500	.....
Year ending March 31, 1911	89,800	55,200
Year ending March 31, 1912	27,700	210,200

Plantation trees are thus evidently yielding increased quantities of rubber.

Ceara has found favor with various planters, but some of them are beginning to grow skeptical as to its merits. As shown by above table *Hevea* and *Manihot* are at present the only rubber producing trees of any importance in Uganda.

ANNUAL REPORT OF DEPARTMENT OF AGRICULTURE, TRINIDAD and Tobago, 1910-1911. (Special Bulletin.) Trinidad, 1911. (4to. 73 pp.)

According to this interesting report, the rubber industry has of late received a much larger amount of the department's attention than had been the case in previous years. Reference is likewise made to the experiments carried out with the centrifugal machine of H. Smith, of Tobago, who had visited Mexico and Central America. The *Castilloo* rubber industry has been materially stimulated by Mr. Smith's report on the subject.

A. E. Collens has devised a simple method of coagulating and smoking *Castilloa,* by which he has produced some fine specimens.

As a record of the work of Professor Carmody, the director and his associates, this report has a distinct interest, while its ample statistical material is thoroughly well handled.

COCO-NUTS: THE CONSOLS OF THE EAST. BY H. HAMEL SMITH and F. A. G. Pape, London. 1912. "Tropical Life" Publishing Department. [Cloth. 506 pp.]

To those who have not followed the progress which has marked the development of tropical agriculture, the above work will afford a mass of information upon the subject. A specially practical feature of the book consists of the suggestions made by the authors as to the management of large estates on which cocoanuts flourish. In fact, the work will be found indispensable by planters interested in that branch, being an exhaustive and complete study of the cocoanut palm. The questions of nurseries, manuring and diseases are treated in detail, as well as catch-crops.

Another important feature of the work is the discussion of the utilization of the products and by-products of cocoanuts, including coprah, fiber and oil, as well as the possibilities of paper making. How to deal with everything that can be made to pay is the point kept steadily in view by the authors, and brought out with perspicacity and clearness.

While rubber is dealt with more or less incidentally, the references to that subject have a distinct interest, particularly as to interplanting. Regarding Samoa and New Guinea, it is stated that interplanted cocoa and rubber have been tried with doubtful success, such a plan not being recommended. At the same time this combination would, it is remarked, restrict disease and distribute financial risks, if the soil and climatic conditions were suitable.

As to Papua, it is of interest to note that out of 7,740 acres under cultivation, 5,365 acres are in cocoanuts and 1,702 acres in rubber.

In North Borneo, large areas have been planted in rubber, and appear to be doing well. Moreover, land is still being planted up with rubber and other crops, so rapidly that additional labor is needed.

HANDBOOK FOR INDIA-RUBBER ENGINEERS, by Dr. Werner Esch, Editor of the "Gummi-Markt." Hamburg. 1912. [8vo, 135 pp., cloth.]

One of the chief requirements of a technical work is that the information contained should not only be accurate and reliable, but that it should be expressed in concise form. This has been accomplished by Dr. Werner Esch in the above-named handbook intended for the guidance of those whose occupations or interests call for more or less detailed knowledge of the production and preparation of rubber. As described in the subtitle it is "a practical manual for manufacturers, chemists, works managers, and commercial men in the rubber and allied trades."

Starting with the varieties of crude rubber, which are treated in detail, the physical and chemical properties of rubber are next discussed. Then follow the chapters dealing with the mechanical cleaning of crude rubber, including washing, deresination and drying.

The following section treats of the further working up of the dried rubber, conducting the reader through the processes of mixing, weighing and calendering. In natural sequence, the subject of vulcanization is then handled, with references to vulcanizing heaters and sulphur bath installations. Next in order come the vulcanization of proofed fabrics and the cold vulcanizing shop.

Finally, compounding ingredients for rubber compounds are dealt with, in connection with which subject a number of standard mixing formulae are given. The descriptions of machinery used in the rubber industry are supplemented by effective illustrations.

It is of material importance, considering the scope of the subjects treated, that Dr. Esch has written in English; the value of his work being thus considerably enhanced. The whole treatment of the subject reflects credit upon its author, and will add to his established reputation as a rubber chemist.

NEW TRADE PUBLICATIONS.

IN commemoration of the fiftieth anniversary of the Franz Clouth Rhemish Rubber Factory of Cologne, a festival souvenir volume has been isued, which is a notable example of typography and illustration. Various interesting statistical data are supplemented by a chart representing the movement of rubber prices from 1861 to the present time.

The personal features of the volume are represented by a full description of the works, embellished with a number of illustrations, representing the various portions of the installation and the chief manufacturing processes. The reader is conducted in imagination through the processes of washing, mixing and vulcanizing, as well as the manufacture of hose, belting and other products; including roller-coverings and diving appliances. Rubber tiling also constitutes a prominent feature of the firm's production; having been supplied for the smoking saloon of the "Prinz Wilhelm," which is effectively illustrated. The frontispiece is a portrait of the late Herr Franz Clouth, the founder of the firm, whose history is graphically told.

Under the title of "Merck's Analytical Methods for Testing Analytical Reagents," Merck & Co. have issued a handy booklet containing a full price list of their "Blue Label Reagents," indicating their analyses, and the tests to which they are intended to apply. The alphabetical order in which the various reagents are treated, facilitates reference and renders this little book a *vademecum* for the busy chemist and analyst. To those already using Merck's chemicals, it will recall familiar compounds, while to those contemplating the extension or improvement of laboratories, it will serve as a useful guide.

The B. F. Goodrich Co. has just issued a manual of tire repairing with complete descriptions and full illustrations sufficient to give professional repair men full information as to materials to be used and methods to be pursued in the repair of pneumatic tires. The information therein contained is based on the experience of the oldest and most complete repair departments in existence. The methods mentioned therein are applicable to ordinary shops.

The monthly publication of "The Goodrich" for September, their birthday number, contains an excellent article by Alexander P. Rogers, entitled, "In the Heart of South America—Part Second," which gives a vivid account of the country bordering the Madeira River and of the difficulties overcome in surveying and building a railroad around the rapids in that turbulent river. It also contains a map of Europe, giving the Goodrich service abroad. The September issue numbers 46,000.

NEW TENNIS LIST FOR 1912 AND 1913.

The United States Rubber Co. has issued its tennis lists for the year beginning September 1, 1912. These lists follow the usual form, being about 3½ inches x 6 inches, a convenient size for mailing in the ordinary envelope.

Three different lists are issued by the company, one entitled, "The United States Rubber Company's Tennis, Yachting, and Gymnasium Shoes"; the second entitled, "Tennis Glove Brand"; and the third, "Lycoming and Keystone Tennis and Gymnasium Shoes."

The first list describes and illustrates the company's Tennis, Yachting, "Champion" Gymnasium, Bathing, and Basket Ball shoes, most of these being made in Oxfords and bals.

The "Glove Brand" price list describes and illustrates the "Bon Ton," Outing, "Racquet," "Marblehead," and "Athlete" shoes, being similar in character to those shown in the list described above.

The Lycoming list includes yachting, gymnasium, and a general tennis shoe called "The Rival."

FIRE HAZARDS IN RUBBER MANUFACTURE.

IN an article on "Rubber Manufacture," with particular reference to the fire hazards attendant upon the making of mechanical rubber goods, written by L. Alexander Mack, for the *Weekly Underwriter*, of June last, the following paragraphs appear; which will be of interest to all rubber manufacturers:

THE FIRE HAZARDS.

"The greatest hazard in the manufacture of rubber products is not the rubber itself but its solvents. 'Rubber cement,' as it is commonly called, is composed of pure rubber, cut fine and softened in carbon dioxide, after which this mixture is dissolved in benzine, making a powerful adhesive. The dangers of volatile fumes of benzine are well known to every underwriter, and the danger from careless use of rubber cement cannot be too strongly emphasized. The inspector should devote particular attention to this material, first, as to its storage, and, secondly, as to its actual use. It is worth noting, however, that once the cement has been applied and becomes dry, the danger point appears to have been passed.

STORAGE OF RUBBER CEMENT.

"Manufacturers realize that with a costly product like rubber cement it is important that every gallon purchased should be used. This result cannot be obtained when the wooden barrel which has served for its transportation is afterward used for storage. Such a barrel is more or less porous, and so in the best plants the cement is at once transferred to metal tanks, buried underground at least thirty feet from any building. This is the only safe and approved method of storage of rubber cement. The inspector should satisfy himself that only a day's supply of cement is kept in the factory at one time, and this must be kept in self-closing metal cans. It seems almost needless to say that smoking should be prohibited within any portion of a plant where such material as rubber cement is used in almost every department.

STATIC ELECTRICITY.

"Next to the hazard of rubber cement is the danger from static electricity. Instances are of frequent occurrence, where in moving a sheet of rubber-lined cotton duck or belting across a table top enough static electricity is developed to generate a good sized spark. This is extremely dangerous if there is any rubber cement nearby. The best safeguard against this hazard is to have all tables in this department 'grounded'—a simple expedient within the reach of every manufacturer.

BUFFING.

"Some attention should be given to the department where buffing is carried on. The fine dust, here given off, though composed partly of rubber, has an admixture of lint from the buffing wheels themselves. This finely divided material if allowed to accumulate would make an excellent subject for spontaneous combustion, especially if left where any grease or oil could drop on it. Complete blower systems should be installed to carry the dust direct to the boiler room, where it should be destroyed as soon as practicable. There is very little danger of the friction of the buffers developing enough heat to set fire to any fumes of benzine in this department.

STORAGE AND WASHING.

"The storage of crude rubber under suitable conditions does not present any undesirable features from the underwriter's viewpoint. Nor does the process of washing, for, in spite of the frequent presence of foreign substances, water is so necessary an adjunct to this process as to make fire an impossibility at this stage of the work.

The rubber manufacturer thus need not fear the risk of fire through the storage of crude rubber, or the processes incidental to purification.

CHEMICAL ROOM.

"The chemical room should be carefully inspected to make sure that all chemicals are stored in standard self-closing bins of lock-jointed tin. The best mills store their chemicals in a separate building from which the boxes containing mixed chemicals and raw rubber stock are conveyed by a belt to the mixing machines. Lampblack is a decidedly dangerous substance, composed almost entirely of carbon. If it becomes damp it will heat up sufficiently to char its paper wrappings, or the paper linings of barrels in which it is shipped, and if left long enough will eventually set fire to the barrel itself. Barium sulphate is a rapidly oxidizing metallic substance which is a frequent source of trouble if allowed to become damp; carbon disulphide is a liquid similar to benzine in its volatile and explosive qualities. There is danger also from unslaked lime becoming slaked and setting fire to things about it. Sulphur is not bad, and there is no danger from whiting, paraffin or litharge.

MIXING AND CALENDERING.

"In the mixing process the underwriter will find little or no special hazard, as a high temperature would spoil the rubber. The temperature of the mixing rollers is maintained at about 176 degrees Fahr., and steam heat is now almost universally employed.

VULCANIZING.

"The fire hazard from the vulcanizers themselves cannot be said to amount to anything more than the usual steam pipe hazard, steam being the medium now employed in vulcanizing in practically all factories. With the boiler house properly isolated and the vulcanizers set on metal, and with all surrounding woodwork protected with metal sheathing, the hazards of the vulcanizer can be reduced to a minimum.

RECLAIMING HAZARDS.

"The hazards of the reclaiming house are chiefly those of the storage of chemicals. Sulphuric acid, nitric acid and caustic soda are the chemicals principally used. All are dangerous unless kept in approved receptacles, preferably in a detached building. The machinery and arrangement of the reclaiming plant present no more serious hazard than that the floors must of necessity be pierced in numerous places to facilitate the handling of the reclaimed material, thus making a total loss on this structure a high probability if fire once gets a start.

MISCELLANEOUS.

"As before indicated, the hazard of oily waste and lint is to be looked for in the department where jackets are woven for hose. Self-closing metal cans should be provided for waste in this department. Large plants frequently run their own printing establishments, the hazards of which have been pointed out in another article in this series. Benzine is the dangerous substance here, and should be kept in patent safety cans and only a day's allowance kept in the shop at one time.

OTHER RUBBER INDUSTRIES.

"While this article will not deal with the hazards to be found in factories making rubber clothing, boots and shoes, tires and druggists' sundries, it will be well to note that the hazard in the clothing industry is chiefly in the spreading of the daub, which is virtually a rubber cement mixture. Static electricity is the dangerous feature here. In the boot and shoe industry the lacquering room seems to be the source of most trouble. Here the lacquer, composed of highly inflammable materials, is 'slathered' over the boot or shoe by hand, and the article is at once put on a rack and taken into the drying room, where a high temperature prevails. Trouble may frequently develop here.

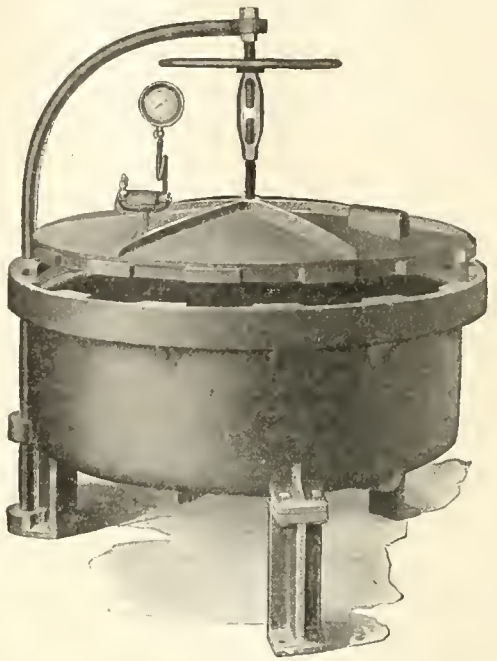
FIRE PROTECTION.

"A full equipment of fire pails, extinguishers, standpipe and hose, and, above all, a thorough sprinkler equipment will do much toward making rubber works profitable to the underwriters. Good housekeeping is, of course, an essential to every well organized factory, and should be insisted upon by the inspector at all times.

"In closing we desire to acknowledge the courtesies extended to us in the preparation of this article by the Manhattan Rubber Manufacturing Company, THE INDIA RUBBER WORLD, the Insurance Society of New York, the Biggs Boiler Works Company of Akron, Ohio, and the Birmingham Iron Foundry of Derby, Conn."

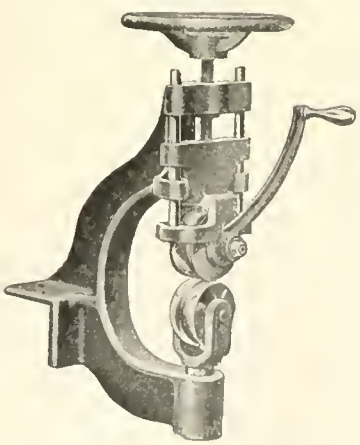
A TIRE KETTLE AND TREAD ROLLING MACHINE.

THE WILLIAMS FOUNDRY AND MACHINE CO., of Akron, Ohio, has recently put on the market a boltless, quick-opening tire kettle that has sufficient capacity for all except the very largest shops. It measures about 43½ inches inside



THE WILLIAMS TIRE KETTLE.

diameter in the clear, and the curing space is 16 inches high above the bottom grating, making capacity for about four tires 42 inches or smaller at a time. The kettle and lid are made of open hearth cast steel, tested with 200 pounds hydraulic pressure and 75 pounds steam pressure, making it safe for any condition of service. The crane head handling device and bottom grating which keeps the tires out of the water, and permits the steam to circulate all around the tires, overcome the common objections to vertical kettles. The boltless head saves so much time and labor that a retreaded tire can be cured with as little trouble as a sectional repair in a mold—a very obvious advantage.



TREAD ROLLING MACHINE.

This company is also placing on the market for the use of repair men who are retreading tires, a tread rolling machine that will enable the repairmen to roll the fabric much harder than it can be done by hand. The upper or concave roll is raised by means of a large hand wheel, and the tire inserted between the rolls. The desired pressure is applied by screwing down the hand wheel. The heavy oil tempered steel springs which roll the convex roller insure even pressure, and turning the crank causes the tire to turn between the rollers.

New Rubber Goods in the Market.

WATERPROOF COATS FOR THE NEW SEASON.

HERE are four new waterproof coats, taken from the offerings for 1912 and 1913 of the Greenhut-Siegel Cooper Co., of New York. They give a very good idea of the sort of rubberized garments that the women are expected to wear this winter.

Describing them from left to right they are briefly as follows:

No. 1 is made of serge or cravenette and guaranteed showerproof, but not being rubberized cannot be guaranteed as a sufficient protection against pelting rain. This is made in semi-fitted style with tailored seams and has a mannish collar and patch pockets which serve further to set it off. It comes in Oxford grey and tan.

Some 1912 Raincoats for Women.

No. 2 is a tourist raincoat made of imported rubberized diagonal tweed in the Raglan style. This garment can be worn in any weather and is suited for a general traveling coat or automobile wrap. This is made in grey, black, and black and brown diagonal.

No. 3 is made of rubberized cashmere, fashioned in the loose slip-on style, with high turnover collar and is made in olive green.

No. 4 is made of mercerized poplin rubberized and is cut in the English box style. All the seams are cemented with pure rubber, making them absolutely watertight. This garment is made in navy blue, grey and black.

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

A COLLAPSIBLE PAIL FOR MOTORISTS.

This collapsible pail isn't in reality new, for it has been on the market for several years, but it probably is new to a good many people who tour around in motor cars; and all such will be glad to know about it. It is made of rubber cloth, well coated to avoid leaking. It is light, and when collapsed only stands 2½ inches high. When extended for use, it stands 11 inches high, and holds 2½ gallons of water. Any motorist who has found his radiator running dry, and not a house in sight, and has tried to convey water from a running brook in his hat, knows how much he would have given under those conditions for any sort of a pail. [The B. F. Goodrich Co., Akron, Ohio.]

A Collapsible Rubber Pail.

CUTTING PAVEMENTS WITH PNEUMATIC HAMMERS.

One of the most frequent sights in city streets, particularly in the streets of our older cities, is the taking up of hard pavement—asphalt or concrete—for the purpose of putting in new pipes or wires or rails, or repairing those that are already there.

Cutting Asphalt by Compressed Air.

It is no easy task to take up an asphalt pavement. It is almost as hard as iron, and the old regulation method of doing it by hand with a gang of men and picks is slow, expensive, and not very satisfactory in any way, particularly where it is desirable to follow a straight line and make a clean edge. To obviate the disadvantages of hand work in taking up these hard pavements, considerable experimenting of a very successful character has recently been

done with pneumatic hammers. A gas company in Brooklyn, New York, has found this method greatly preferable to the old way. They have a portable air compressor on a large flat-wheel truck; from this run rubber pipes conveying the power to the pneumatic hammers. The tools used are chisels with an edge somewhere from ¾ inch to 1½ inches in diameter. It has been found that a workman with a pneumatic hammer can accomplish as much as four or five workmen by the old method, and more than that, a straight chalk line can be drawn which the pneumatic hammer follows absolutely, making a clean-cut edge.

Pneumatic Hammers Cutting Concrete.

The experiment with the pneumatic hammer was thoroughly tried not long ago in the streets of Zurich, Switzerland, which were paved with a ten-inch thickness of concrete. It was found necessary to take up the rails of a street car track, and the pneumatic method was adopted with great success. A recent number of the "Compressed Air Magazine" has a more detailed account of both of these experiments illustrated with a number of cuts made from photographs, two of which, through the courtesy of that magazine, we here reproduce; the first cut showing a single workman chiseling out a line in an asphalt pavement, while the second cut shows a group of workmen taking up a concrete pavement in Zurich. Hard as asphalt is, this pneumatic chisel cuts into it and turns it over as if it were a piece of leather.

GOODRICH "LUMINA" AEROPLANE CLOTH.

The B. F. Goodrich Co. appears to have made very considerable headway with its new "Lumina" aeroplane cloth. It will be recalled by those who visited the recent New York Aero Show, that Wright and Curtiss both had aeroplanes there on exhibition in which this particular cloth was used. The Curtiss hydro-aeroplane recently purchased by the Russian Navy, and the Burgess biplane ordered by the United States Army, both are constructed with "Lumina" cloth.

"Lumina" is a handsome fabric, made from the finest long staple cotton, coated several times over with high-grade rubber solutions of various consistencies, and on one side again covered with aluminum. It becomes to all intents and purposes wind and weather proof.

The making of a suitable fabric for aeroplane purposes involves several novel conditions. The scantling of a plane is so slight that any warping or shrinking of the fabric will infallibly distort the frames, throwing them out of line and upsetting the true direction of flight. In "Lumina" these contingencies have been provided for, as it will neither shrink nor stretch. The rubber coating and aluminum covering are incorporated with the fabric, making it impervious to climatic influences; with the further advantages that it does not crack nor show dirt, while repairs may be readily executed with ordinary cement and without disfiguring the fabric.

"Lumina" cloth is made by the Goodrich company in its factory at Akron, Ohio, by special arrangement with the Continental Company of Hanover, Germany.

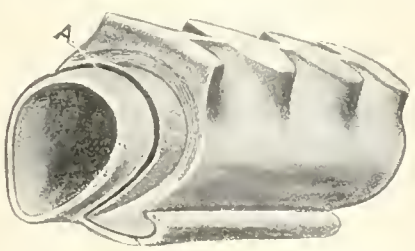
A RUBBER COAT FOR YOUR STRAW HAT.

There is nothing that fills a good man with more sorrow, or drives a wicked man to more profanity, than to pay $3.50 for a superior straw hat, and then immediately thereafter get caught in a pelting rain, and have the handsome, crisp, new headgear turned into a limp candidate for the dump-heap. And that really isn't at all necessary; for here is a rubber hat cover, which weighs next to nothing, and can be rolled up and tucked into a corner of a pocket; and yet, when occasion demands, can be taken out and in a second's time can be adjusted over the straw hat, so that it will go through the fiercest downpour without even getting moist. As some inventive genius has already made it possible to get a pair of rubber footholds so light that they can be conveniently carried in the pocket, if somebody else would only invent a spider-web rubber coat that could be carried in the same way, a man would only need three pockets to be able to carry adequate protection with him, wherever he went against the worst the elements might do. [National Rubber Hat Protector Co., Nashville, Tennessee.]

Straw Hat with Rubber Cover.

THE STEPNEY ROAD GRIP TIRE.

The annexed illustration displays in section the extremely heavy rubber tread of the "Stepney Road Grip Tire," the large flat projections in which form an excellent preventive against slipping, as they, to a certain extent, adhere to the surface of the road, while their rounded form casts on one side the stones and other objects which may come in the way. The thickness of the projecting portions tends to prevent nails and other sharp substances from penetrating the surface of the tire or the inner layers of linen, thus imparting a marked capacity of resistance.



Another specially made by the same concern is the "Stepney Tire Cover." This cover, it is claimed, permits the use of old, torn, or burst tires, instead of their being thrown away or sold as old rubber. It is shown in position A on annexed illustration, and is made of heavy linen impregnated with rubber, fitting the tire. With burst tires, it is recommended before putting on the cover to patch the hole with a linen rag and to vulcanize the surface or to apply rubber solution, so as to prevent water or dirt from getting in. [Stepney Auto-Reserve Wheel Tire Co., Limited, Berlin, 39.]

News of the American Rubber Trade.

COLONEL COLT BACK FROM EUROPE.

WHEN Colonel Samuel P. Colt, president of the United States Rubber Co., returned on the *Olympic* September 5, after a short visit to Europe, taken primarily to attend the wedding of his son, Roswell C. Colt, and incidentally devoted to the advancing of certain large enterprises in which his company is interested, he was met at the dock by various reporters of the New York dailies. In reply to their questions he gave his views on a number of subjects, predicting the re-election of President Taft, and stating that the Republican party of Rhode Island were united on his brother, Judge LeBaron C. Colt, to succeed Senator Wetmore in the United States Senate; but the paragraph of particular interest to the readers of this journal referred to certain important rubber matters. He is quoted by one of his interviewers as follows:

"While my trip has been primarily for pleasure," said Colonel Colt, "I have given time and attention to important matters in connection with the United States Rubber Co. One of these was an application to list $10,000,000 of our first preferred stock on the Parquet of the Paris Bourse. The negotiations are progressing satisfactorily and, I am confident, will be consummated within a reasonable time. This will be the minimum amount and it will be increased from time to time as the original offering is absorbed.

"I also gave attention to our crude rubber interests in the Far East. On one estate there we already have 25,000 acres planted. We are now putting out on an average 1,000 trees a day and we will continue at about this rate until we have 50,000 acres planted on that one estate. We shall begin to get rubber from our trees within the next two or three years."

ANNUAL MEETING OF THE FIRESTONE COMPANY.

Stockholders of the Firestone Tire and Rubber Co. held their annual meeting on September 4. The directors declared a 10 per cent. dividend on the common stock for the ensuing year, and a 7 per cent. dividend on the preferred.

After the dividends had been declared it was found there was nearly a million dollars in surplus. This will be used to expand the business, and to establish new branches. The year ending August 1 was the most successful in the history of the company, the gross receipts totaling $1,189,000.

The same officers and directors were elected at the meeting to serve for another year, namely: H. S. Firestone, president; Amos C. Miller, Chicago, vice-president; J. G. Robertson, treasurer, and S. G. Carkhuff, secretary. The capital stock of the company will remain the same, one million in preferred and three million in common.

THE RUBBER BALL PLAYERS TAKE THE CUP.

The Hub Athletic Association, composed chiefly of young men connected with the New York office of the United States Rubber Co., has during the last two or three years entered a baseball team against other members of the Shoe Baseball League. In the season of 1911 the Hub club was tied with the Morse and Rogers team, and the tie was to be played off during the past summer for the championship cup; but as the Morse and Rogers team was not able to get together with its original membership, the cup has been awarded to the Hub Athletic Association. The president of this association is Mr. Richard S. Harding, head of the mailing department of the United States Rubber Co., and the treasurer is the company's advertising manager, Mr. William H. Palmer.

TIRE COMPANY INCORPORATED IN MAINE.

The Hallett Vehicle Tire Co. has been incorporated under the laws of Maine to manufacture rubber tires for automobiles and other vehicles. The headquarters are at Augusta, Maine. The president is L. J. Coleman, and the treasurer G. E. Beane.

THE WILKIE COMPANY BECOME THE SAGAMORE.

It was voted at a special meeting of the stockholders of the Wilkie Rubber Manufacturing Co., Lynn, Massachusetts, held August 23, 1912, to change the name of the company to the Sagamore Rubber Manufacturing Co. All obligations due to and by the Wilkie Rubber Manufacturing Co. are payable to and by the Sagamore Rubber Manufacturing Co.

THE FISK SALESMEN HOLD A CONFERENCE.

The salesmen of the Fisk Rubber Co., Chicopee Falls, Massachusetts, had a three days' conference, from September 11 to 13 inclusive, at the head office of the company, for the purpose of discussing the policy for the coming season, and with the further object of getting acquainted with the company's plant and with one another.

WALLACE L. GOUGH RETIRES.

Wallace L. Gough Co., under date of September 14, has sent out the following letter announcing the retirement from that company of Wallace L. Gough. "We wish to inform you that our former treasurer, Mr. Wallace L. Gough, has sold his interest in the Wallace L. Gough Co., and that our former vice-president, Edward Weber, has been made the general manager of the concern.

The board of directors will consist of Edward Weber, president and treasurer; Cornelius Schroeter; Willy Kemmler, secretary.

All checks, notes, drafts or other obligations of the corporation will be signed by Edward Weber, as treasurer, or in his absence or disability by both C. Schroeter and W. Kemmler as directors.

RUBBER MEN AT THE CARRIAGE CONVENTION.

The Fortieth Annual Convention of the Carriage Builders' National Association was held on the famous Million Dollar Pier, Atlantic City, from September 23d to the 27th. In connection with this convention there was an exhibition in which the following manufacturers of rubber tires and other rubber articles took part: Diamond Rubber Co., Akron, Ohio; Fabrikoid Works, Wilmington, Delaware; Fairfield Rubber Co., Fairfield, Connecticut; Federal Rubber Manufacturing Co., Milwaukee, Wisconsin; Firestone Tire and Rubber Co., Akron, Ohio, and Goodyear Tire and Rubber Co., Akron, Ohio.

The Acushnet Process Co., New Bedford, Massachusetts, is adding a new building to its plant and otherwise making improvements in its factory.

OVER A THOUSAND TONS OF SCRAP RUBBER A WEEK.

The Loewenthal Co., New York, sold during the week ending September 14th over a thousand tons of scrap rubber—the actual weight being 2,118,000 pounds. On the hypothesis that the volume of scrap rubber sold is an excellent criterion of the rubber business being done in this country, these sales would indicate that the general trade is in very good condition.

TIRE MAN MAKES A GOOD SUGGESTION TO INNKEEPERS.

One of the officials of the United States Tire Co. passes along to the public generally and to keepers of way-side inns in particular a suggestion that comes to him from the owner of an automobile who is fond of touring around the country, as most automobile owners are, and naturally likes to stop from time to time at some proper house of refreshments. This man complains that the average automobile innkeeper acts as if he wanted all the money his guests could possibly raise, on the theory that this would be his last chance at him. Moderate and reasonable prices would certainly encourage tourists to patronize road houses much more than they do, and would therefore be ultimately for the benefit of innkeepers.

NEW INCORPORATIONS.

Amazon Rubber Smoking Machine Co., September 13, 1912; under the laws of New York; authorized capital, $5,000. Incorporators: Charles T. Green, 2 Rector street, New York; Edwin B. Griffin, 337 West Fourteenth street, New York, and Ernest M. Morrison, 206 Lincoln avenue, Brooklyn, New York. Location of principal office, New York.

Automobile Tire Filling Sales Co., August 24, 1912; under the laws of Delaware; authorized capital, $1,000,000. Incorporators: George G. and Oscar W. Stiegler, and William F. O'Keefe—all of Wilmington, Delaware. To buy, sell and generally deal in rubber goods of all kinds and to fill rubber tires and many other things.

The California Rubber Co., August 23, 1912; under the laws of California; authorized capital, $5,000. Incorporators: C. C. Booth, W. D. Walsh and William C. Earhuff—all of Los Angeles, California. To deal in manufactured rubber goods.

Empire Essenkay Co., September 13, 1912; under the laws of New York; authorized capital, $10,000. Incorporators: Herman C. Cowen, John W. Cumming and Howard C. Wilbur—all of Catskill, New York. Location of principal office, Albany, New York.

Englebert Tyre Co., September 13, 1912; under the laws of New York; authorized capital, $100,000. Incorporators: Samuel K. Kellock, 135 Kenmore place; Clarence B. Campbell, 16 Sydney place—both of Brooklyn, New York; and Edward W. Elverson, 82 Beaver street, New York. Location of principal office, New York. To deal in automobile and other tires.

Hallett Vehicle Tire Co., August 17, 1912; under the laws of Maine; authorized capital, $500,000. Incorporators: C. L. Andrews, L. J. Coleman and G. E. Beane—all of Augusta, Maine. To manufacture, buy, sell and deal in rubber, vegetable oils, substances for making artificial rubber and the like; to manufacture, buy, sell and deal in automobile tires, shoes, fillers, etc.

Hudson Raincoat and Duster Co., August 26, 1912; under the laws of New York; authorized capital, $6,000. Incorporators: Max Klein, 29 St. Marks place; Fischel Karp, 106 Avenue D, and Leon Wieselthier, 1341 Teller avenue—all of New York. Location of principal office, New York. To manufacture rubberized and other clothing.

Link Shoe Co., September 4, 1912; under the laws of New York; authorized capital, $10,000 Incorporators, Nathan Blyn, 27 East 124th street; Jacob Blyn, 22 Mount Morris Park, West, and Henry Blyn, 316 West 51st street—all of New York. Location of principal office, New York. To deal in leather and rubber goods.

The New England Rubber Reclaiming Co., August 26, 1912; under the laws of Massachusetts; authorized capital, $25,000. Incorporators: Paul Miller Broomfield, 121 Crawford street, Roxbury; Mary C. Cavanagh, 59 Olney street, and Harry Klein, 128 Chambers street, Boston—all of Massachusetts. To buy, sell and manufacture rubber, rubber waste, and rubber goods and merchandise.

Paragon Rubber Co., September 8, 1912; under the laws of New York; authorized capital, $5,000. Incorporators: Henry Horowitz, 124 West 117th street; Isadore Samisch, 133 West Twenty-first street, and Alexander Friedman, 220 Henry street, all of New York. Location of principal office, New York.

The Pharis Tire and Rubber Co., August 27, 1912; under the laws of Ohio; authorized capital, $25,000. Incorporators: Carl, Emma W. and Mabel A. Pharis. Location of principal office, Columbus, Ohio. To manufacture and deal in automobile, bicycle, motor-cycle, etc., tires and manufacture and sell appliances for same.

The Premier Waterproof and Rubber Co., September 4, 1912; under the laws of New York; authorized capital, $1,000. Incorporators: Ethel Cohan, 109 Ellery street, Brooklyn, New York; George A. Newman, Garden City, New York, and Albert A. Raphael, 23 Morningside avenue, New York. Location of principal office, New York.

Rondout Rubber Co., September 12, 1912; under the laws of New York; authorized capital, $1,000,000. Incorporators: Harry T. Clews, 115 East Thirty-ninth street; Frank C. Brannan, 327 West 124th street, and William J. Johnson, 1436 Crotona Park, East, Bronx, all of New York. Location of principal office, Kingston, New York.

The Sangha Rubber and Trading Co., August 16, 1912; under the laws of Connecticut; authorized capital, $50,000. Incorporators: Ewald G. Walker, Morristown, New Jersey; William D. and Laura I. Rorer, both of West Haven, Connecticut. To buy, sell, produce, import and export, manufacture and deal, as principal, in rubber, ivory and goods, wares and merchandise, etc.

United States Tire Sales Co., September 7, 1912; under the laws of New York; authorized capital, $500. Incorporators: A. G. Thaanum, 13-21 Park Row, New York; Joseph T. Weed, 150 Hicks street, Brooklyn, New York, and Max Greenberg, 32 West 112th street, New York.

FOUR FINE WAYS TO WEAR OUT TIRES.

Any motorist who has tire money that is burdensome to him and who would like to see the tire factories running with triple shifts, can find relief and promote a worthy cause by adhering to four very simple rules.

The first rule is of course, as everybody understands, to keep the tire only partially filled with air. This is so generally recognized as the best way of disposing of a tire that it needs no further consideration.

The second rule, which is important to observe, is to start the car into full speed and then apply the brakes. If the car can be made to grind along five or ten feet, particularly on a rough road, and this operation be repeated a few times, very noticeable sections of the tread can easily be removed.

Rule three is to stick to street car tracks, particularly attempting to cross them at a very slight angle so that the tire is pointed in one direction and the track constantly trying to pull it in another. Or if it is a country road where there are no car tracks, close adherence to ruts, the narrower and deeper the better, will bring about the same result. An auxiliary to this rule is on all possible occasions to run the car close to the curb, so that the side of the casings will rub as much as possible against the stone. This is a fine discourager of tire longevity.

Rule four is always to keep in mind that corners should be turned at a high rate of speed. This gives the whole tire an effective strain and helps materially to accelerate its pace to the junk heap.

Any motorist who will carefully observe the four rules enumerated above will find himself in a position to have fine new, handsome tires put on his wheels with great frequency.

A NEW TIRE PLANT FOR COLUMBUS.

The Pharis Bros. Rubber Co., Columbus, Ohio, has purchased the Newark Tire and Rubber Co., of Newark, Ohio, and expects to move the business to Columbus in the near future. New machinery will be added to the plant, so that its capacity for turning out tires will be materially increased. The output of the company will be called the "Pharis" tire, and will be made in two types, a wrapped-tread tire, good for 5,000 miles, and a molded tire with a 3,500 mile guarantee.

UNITED STATES RUBBER CO.'S ISSUES.

Transactions on the New York Stock Exchange for three weeks, ending September 14:

Common Stock, $25,000,000.

[The treasury of a subsidiary company holds $1,334,000.]
Last Dividend (special), July 8, 1912—20%.

Week Aug. 31	Sales 3,475 shares	High 51¾	Low 51
Week Sept. 7	Sales 3,400 shares	High 51½	Low 51
Week Sept. 14	Sales 2,500 shares	High 51⅜	Low 50½

For the year—High, 67⅞, May 21; Low, 45¼, February 1.
Last year—High, 48½; Low, 30½.

First Preferred Stock, $39,824,400.

Last Dividend, April 30, 1912—2%.

Week Aug. 31	Sales 430 shares	High 108⅞	Low 108½
Week Sept. 7	Sales 600 shares	High 108⅞	Low 108¾
Week Sept. 14	Sales 510 shares	High 108½	Low 108¼

For the year—High, 116, May 20; Low, 105⅝, July 25.
Last year—High, 115½; Low, 104.

Second Preferred Stock, $9,965,000.

Last Dividend, April 30, 1912—1½%.

Week Aug. 31	Sales 100 shares	High 79	Low 79
Week Sept. 7	Sales .... shares	High	Low ....
Week Sept. 14	Sales .... shares	High	Low ....

For the year—High, 85½, May 21; Low, 75, January 23.
Last year—High, 79; Low, 66.

Six Per Cent. Trust Gold Bonds, $18,000,000.

Outstanding of the 1908 issue of $20,000,000.

Week Aug. 31	Sales 38 bonds	High 104⅜	Low 104⅛
Week Sept. 7	Sales 7 bonds	High 104¼	Low 104⅛
Week Sept. 14	Sales 38 bonds	High 104¼	Low 103¾

For the year—High, 105, February 24; Low, 103¾, January 6.
Last year—High, 105; Low, 101¾.

THE GOODYEAR TIRE COMPANY MAKING COATS.

The Goodyear Tire and Rubber Co., Akron, Ohio, has recently embarked upon the manufacture of rubberized clothing and is now placing on the market a variety of rubber coats, one of which is shown in the accompanying illustration. The fabric, which is imported, is thoroughly impregnated with rubber, and this is done in such a way that the material does not stiffen, even after the coat has been long exposed to a pelting storm and is thoroughly wet.

Coat Made by Goodyear Tire and Rubber Co.

TO KEEP AUTO-BUSSES FROM SPLASHING.

In London they are experimenting with a splash-guard to keep the heavy auto-busses that run through their sometimes muddy streets from disfiguring pedestrians on adjacent sidewalks. These splash guards consist of a screen made of a steel mesh that is hung on the hub of the wheel and drops close to the ground. The mud that is thrown up by the wheel, instead of going off into space to hit any target, human or otherwise, that may be at hand, strikes against the screen and does no damage. Where mud-holes prevail in the roadways of a city, these or similar guards are certainly desirable, but the absence of mud-holes seems even a better and simpler solution of the problem.

AN ENGLISH MARKET FOR AMERICAN TIRES.

Mr. Alfred Halstead, American consul at Birmingham, England, made some interesting observations on England as a tire market for American manufactures, in a report which he recently sent to the State Department. In Mr. Halstead's opinion, there is an excellent market in the British Isles for American automobile tires, but it will take a crowbar of gold to pry it open. Here's what he says:

"The rapid growth of the automobile industry, the enormous development in the manufacture of motorcycles, and the continued British use of the ordinary bicycle have made the United Kingdom as good a market as there is for rubber tires of all kinds as well as for other articles made of rubber that are required in these industries. There are, naturally, great British firms that make rubber tires of all kinds, and they have also been very successfully introduced by prominent continental makers.

Despite the large sales of American automobiles here, American tires have not been introduced into the United Kingdom to the degree that might have been expected, especially as it is stated that there is more actual rubber in the American article than there is in the British or European product, in which, it is said, there is not more than 7 to 10 per cent. of rubber in the outer casing and 35 per cent. in the inner tube, rubber substitutes and filters being extensively used. If the trade in tires is to be successfully cultivated by United States manufacturers, heavy expenditure for advertising and other introductory measures will be necessary, but should be preceded by investigations as to the exact requirements of the market. American exporters may not understand how important a part in the introduction of tires and motor parts is played by hill-climbing and other tests and races. Every such success is regarded as the best possible advertisement, and it is quite customary for drivers of automobiles or riders of motorcycles to be in the employ of various firms and to be paid a bonus for each win they make.

"If tires are to be introduced by American firms, it will be absolutely necessary for a trained organization to be created in England, and the tactics pursued by British and other makers followed, with such modifications as American sales ingenuity may deem desirable. The thorough introduction of tires by any American company will cost an immense amount of money for advertising, racing expenses, etc., and for many months there would be no return; but if the American tires are as good as they are said to be, and prices right, success, when it comes, will be great, even though delayed by the strong hold of British and foreign tires on this market."

DETROIT'S 1913 PRODUCTION OF MOTOR CARS.

The Detroit makers of automobiles expect to add a third of a million motor vehicles in 1913 to the number already in existence. A conference was recently held between representatives of the various Detroit manufacturers and representatives of the railroads, with a view to ascertaining how large a freight-car equipment they would have to furnish. After hearing that the automobile makers expected to produce 330,000 automobiles the representatives of the railroads decided that the 1913 Detroit output would require over 100,000 freight cars.

A RECORD FOR TIRE ECONOMY.

According to the Nebraska papers, there is a certain owner of an automobile who lives in Norfolk in that state, who has driven a car for four years at a total tire expense, covering all repairs, of $2.70. Of this amount, $2.35 was caused by a puncture made by a nail. If it had not been for that nail, the four years' tire expense would have been 35 cents, or less than 9 cents a year; and yet so much is said about the high cost of living.

AN ANNOUNCEMENT EXTRAORDINARY.

There is an original genius in Bridgeport, Connecticut, who styles himself "Chemist Peck, Inventor," who is the inventor of a "Nu-Rubber Tire-Lining" which he describes as follows:

"Each Lining provides 1,000 instant, Self-Mending Plugs—Permanent, Unseen, Harmless, becoming a part of the tire; giving usually Double-Life and Value"—and so on, for several hundred more words to the same general effect.

But the "real cream" of his announcement is contained in the following paragraph:

"Eclesia, New Era, Federation of Nations, United States of the Globe. Initiated and Represented by the Corporation Eclesia, Stratford on the Ousatonic, Independence Day, July 4, C. D. 1908. Incorporated and Registered Copyright, State of Connecticut, U. S. A., 1908, Merit Certificate and Patent Award by Corporation Eclesia for Nu-Rubber Tire-Lining. Assigned for Protection and Promotion of Policies and Benefices Mutual and General."

If Nu-Rubber even remotely lives up to its literature, it must be marvelous stuff. Evidently Chemist Peck does not intend to hide his literary light under a bushel.

DAHL TIRE STOCK INCREASED TO $6,000,000.

At the annual meeting of the stockholders of the Dahl Tire Co., which was held at Minneapolis early in September, the capital stock was increased to $6,000,000 and the company reorganized. The new company will take over all the patent rights owned by the old company, and in addition to manufacturing Dahl tires, will also manufacture various tire accessories. The central office will be in New York city, with a branch office in Chicago.

A NEW RUBBER CEMENT COMPANY.

The Standard Rubber Cement Co., a New York corporation with a capital stock of $100,000, recently began business in a factory at 772 Humboldt street, Brooklyn, New York. The company expects to manufacture rubber cement of all kinds, but will make a specialty of rain coat and channel cement. An additional enterprise will be the washing and refining of crude rubber for the trade.

COMPRESSED AIR CUSHIONS FOR AUTOMOBILES.

Comparatively few people, who have heard Josef Hofmann operate on the piano, are aware of the fact that in addition to being a marvelous musician, he is very much of an inventor. He has recently invented an air-cushion automobile. It is being tested in Switzerland, and some are being constructed at the Saurer Machine Works in the district of St. Gall, Switzerland. It is described as follows:

"In place of the usual steel springs it has four brass cylinders for compressed air, resting on the axles under the four corners of the automobile body, and these, by means of pistons and soft leather diaphragms, greatly reduce the swaying and jolting.

"It is claimed for the new invention that it is adaptable to all kinds of roads, regardless of speed or weight of machine; that the air cushions work instantaneously with softness and ease of movement; that there is an entire absence of vibration, as no metal springs intervene between the axle and the car body; that there is almost perfect balance in rounding curves; and that there is as nearly perfect working safety as can be secured."

This Hofmann air-cushion auto has been put to severe tests during a number of months, and has run well towards 5,000 miles over rather trying roads, with results that are said to be very satisfactory. It has made a speed of 40 miles an hour over rough roads.

PERSONAL MENTION.

Ellsworth F. Norton, of E. F. Norton & Co., Chicago, Illinois, buyers and sellers of scrap rubber, was married on September 10 last to Miss Laura Steffan, of that city.

Miss Maie Elizabeth Spadone, of Brooklyn, New York, daughter of Walter W. Spadone, vice-president of the Gutta Percha and Rubber Manufacturing Co., New York City, was married on September 1 to Hamilton Disston Saxton, of New London, Connecticut.

Mr. Hartman, who had charge of the sheet packing department of the Manhattan Rubber Manufacturing Co., Passaic, New Jersey, died early in September after a short illness.

Albert Weber, of Weber & Schaer, of Hamburg, Germany, recently arrived here on the Olympic, the purpose of his visit being the renewal of many friendships in the trade in this country. Mr. Weber is the vice-president of the "Verein am Gummi Handel Betheiligten Firmen"; as well as a promoter and director of many important importing and growing associations. These include: The Gesellschaft Sued Kamerun; Deutsche Kamerun Gesellschaft; Mahesa Rubber Plantations, Limited, and the Anglo Bolivian Rubber Estates, Limited.

I. Henry Hirsch, of Adolph Hirsch & Co., crude rubber importers, sailed for Europe on September 3, by "Kaiser Wilhelm der Grosse."

Mr. William G. Brown, the well-known distributor of rubber manufacturers' supplies, of 701 Provident Bank building, Cincinnati, Ohio, is in New York with the two-fold purpose of placing his daughter, Miss Helen Brown, at Vassar, and attendance at the rubber show now in progress at the Grand Central Palace.

DR. EDUARD MARCKWALD IN AMERICA.

Dr. Eduard Marckwald, who for the last 12 years has been at the head of the Chemical Laboratory for Commerce and Industry, in Berlin, is now visiting the United States, and expects to remain in this country for the next three or four weeks. He is not only a well known German chemical authority but is especially prominent in the field of rubber chemistry.

TWO WALPOLE APPOINTMENTS.

The Walpole Rubber Co., of Walpole, Massachusetts, has recently made two new appointments to the selling staff of its New York headquarters at 80 Reade street. Charles O. Anthony, who for the past nine years has been connected with the New York Insulated Wire Co., has been added to the selling force of the New York office, as has also August R. J. Rode, who will be connected with the selling force of the druggists' sundries department.

THE SUPREME COURT UPHOLDS THE COMPLAINT.

In our last issue we referred to a decision in an action recently brought by a rubber manufacturing company against the National Board of Fire Underwriters. We have ascertained that the decision we there referred to merely called for the reframing of the complaint in the action; and that this was at once done by the plaintiff. The defendant then claimed by demurrer that no sufficient cause of action was shown in the complaint. This has since been argued before the Supreme Court, and a decision has been rendered holding the complaint to be good.

TO MAKE RUBBER GREASE-PROOF.

The Starkweather & Williams Co., manufacturers of textile specialties, Providence, Rhode Island, state that they have discovered a process by which they can put a coating, which is invisible and cannot be detected by touch, over a rubber surface so as to make it proof against grease. They have not only given this matter a thorough testing, but they have already begun to supply rubber manufacturers with this preparation. It is, of course, of obvious value for aprons, and in the making of clothing that is to be used where there is any grease, as, for instance, in a dairy. The name of this preparation is "Boline." The company is now increasing its facilities and expects to be ready before long to make this new product in considerable quantities.

COAL PRICES TO SOAR?

Advices from Cleveland speak of an impending car shortage, likely to be the greatest in the history of transportation, as being liable to occur within a month. As a result, it is anticipated that the prices of both hard and soft coal will advance. Local distributors of anthracite are said to be fifty per cent. behind in their receipts, due to the closing of the mines last spring and the failure of the railroads to move the output.

RUBBER FLOORS FOR STAGE DANCING.

According to European advices, the slippery floors on which stage dances have hitherto been executed at Parisian music halls, are being replaced by rubber matting. Two rubber mats about 17 feet long by 7 feet wide are placed side by side in the center of the stage. The mats are about ⅛-inch in thickness, a couple of them being said to cost about $50 or $60.

It has been suggested that sooner or later the whole stage will be covered with a rubber tiled flooring. That stage floors are at present too slippery is an admitted fact, the question arising: what is to be the consequence of prospective increased speed in terpsichorean evolutions?

FOUR-INCH TRUCK TIRES.

Foreigners, particularly the English, have been rather prone to criticize American truck tires on the ground that they were much too thin to give the best possible continuous service. American truck tires usually remain about 2¾ inches in thickness irrespective of the width of the tire, while in England and on the continent the thickness of a tire—or the sectional height—is in proportion to the width; for instance, a tire 3½ inches wide will be 2¾ inches thick, but a 6-inch tire will be 4-inch thickness. Undoubtedly this extra thickness gives greatly increased wear and also diminishes the jolting. On the other hand, of course, it takes much more rubber.

ASBESTOS IN THE UNITED STATES AND CANADA.

The total production in the United States for 1911, according to the United States geological survey, was valued at $119,935; the raw material imported from Canada was valued at more than 11 times that amount. Canada's production of asbestos in 1911 was worth nearly $3,000,000.

MR. TAFT TO HAVE SOME RUBBER BOOTS.

The Boston Rubber Shoe Co., at its factory in Malden, Massachusetts, is manufacturing a special pair of fishermen's hip boots, to be presented to President Taft when he visits that city during the carnival which is soon to be held in the Malden Anniversary Week. A great many of our statesmen have been said in the past to belong to the "gum-shoe brigade," but this is the first time that any man so distinguished in our political life has been openly decorated with a pair of rubber boots.

MOTOR TRUCK TIRES IMPROVING.

According to a prominent tire manufacturer, no period in the history of the motor truck industry has developed such marked improvements in solid tires as the past year. A proof of this statement may be found in the fact that within the year manufacturers have increased their mileage guarantees 2,000 and in some instances 4,000 miles. It now is possible for a truck owner to buy tires covered by a guarantee of 10,000 miles, irrespective of the city or locality in which they are to be used. Up to a short time ago manufacturers were compelled to discriminate against certain cities and localities because of local conditions, such as bad pavements, unimproved highways, the prevalence of hills and for other causes peculiar to a particular section. In such places guaranteed mileage was less than where better conditions prevailed.

Commenting on the solid tire situation at the present time, F. F. Phillips, of the United States Tire Co., says:

"Truck owners are not only receiving greater mileage guarantees today than ever before, but they are getting better all-around service. Our new demountable solid tire, which has been on the market about eight months, is sold under a flat guarantee of 10,000 miles, conditional only upon the service being had within one year's time. The locality where the tires are to run makes no difference in our case."

SOME HIGHLY VALUABLE SUGGESTIONS.

A correspondent in a recent number of "Motorcycling" contributes the following interesting economic suggestion. "If you have an old raincoat, mackintosh or like garment, split it down the back about the length of the regular vent, sew four or five buttons on strongly, and make button holes or clasps corresponding on each side of the front of the garment. When buttoned together, like illustration, it completely covers your good clothes." This suggestion is further elucidated by the accompanying cut, showing just how it is done.

But why stop with utilizing an old rubber garment in the method indicated? Why not complete the good work? An old football cover, with the lacing taken out and the slit extended possibly an inch or two, would make a clever motor cap, coming well down over the ears and fitting the head snugly. Two ten-inch sections cut out of an old automobile tire and turned up a little at the two ends would make a very fine pair of rubber shoes. Naturally the sides of these cut-open sections would clamp the foot and hold on like a pair of "Eversticks." Furthermore, if an old hot water bottle were cut in two across the middle, and gathering strings inserted around the edges you would have a fine pair of rubber mittens. These could readily be converted into gloves by simply cutting the necessary holes for the thumb and fingers to project through.

It will be seen at once from the above suggestions that anyone with a little thought and ingenuity, a few buttons, a string or two, and possibly a nail, can make almost anything he wants in the way of a rubber outfit from discarded rubber relics and thus materially cut down the present high cost of living.

THE UNITED STATES TIRE CO.'S ST. LOUIS OFFICE.

The United States Tire Co. expects soon to move into a new building at Locust street and Compton avenue, St. Louis, Missouri, of which it is said to have taken a ten years' lease.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED AUGUST 6, 1912.

No. 1,034,468. Tire for automobile wheels. H. Knoch, Aldershof, near Berlin, Germany.

1,034,475. Resilient vehicle wheel. M. Mathiesen, San Antonio, Texas.

1,034,497. Elastic suspension device for motor cars. F. Pagliano, Turin, Italy.

1,034,511. Automatic hose and tire connector. E. J. Rohrbacher, Portland, Ore.

1,034,524. Spring wheel. C. Sjogren, Wessington Springs, S. D.

1,034,720. Spring cushion tire. N. McQueen, Ludowici, Ga.

1,034,744. Shoe or boot. F. Tilt and J. E. Telling, Holland. Mich.

1,034,748. Pneumatic tire. E. Weil, New Orleans, La.

1,034,763. Cushion innersole for shoes. F. O. Brown, St. Louis, Mo.

1,034,779. Device for holding reins, leaches, and the like. H. Franzky, Liegnitz, and J. Wieczorek, Haynau, Germany.

1,034,847. Vehicle wheel. P. I. Viel, Paris, France.

1,034,942. Resilient metal tire for vehicle wheels. F. W. Wieber, Colorado Springs, Col.

1,034,966. Tire. H. A. Brandenburger, St. Louis, Mo.

1,034,975. Resilient wheel. Z. D. Butts, Cleveland, Ohio.

1,034,980. Spring wheel. J. F. Cocowitch, Dunnellon, Fla.

1,035,004. Vehicle wheel. T. A. Hargraves and E. J. McCord, Belfast, Ireland.

1,035,052. Spring tire. C. P. Rosier, Boulder, Col.

1,035,058. Spring wheel for automobiles and other vehicles. W. Stephens, New Bedford, Mass., and H. M. Gaston, Newport, R. I.

1,035,078. Resilient tire for vehicle wheels. W. W. Broga, Springfield, Mass.

1,035,107. Elastic material. W. J. Teufel, Stuttgart, Germany.

1,035,128. Cushion tire for wheels. N. McQueen, Ludowici, Ga.

Reissue.

13,454. Supporting and retaining device for spare tires. W. A. Allen, New York.

ISSUED AUGUST 13, 1912.

1,035,138. Vehicle tire. F. N. Ashley, New York.

1,035,207. J. K. Libby, Malden, Mass.

1,035,217. Face protector. O. H. McQuary, Jr., Lawrence, Kan.

1,035,283. Self-inflating and non-collapsible pneumatic tire. F. F. Wear, San Francisco, Cal.

1,035,367. Resilient wheel. A. Loock, Hayfield, Iowa.

1,035,371. Cushion heel. C. H. C. Martin, Forestville, N. Y.

1,035,473. Tire. A. C. Rovelli, Philadelphia, Pa.

1,035,487. Vehicle tire. G. E. Starn, assignor to Starn Tire Mfg. Co., Camden, N. J.

1,035,560. Method of refilling aerial vehicles during a flight. H. Erdmann, Charlottenburg, Germany.

1,035,586. Grip tread for elastic tires. C. L. Hoff, York, Pa.

1,035,749. Apparatus for making tires. J. N. Satterthwaite, assignor to Empire Tire Co.—both of Trenton, N. J.

1,035,788. Synthetic caoutchouc. A. Heinemann, South Kensington, London, England.

1,035,804. Air compressor. M. Mintz, Rock Island, Ill.

Trade Marks.

64,275. Parker, Stearns & Co., New York. The word *Boudoir*. For rubber bathing caps.

64,406. Hood Rubber Co., Boston, Mass. The word *Tuxedo*. For rubber boots, shoes, etc.

64,409. International Shoe Co., St. Louis, Mo. The words *Golden West*. For rubber boots and shoes.

ISSUED AUGUST 20, 1912.

1,035,851. Elastic tire for the wheels of vehicles. F. E. Blaisdell, Hammersmith, England.

1,035,859. Metallic packing. P. Conniff, Washington, D. C.

1,035,867. Wire winding machine. A. L. Eastham, Beaumont, Tex., assignor to J. A. Wiggs, Chattanooga, Tenn.

1,035,870. Vehicle tire. J. G. Funk, Swissvaleborough, Pa.

1,035,912. Wheel. M. C. Rose, Cleveland, Ohio.

1,036,016. Tire. E. Siegel and J. Ruppert, Jr., New York.

1,036,020. Tire holder. A. M. Sonnichsen, assignor to Auto Parts Mfg. Co.—both of Milwaukee, Wis.

1,036,065. Vehicle tire. C. W. Blaney, Philadelphia, Pa.

1,036,120. Hose supporting device. W. Humbaugh, Dayton. Ohio.

1,036,188. Resilient antifriction hub for vehicle wheels. C. G. Capwell, Roslindale, Mass.

1,036,251. Pneumatic rubber tire protector. J. F. Johnson, Jamestown, N. Y.

1,036,311. Wire cutting machine. F. H. Nullmeyer and C. A. Porath, Struthers, Ohio, assignors to The Youngstown Sheet & Tube Co., Youngstown, Ohio.

1,036,340. Cushioning device. A. F. Rockwell and C. F. Schmelz, assignors to The New Departure Mfg. Co.—both of Bristol, Conn.

1,036,349. Hose coupling. C. C. Schultz, Victor, Iowa.

1,036,428. Coated metal wire rubber fabric. R. M. Bissell, Valcour, N. Y.

1,036,448. Device for testing piston rings. D. J. Campbell, Muskegon, Mich.

1,036,455. Pneumatic tire. J. H. Clune, Springfield, Mass.

1,036,493. Pneumatic tire. B. B. Hill, London, England.

1,036,516. Rubber tire. J. J. Beitler, New York, assignor to H. C. Beitler, Chicago, Ill.

ISSUED AUGUST 27, 1912.

1,036,532. Shelter for dirigible balloons, airships and the like. R. A. Katz Berlin, Germany.

1,036,533. Vehicle wheel. W. C. Allen, Kansas City, Mo.

1,036,576. Attaching rubber to metals. L. Daft, Rutherford, N. J., assignor to Electro-Chemical Rubber & Mfg. Co. of New Jersey.

1,036,579. Resilient wheel. W. W. Darling, Delta, Col.

1,036,595. Suspender garter for stockings. H. Fenton, Glebe Point, near Sydney, New South Wales, Australia.

1,036,599. Vehicle wheel. A. H. Flournoy, Heraldsburg, Cal.

1,036,602. Signal for pneumatic tires. F. L. Fuller, Sacramento, Cal.

1,036,685. Vehicle wheel. R. D. Muro, Habana, Cuba.

1,036,748. Tire removing device. W. L. Tobey, Winthrop, Mass.

1,036,776. Tire armor. H. Auperl, New York.

1,036,829. Cushion tired wheel. N. Gratz, Boise, Idaho.

1,036,855. Pneumatic vehicle wheel. G. Kanter, Murtoa, Victoria, Australia.

1,036,856. Pneumatic shock absorber for vehicles. G. Kanter, Murtoa, Victoria, Australia.

1,036,955. Tire. G. V. Benninghoff, Meadville, Pa.

1,037,116. Tread for tires. J. A. Bowden, Los Angeles, Cal.

1,037,144. Vehicle wheel. T. J. Holland, Antigo, Wis.

1,037,158. Process of manufacturing substitutes for oils, caoutchouc, resins and the like. L. Lilienfeld, Vienna, Austria-Hungary.

Trade Mark.

52,874. Hood Rubber Co., Boston, Mass. The word *Winner*. For rubber boots, shoes, etc.

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1910.

**Denotes Patents for American Inventions.*

[Abstracted in the Illustrated Official Journal, August 8, 1912.]

9,264. Rubber substitutes. J. Stockhausen, 105 Fischelnerstrasse, Crefeld, Germany.

9,281. Tire attachments to rims. J. W. Hall, 70 Josephine avenue, Brixton Hill, and C. Baynes, 9 Kensington Court Mansions—both in London.

9,290. Wheel tires. T. H. B. Gayner, 113 Neville street, Middle Park, South Melbourne, Australia.

9,321. Moulding tires. Margetts International Sectional Tire Co., 56 Moorgate street, and A. J. M. Smith, Venner Villa, Venner Road, Sydenham—both in London.

9,364. Fluid pressure relays for amplifying sounds. Soc. des Etablissements, Gaumont, 57, Rue St. Roche, Paris.

9,427. Vehicle wheels. F. H. de Lostalot, 3 Avenue des Moulineaux, Billancourt, Seine, France.

9,434. Vehicle wheels. H. Farjas, 13 Rue Vignon, Paris.

9,497. Copying documents, etc. B. J. Hall, 41 Castelnau, Barnes, London.

9,523. Electric conductors. C. J. Beaver, Rangemoor Crescent Road, Hale, aid E. A. Claremont, Broom Cottage, High Leigh—both in Cheshire.

9,534. Sponge substitutes. B. W. Wittenberg, 31 Weidendamm, Riga, Russia.

9,535. Sphygmometers. A. A. Thornton, 38 Chancery Lane, London.

9,546. Wheel tires. C. Schmidt, Ichenhausen, Bavaria.

9,580. Vehicle wheels. Austin Motor Co., and H. Austin, Longbridge Works, Northfield, near Birmingham.

9,600. India rubber washing machines, etc. R. Bridge, Castleton Ironworks, Castleton, Lancashire.

9,635. Railway vehicles. A. Spencer, 77 Cannon street, London.

9,722. Diolefines; caoutchouc. W. H. Perkin and C. Weizmann, University Manchester, and F. E. Matthews and E. H. Strange, 7 Maple Inn, London.

9,734. Chair feet. H. Cohrs, 73 Steinstrasse, Dusseldorf, Germany.

[Abstracted in the Illustrated Official Journal, August 14, 1912.]

9,778. Discharging bottles, etc. R. G. Slee, Dowanhurst, Atkins Road, Clapham Park, London.

9,833. Boot machinery. F. H. and H. S. Pochin, of Standard Engineering Co., Evington Valley Road, Leicester.

9,855. Baths. A. C. Franklin, 24 Chatham Place, and G. W. Beall, 51 Gardner street—both in Brighton.

9,888. Signals. J. Buck and H. Them, Dinglingen, Baden, Germany.

9,923. Filling tires. R. Zimpel, 25 Verlangerte Wilhelmstrasse, Grosslichterfelde, Berlin.

9,962. Railway buffers. J. G. Robinson, Boothdale, Fairfield, near Manchester.

*10,023. Tire valves. F. B. Carlisle, 35 High street, Malden, Mass., U. S. A.

10,064. Rubber strips for carpets, floor rugs, mats, etc. C. E. Player, Birkenhead, Auckland, New Zealand.

10,126. Wheel tires. A. Boerner, 45 Rue Henri Maus, Brussels.

10,128. Electric conductors. Scandinavian Belting and T. E. Delmaine, 59 Southwark street, London.

10,155. Vehicle wheels. H. A. Pryor, 70 Chancery Lane, London.

10,216. Treating india rubber. Hiestrich (Nachfolger), W., 4, Jungfernstieg, Hamburg, Germany.

10,277. Boots, etc. O. Budt, 1 Burgstrasse, Werniegerode, Germany.

10,232. Rubber sheets in leather manufacture. A. G. Bloxam, Birkbeck Bank Chambers, London.

10,239. Date indicators. J. F. Coates, 52 King William street, and A. Emmett, 96 Nightingale Lane, Wandsworth Common—both in London.

10,257. Wheel tires. G. W. Mascord, 5 The Crescent, Barnes, London.

10,292. Rubber tapping knives. D. D. Wragg, 70 Charles street, Sheffield.

10,321. Billiard cues. E. and F. Rudolph, 12 Freiburgerstrasse, Waldenburg, Germany.

10,326. Wheel tires. A. Boerner, 45 Rue Henri Maus, Brussels.
[Abstracted in the Illustrated Official Journal, August 21, 1912.]

10,370. Lubricators. J. T. K. Maddrell, 5 De Beers Road, Kimberley, South Africa.

10,420. Rubber substitutes. R. Desouches, 20 Rue Alphonse de Neuville; A. Riasse, 46 Cité des Fleurs, and A. Duron, 63 Rue Dulong—all in Paris.

10,438. Wheel tires. E. Overy, 40 Haig Road, Plaistow, and W. F. Gould, 213 Neville Road, Forest Gate—both in London.

10,439. Heel protectors. B. Fuchs, 27 Akacfautca, Budapest.

10,451. Wheel tires. A. de Doncquers and J. de Koninck, Anderlecht, near Brussels.

10,452. Wheel tires. A. de Doncquers, Anderlecht, near Brussels.

10,473. Rubber cushions in axles of cycles. J. Roberts, 78 Granby street, Liverpool.

10,481. Moulding india rubber. W. H. Haydock, 2 Fitzwarren street, Pendleton, Manchester.

10,574. Weavers' shuttle threaders. A. MacLean, 49 Deansgate, Manchester.

10,612. Pressure gauges for tires. H. Edmunds, Parliament Mansions, Victoria street, Westminster.

10,619. Belts and bands. E. Lycett, Bromley street, Birmingham.

*10,622. Wheel tires, etc. E. G. Dreger and F. E. Püster, 19 Tehama street, San Francisco, Cal., U. S. A.

10,646. Bottle stoppers. Johnson & Sons, 23 Cross street, Finsbury, London, and E. A. Marr, 81 Stretton Road, East Croydon, Surrey.

*10,672. Vehicle wheels. M. Clark, 401 Steinway Hall, Chicago, Ill., U. S. A.

10,698. A box for bottles. G. Leigh, Warren street, Stockport, Cheshire.

10,720. Vehicle wheels. J. N. Mollett, 6 Eastcheap, and T. P. Thomson, 434 Strand—both in London.

10,722. Vehicle wheels. E. Sutcliffe, 19 Bradford Road, Brighouse, Yorkshire.

10,726. Vehicle wheels. C. R. Strange, Merilbah, Clan Alpine street, Mosman, New South Wales, Australia.

10,732. Vehicle wheels. H. W. Spence, 56 Millicent avenue, Toronto, Canada.

10,808. Vehicle wheels. H. W. Toengers, Marie House, Brockley View, Forest Hill, London.

10,816. Electric meters. Chamberlain & Hookman and S. James, Solar Works, New Bartholomew street, Birmingham.

10,826. Diolefines; caoutchouc. J. Y. Johnson, 47 Lincoln's Inn Fields, London.

*10,827. Electric coils. J. L. Milton, Hotel Moicher, Tiffin, Ohio, U. S. A.

10,896. Buoys. D. Pesci, 4 Piazza Mazzini, Pisa, Italy.

10,914. Caoutchouc substances. J. Y. Johnson, 47 Lincoln's Inn Fields, London.

[Abstracted in the Illustrated Official Journal, August 28, 1912.]

10,940. Compressing air, etc. G. Kubler, Brandon, Freta Road, Brexley Heath, and G. S. Woollatt, "Weathersfield," Brexley Road, Erith—both in Kent, and Frazer & Chalmers, 3 London Wall Buildings, London.

10,942. Extracting rubber, etc. A. J. Boult, 111 Hatton Garden, London.

11,060. Wheel tires. H. H. Cuthbert, 7 Belgrave Mansions, Grosvenor Gardens, and A. Tomlins, 130 Warwick street, Eccleston Square—both in London.

11,093. Pliers for manipulating elastic tires. J. Platt, Totley Rise, Bushey Wood, Dore, near Sheffield.

11,101. Smoking india rubber. A. Woosnam, 46 Lincoln's Inn Fields, London.

11,177. Medical syringe. F. J. Hering, Basel-Binningen, Switzerland.

*11,212. Artificial teeth. J. Petry, 2022 Lowrie street, Pittsburgh, Pa., U. S. A.

11,247. Skates. A. J. Mollinger, 42 van Nispenstaat, Nymegen, Holland.

11,301. Corsets. W. Pretty & Sons and L. E. Pretty, Tower Ramparts, Ipswich.

11,329. Cords. R. Latour and A. Cappelle, 157 Chaussee d' Ypres, Menin, Belgium.

11,449. Wheel tires. R. Withy, 103 Verney Road, North Camberwell, London.

11,432. Reclaimed rubber. H. L. Terry, 23 Hopwood avenue, Market Place, and G. Spencer, Dudley Bank, Withington Road—both in Manchester, and E. L. Curbishley, Woodlea, Albert Road, Cheadle Hulme, near Manchester.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

439,519 (January 30, 1912). J. G. Peck. Elastic wheel.

439,564 (January 31). Pugniet & Co. Manufacture of rubber articles by stamping.

439,570 (January 31). R. Reinecke and E. Knoll. Process for production of a substitute for ebonite.

439,579 (January 31). G. G. Le Meneust. Vehicle wheel with elastic tire.

439,606 (January 29). Dupont & Ameripoque. Metallic elastic dismountable wheel, with special axle, applicable to all kinds of automobiles.

439,651 (April 13, 1911). H. Morin. Insulating product and process for its manufacture.

439,662 (February 2, 1912). P. Beer. Boiler press for the vulcanization of rubber.

439,715 (February 5). Bolat, Geiss & Richter. Elastic wheel tire, specially for automobiles.

439,766 (January 6). F. M. Henry. Combined sectional tire and wheel rim.

439,796 (February 2). A. Vertua. Pneumatic vehicle wheel.

439,797 (February 3). A. Mascart. Elastic vehicle tire.

439,805 (February 6). A. Bienassez. Anti-skid device for elastic tires.

439,841 (February 7). P. Rousset. Device for mounting and dismounting pneumatic tires.

439,956 (February 10). E. J. Andriess. Improvements in air chambers for automobiles and other vehicles.

440,018 (February 8). V. Bernard. Articulated protector for pneumatic tires.

440,045 (February 12). H. A. Pryer. Improvements in vehicle wheels.

440,046 (February 12). A. Olier & Co. Manufacture of metallic armatures for solid rubber tires.

440,052 (February 12). J. L. Didier, Paris. Elastic protective tire.

400,055 (February 12). A. Margette. Improvements in sectional covers for tires.

400,082 (February 1). A. von Brüning. System of durable and resisting tires for all kinds of wheels.

440,119 (February 13). F. Steigenberger. Improvements in anti-skid devices for automobiles.

440,169 (February 14). J. Borde. Pneumatic tire with rigid tread.

440,271 (February 17). O. T. Banks. Improvements in sectional pneumatic tires.

440,173 (February 14). Badische Anilin und Soda Fabrik. Production of substances resembling rubber.

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

250,181 (June 20, 1911). Impregnation of fabrics, etc. Th. Budde, Charlottenburg, Berlin.

259,282 (July 29, 1911). Air tight bottle stoppers. Josef Metz, Wien.

250,350 (November 27, 1910). Prevention of shrinking in elastic fabrics. W. J. Teufel, Stuttgart.

250,537 (June 25, 1911). Method of replacing damaged tires. Deutsche Dunlop Gummi-Kompagnie a. G. Hanau.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

245,158 (1912). H. Villain, 20 Rue Coulincourt, Paris. Apparatus for softening gutta percha.

244,965 (1912). J. Ostromislensky. Manufacture of substances resembling rubber.

245,039 (1912). H. Graf, Brühl, near Cologne. Seamless assembling of rubber, without screws or other metallic appliances.

246,017 (1912). F. Pfleumer, Dresden. Hot vulcanization of rubber, gutta percha and balata.

246,245 (1912). S. Blok & Benina, Amsterdam. Filling substance for rubber and process of manufacture.

EXPORTS FROM THE UNITED STATES.

SHIPMENTS TO NON-CONTIGUOUS COUNTRIES.

For the Fiscal Year ended June 30, 1912:

Territories.	Belting, Packing and Hose.	Boots and Shoes.	Tires.*	All Other Rubber.	Total.
Alaska	$86,634	$181,505	$1,577	$21,890	$291,606
Hawaii	67,550	9,699	255,025	67,278	399,552
Porto Rico	19,485	1,198	228,135	93,226	342,044
Philippines	93,545	6,734	177,251	125,782	403,312
Total, 1911-12	$267,214	$199,136	$661,988	$308,176	$1,436,514
Total, 1910-11	239,651	181,378	507,741	287,484	1,216,354
Total, 1909-10	176,070	222,037	.....	392,114	790,221
Total, 1908-09	190,908	194,976	.....	264,722	650,606
Total, 1907-08	162,602	235,044	.....	217,801	615,447

* Included in "All Other Rubber" prior to July 1, 1910.

Review of the Crude Rubber Market.

THE principal feature of the London market during September has been the loss of the advance established the previous month, in conjunction with a further drop in values. Comparing recent quotations of fine Pará, it will be found that the following prices have ruled: June 28, 4*s.* 7½*d.*; July 26, 4*s.* 11¾*d.*; August 31, 5*s.* 1¾*d.* From the last named point, the market has steadily fallen off; the price reaching: September 4, 5*s.*; September 10, 4*s.* 10*d.*; September 11, 4*s.* 9*d.*, and September 17 (at time o fwriting) 4*s.* 7½*d.* Thus the price is again where it was on June 28.

As to plantation rubber, the market has followed more or less the same course; pale crepe closing August 31 at 4*s.* 10¼*d.*; September 6, 4*s.* 9*d.*; September 10, 4*s.* 8*d.*; September 16, 4*s.* 7¼*d.*; and September 17 (at time of writing) 4*s.* 6½*d.*

The comparative movements of Pará and plantation rubber during August and September are of interest:

	Fine Pará.	Pale Crepe.
August 1	4*s.* 10½*d.*	4*s.* 10½*d.*
August 31	5*s.* 1¾*d.*	4*s.* 10¼*d.*
September 4	5*s.*	4*s.* 9½*d.*
September 10	4*s.* 10*d.*	4*s.* 8*d.*
September 11	4*s.* 9*d.*	4*s.* 7½*d.*
September 17	4*s.* 7½*d.*	4*s.* 6½*d.*

Thus plantation rubber has withstood the downward movement better than Pará has done, but it should be remembered that it did not share to the same extent as Pará in the upward course of the market during August.

Among the reasons to which the fall in quotations of plantation rubber is attributed, has been the anticipation that the quantities announced for auction would depress prices. Mail reports of the sale of August 27 of 875 tons indicate, however, that the opening was at practically unchanged prices maintained throughout the sale, which closed with steady values. Demand was remarkably well sustained; most of the buying interests having to go short.

The sale of September 10, for which nearly 1,000 tons had been expected passed off relatively well. At the opening demand was light and prices easy, though without material change. These rates were maintained throughout the sale, with moderate inquiry.

The New York market has partaken of the same general features as have characterized development in London.

At the Antwerp sales of August 28 a very satisfactory result was attained, due to a good demand from America and the Continent. Of the 360 tons Congo catalogued, 285 tons were cleared at an average advance representing 1⅜d. per pound over valuations. Out of 100 tons plantation, 90 tons were sold at a decline equalling 1⅜d. per pound.

Sales were fixed to take place at Rotterdam on Septembre 11 of 37 tons, and at Amsterdam on September 20 of 65 tons.

The Havre sale of August 28 resulted in 66 tons being sold out of the 100 tons Congo offered. Prices obtained were satisfactory, being about 2 per cent. above valuations.

According to latest advices, the London market has assumed a firmer aspect; fine Para having been quoted on 18th at 4*s.* 8*d.*, and on 19th, at 4*s.* 8½*d.* Pale crepe has recovered by 19th to 4*s.* 7*d.*

[Owing to this issue, though dated October 1, being published on September 23, in time for the Exposition, the various market reports are to a proportionately earlier date.]

NEW YORK QUOTATIONS.

FOLLOWING are the quotations at New York for Pará grades, one year ago, one month ago, September 20—the current date:

PARA.	Oct. 1,'11.	Sept. 1,'12.	Sept. 20,'12.
Islands, fine, new	107@108	112@113	109@110
Islands, fine, old	109@110	.....	111@112
Upriver, fine, new	113@114	122@123	114@115
Upriver, fine, old	115@116	124@125	121@122
Islands, coarse, new	61@ 62	58@ 59	56@ 57
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	96@ 97	96@ 97	89@ 90
Upriver, coarse, old	.....	.....	91@ 92
Cametá	66@ 67	67@ 68	63@ 64
Caucho (Peruvian) ball	98@ 99	92@ 93	87@ 88
Caucho (Peruvian) sheet	.....	80@ 81	.....
PLANTATION PARA.			
Fine smoked sheet	135@136	121@122	114@115
Fine pale crepe	133@134	120@121	114@115
Fine sheets and biscuits	128@129	117@118	111@112
CENTRALS.			
Esmeralda, sausage	87@ 88	85@ 86	83@ 84
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	86@ 87	84@ 85	82@ 83
Panama	.....	.....	.....
Mexican plantation, sheet	.....	93@ 94	.....
Mexican, scrap	86@ 87	84@ 85	80@ 81
Mexican, slab	.....	.....	.....
Mangabeira, sheet	.....	.....	.....
Guayule	46@...	57@ 58	58@ 59
Balata, sheet	83@ 84	88@ 89	85@ 86
Balata, block	58@ 59	60@ 61	56@ 57
AFRICAN.			
Lopori, ball, prime	111@112	.....	109@110
Lopori, strip, prime	.....	.....	.....
Aruwimi	101@102	104@105	104@105
Upper Congo, ball, red	110@111	107@108	105@106
Ikelemba	.....	.....	.....
Sierra Leone, 1st quality	95@ 96	100@101	96@ 97
Massai, red	96@ 97	102@103	97@ 98
Soudan, Niggers	.....	.....	.....
Cameroon, ball	70@ 71	.....	70@ 71
Benguela	70@...	.....	.....
Madagascar, pinky	85@ 86	.....	.....
Accra, flake	27@ 28	26@ 27	27@ 28
EAST INDIAN.			
Assam	.....	.....	.....
Pontianak	6@...	6¼@6⅝	6¼@6⅝
Borneo	.....	.....	.....

Late Pará cables quote:

	Per Kilo.		Per Kilo.
Islands, fine	4$600	Upriver, fine	.....
Islands, coarse	2$200	Upriver, coarse	.....
		Exchange	16 1/32d.

Latest Manáos advices:

Upriver, fine	5$825	Exchange	16 7/32d.
Upriver, coarse	3$825		

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "A decided change has come over the money market since our report for August, rates having stiffened considerably and the demand for paper fallen off. New York banks have been mostly out of the market during September, but there has been a fair demand from out of town, the best rubber names ruling at 5¼@5¾ per cent., and those not so well known 6@6½ per cent.

NEW YORK PRICES FOR AUGUST (NEW RUBBER).

	1912.	1911.	1910.
Upriver, fine	$1.16@1.23	$1.09@1.17	$1.87@2.20
Upriver, coarse	.89@ .96	.95@ .99	1.40@1.48
Islands, fine	1.06@1.13	1.02@1.09	1.78@2.10
Islands, coarse	.56@ .59	.61@ .63	.94@ .98
Cametá	.64@ .68	.66@ .68	.96@1.10

Statistics of Para Rubber (Excluding Caucho).

	New York. Fine and Medium.	Coarse.	Total, 1912.	Total, 1911.	Total, 1910.
Stocks, July 31.....*tons*	78	29 =	107	385	209
Arrivals, August	850	436 =	1,286	1,246	702
Aggregating	928	465 =	1,393	1,631	911
Deliveries, August	769	441 =	1,210	1,261	740
Stocks, August 31	159	24 =	183	370	171

	Pará. 1912.	1911.	1910	England. 1912.	1911.	1910
Stocks, July 31....*tons*	2,300	3,450	485	650	1,400	1,140
Arrivals, August	1,465	1,295	1,460	639	465	348
Aggregating	3,765	4,745	1,945	1,289	1,865	1,488
Deliveries, August ...	2,410	1,735	1,360	894	555	213
Stocks, August 31...	1,355	3,010	585	395	1,310	1,275

	1912.	1911.	1910.
World's visible supply, August 31.....*tons*	2,910	5,281	2,473
Pará receipts July 1 to August 31.....	2,785	2,445	2,960
Pará receipts of caucho, same dates.....	730	710	1,210
Afloat from Pará to United States, August 31	497	231	229
Afloat from Pará to Europe, August 31.....	480	360	215

Rubber Stock at Para.

Stock for January 31 showed an increase caused by heavier arrivals, while that of February 29 shows a slight decrease. The stock of March 31 displayed a further reduction, while that of April 30 was about the same as a month earlier. On May 31 the stock had again increased, but had receded by June 30; and had again fallen off on July 31. Large sales by the syndicate materially reduced the stock by the end of August.

February 28, 1911..*tons*	3,787	December 31 .....*tons*	2,675
March 31	4,214	January 31, 1912.....	3,370
April 30	5,104	February 29	3,240
May 31	5,350	March 31	2,730
June 30	4,545	April 30	2,770
July 31	3,884	May 31	2,995
August 31	3,450	June 30	2,685
September 30	3,102	July 31	2,300
October 31	3,320	August 31	1,355
November 30, 1911.....	3,050		

Liverpool.

William Wright & Co., report [September 2]:

Fine Pará.—The market has continued firm; there has been a good demand for spot rubber, principally old condition; a good business done at higher prices, which advanced 3*d.* per lb. For forward delivery the near positions have been in good request at advancing rates; up to 4*s.* 10*d.* [$1.18] paid for October-November. Receipts for the new crop July-August are 800 tons in excess of last year, doubtless owing to increased transport facilities. Coupled with the active demand for Plantation, there seems little chance of any decided break in values for the present. Closing value—Upriver fine, spot, 5*s.* 1½*d.* [$1.27]; September, 5*s.* 1*d.* [$1.24]; September-October, 4*s.* 11½*d.* [$1.21]; Islands fine, 4*s.* 10½*d.* [$1.19].

WEEKLY MOVEMENT OF LONDON PRICES.

[In Shillings and Pence Per Pound.]

January 5, 1912.....	4/4½	May 17, 1912	4/7½
January 12	4/5½	May 24	4/7½
January 19	4/5½	May 31	4/7½
January 26	4/8	June 7	4/8½
February 2	4/7	June 14	4/10
February 9	4/6½	June 21	4/9½
February 16	4/6¾	June 28	4/7½
February 23	4/7½	July 5	4/9
March 1	4/7½	July 12	4/10
March 8	4/9	July 19	4/10
March 15	4/10½	July 26	4/11¾
March 22	5/1½	August 2	4/11
March 29	4/11½	August 9	5/0½
April 5	4/11	August 16	5/0½
April 12	4/11	August 23	5/2
April 19	4/10¼	August 30	5/1¾
April 25	4/9	September 7	4/11¼
May 3	4/7½	September 14	4/9¼
May 10	4/7½		

Rotterdam.

Havelaar & De Vries report [August 27]:

The date of the next sales has been fixed for September 11. The quantity offered amounts to about 37 tons, as follows: Congo, 22 tons; *Hevea*, 5 tons; *Ficus*, 9 tons; *Vanar*, 1 ton.

Amsterdam.

Joosten & Janssen report [September 6]:

Our next sale by tender will be held on September 20, and comprises about 65 tons: *Hevea*, 54 tons; *Ficus*, 8 tons; *Castilloa*, 3 tons.

Plantation Rubber from the Far East.

Exports of Ceylon-Grown Rubber.

[From January 1 to July 1, 1911 and 1912. Compiled by the Ceylon Chamber of Commerce.]

	1911.	1912.
To Great Britain .....*pounds*	1,604,340	3,784,098
To United States	1,079,402	1,985,752
To Belgium	313,258	659,495
To Australia	24,374	112,899
To Germany	12,394	96,942
To Austria	255	20,474
To Japan	33,985	18,509
To Canada	9,971	16,065
To Italy	3,597	5,885
To Holland	100	2,282
To France	117	1,915
To India	85	100
To Norway and Sweden	.....	39
Total	3,081,878	6,704,455

[Same period 1910—1,468,146 pounds; same 1909—693,947.]

Total Exports from Malaya.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore, July 18.	Penang, June 30.	Port Swettenham, Corrected, June 30.	Total.
Great Britain..*pounds*	4,876,249	3,845,608	7,847,520	16,569,377
Continent	135,090	27,867	1,048,061	1,211,018
Japan	243,204	.....	.....	243,204
Australia	35,615	.....	.....	35,615
Ceylon	2,217	123,493	448,559	574,269
United States.....	1,186,413	.....	.....	1,186,413
Total	6,478,788	3,996,968	9,344,140	19,819,896
Same period, 1911....	2,978,129	2,266,216	5,994,795	11,239,140
Same period, 1910....	1,676,580	1,096,074	4,069,587	6,842,241
Same Period, 1909....	1,418,962	1,470,960	.....	2,889,922

Rubber Scrap Prices.

Late New York Quotations.— Prices paid by consumers for carload lots, per pound—are practically unchanged.

	September 20.
Old rubber boots and shoes—domestic.....	9¼@ 9⅜
Old rubber boots and shoes—foreign.....	9⅛@ 9¼
Pneumatic bicycle tires.....	4½@ 4¾
Automobile tires	9¼@ 9⅜
Solid rubber wagon and carriage tires.....	9¼@ 9½
White trimmed rubber	11 @11½
Heavy black rubber	4¾@ 5
Air brake hose	5½@ 5¾
Garden hose	1⅜@ 1½
Fire and large hose.....	2 @ 2⅛
Matting	⅝@ ¾

IMPORTS INTO THE UNITED STATES OF UNMANUFACTURED INDIA-RUBBER, ETC.

[Fiscal years ending June 30.]

Years.	India Rubber.	Guayule Gum.	Balata.	Gutta Jelutong.	Gutta Percha.	[1] Scrap.	Total.
1911-12	$93,013,255	$6,463,787	$984,012	$2,255,050	$225,797	$2,095,605	$105,037,506
1910-11	76,244,603	[2]10,443,157	624,702	2,872,633	390,548	2,334,870	92,910,513
1909-10	101,078,825	.....	196,878	2,419,223	167,873	2,998,697	106,861,496
1908-09	61,709,723	.....	522,872	852,372	82,136	1,543,267	64,710,370
1907-08	36,613,185	[4]28,583	276,756	1,039,776	100,305	1,496,822	39,555,427
1906-07	58,919,981	24,613	305,041	1,085,098	201,339	2,608,987	63,145,059
1905-06	45,114,450	.....	[3]152,689	733,074	188,161	1,721,678	47,910,052
1904-05	49,898,366	.....	.....	641,319	210,188	953,439	51,703,312
1903-04	40,444,250	.....	.....	430,231	174,953	1,164,785	42,214,219
1902-03	30,436,710	.....	.....	345,431	222,400	1,516,137	32,520,678

[1] Fit only for re-manufacture.
[2] Included in "India Rubber" prior to 1911.
[3] Not stated separately prior to July 1, 1905.
[4] Guayule plant.

United States Imports of Crude Rubber.

Official Statement.—Fiscal Years Ending June 30.

	1909-10.	1910-11.	1911-12.
United Kingdom ....*pounds*	15,556,981	15,953,233	29,728,994
Belgium	3,813,702	4,473,202	6,101,346
France	3,695,703	3,157,879	4,139,109
Germany	6,528,147	6,151,752	8,820,516
Portugal	1,996,530	1,752,468	1,449,790
Central America	1,424,449	1,342,939	1,390,555
Mexico	23,486,384	853,805	2,226,541
Brazil	39,510,920	31,020,764	46,762,744
Other South America	2,503,683	2,506,875	2,857,173
East Indies	2,419,956	4,624,457	6,338,130
Other Countries	108,226	208,886	395,275
Total .....*pounds*	101,044,681	72,046,260	110,210,173
Import value	$101,078,825	$76,244,603	$93,013,255
Average per pound	$1.00	$1.06	$0.84

Net Imports.

Imports .....*pounds*	101,044,681	72,046,260	110,210,173
Exports	6,492,947	5,267,589	5,610,951
Net imports	94,551,734	66,778,679	104,599,222

Other United States Imports.

	1909-10	1910-11.	1911-12.
Balata .....*pounds*	399,003	878,305	1,517,066
Gutta-percha	784,501	1,648,921	1,204,406
Waste rubber	37,364,671	26,948,000	28,293,192
Gutta-jelutong	52,392,444	51,420,872	48,795,268
Guayule gum*	.....	19,749,522	14,238,625

*Imports of Guayule gum were included in "India rubber" prior to July 1, 1910.)

African Rubbers.

New York Stocks (in Tons).

August 1, 1911	90	March 1, 1912	90
September 1	112	April 1	80
October 1	67	May 1	62
November 1	45	June 1	94
December 1	60	July 1	62
January 1, 1912	58	August 1	85
February 1	150	September 1	156

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

September 3.—By the steamer *Francis*, from Manáos and Pará:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	316,200	86,400	156,300	57,300=	616,200
Henderson & Korn	56,400	27,300	135,400	5,900=	225,000
New York Commercial Co.	*115,700	26,500	28,000	40,300=	210,500
Meyer & Brown	14,300	1,100	15,200	21,300=	51,900
De Lagotellerie & Co	20,300	2,500	19,100	.....=	41,900
General Rubber Co	*16,800	.....	6,400	6,000=	29,200
Robinson & Co	.....	.....	4,600	.....=	4,600
Total	539,700	143,800	365,000	130,800=	1,179,300

* Of above, 30 tons for exposition.

September 10.—By the steamer *Cuthbert*, from Manáos and Pará:

Henderson & Korn	14,500	1,800	210,200	6,600=	233,100
Arnold & Zeiss	42,200	31,100	92,500	21,800=	187,600
New York Commercial Co.	49,500	17,600	37,200	13,600=	117,900
Robinson & Co	15,000	5,800	12,000	400=	33,200
General Rubber Co	.....	.....	25,700	.....=	25,700
Meyer & Brown	.....	.....	2,600	20,200=	22,800
De Lagotellerie Co	7,500	700	2,600	.....=	10,800
Total	128,700	57,000	382,800	62,600=	631,100

PARA RUBBER VIA EUROPE.

		Pounds.
August 19.—By the *Mayaro*=Bolivar:		
Gen. Export Com. Co. (Fine)	18,000	
Gen. Export Com. Co. (Coarse)	18,000	
Ed. Maurer (Fine)	12,000	
Ed. Maurer (Coarse)	12,000	
Yglesias, Lobo & Co. (Fine)	7,000	
Yglesias, Lobo & Co. (Coarse)	9,000	76,000
August 26.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Ed. Maurer (Fine)		20,000
August 27.—By the *Colon*=Mollendo:		
N. Y. Commercial Co. (Fine)	6,000	
F. Rosenstern Co. (Fine)	6,000	12,000
September 3.—By the *Cleveland*—Hamburg:		
N. Y. Commercial Co. (Fine)	8,000	
Ed. Maurer (Fine)	5,000	
Meyer & Brown (Fine)	5,000	18,000
September 5.—By the *Carmania*=Liverpool:		
Arnold & Zeiss (Fine)	34,000	
Arnold & Zeiss (Coarse)	5,000	39,000
September 9.—By the *Panama*=Mollendo:		
N. Y. Commercial Co. (Fine)	10,000	
W. R. Grace & Co. (Caucho)	5,000	15,000
September 12.—By the *President Grant*=Hamburg:		
Ed. Maurer (Fine)	22,500	
Meyer & Brown (Fine)	11,000	
Rubber Trading Co. (Fine)	3,500	37,000
September 13.—By the *Adriatic*=Liverpool:		
New York Commercial Co. (Fine)		90,000

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

		Pounds.
August 26.—By the *Byron*=Bolivia:		
J. H. Rossbach & Bros	80,000	
A. Hirsch & Co	5,000	85,000
August 27.—By *El Norte*=Galveston:		
Continenal-Mexican Rubber Co		*45,000
August 27.—By the *Colon*=Colon:		
G. Amsinck & Co	5,500	
A. M. Capen Sons	2,500	
J. Sambrada & Co	2,500	
Mecke & Co	2,500	
Wessels, Kulenkampff & Co	2,500	
Isaac Brandon & Bros	1,500	
Suzarte & Whitney	1,000	18,000
August 27.—By the *Minnehaha*=London:		
Arnold & Zeiss	105,000	
General Rubber Co	30,000	135,000
August 28.—By the *Thames*=Colombia:		
G. Amsinck & Co	3,000	
Maitland, Coppell & Co	2,000	
Kunhardt & Co	1,000	6,000
August 28.—By the *Camaguey*=Tampico:		
Ed. Maurer	*100,000	
New York Commercial Co	*100,000	
Continental-Mexican Rubber Co.	*35,000	
Arnold & Zeiss	*35,000	
For Europe	*110,000	*380,000
August 31.—By the *Morro Castle*=Frontera:		
Meyer & Brown	5,000	
Charles T. Wilson	5,000	
New York Commercial Co	2,500	
Maldonado & Co	2,000	
General Export Commission Co.	1,500	
For Europe	6,000	32,000
September 3.—By the *Cleveland*=Hamburg:		
Ed. Maurer	*11,500	
New York Commercial Co	*7,000	
Arnold & Zeiss	*11,000	*29,500
September 4.—By the *Guantanamo*=Tampico:		
Continental-Mexican Rubber Co.	*80,000	
New York Commercial Co	*35,000	
Arnold & Zeiss	*25,000	*140,000
September 4.—By the *Advance*=Colon:		
G. Amsinck & Co	10,000	
Simon Elias Co	4,000	
Dumarest Bros.	2,500	
R. G. Barthold	2,000	
J. Sambrada & Co	1,500	
Roldau & Van Sickle	1,000	21,000
September 4.—By the *Indian Prince*=Bolivia:		
J. H. Rossbach & Bros	56,000	
A. Hirsch & Co	45,000	101,000
September 5.—By the *Prinz August Wilhelm*=Colon:		
Isaac Brandon & Bros	17,000	
A. Rosenthal & Sons	13,500	
G. Amsinck & Co	11,000	
L. Johnson & Co	5,000	46,500
September 5.—By the *Olympic*=London:		
Arnold & Zeiss		80,000
September 6.—By the *Metapan*=Colombia:		
G. Amsinck & Co	6,000	
Caballero & Blanco	2,000	
A. Helde	1,000	9,000

SEPTEMBER 7.—By the *Celtic*=Liverpool:

Rubber Trading Co.	5,500	
Cowdrey & Co.	3,500	9,000

SEPTEMBER 9.—By the *Panoma*=Colon:

G. Amsinck & Co.	4,000	
Pablo Calvet & Co.	1,000	
Lanman & Kemp.	1,000	
Kunhardt & Co.	1,000	7,000

SEPTEMBER 11.—By the *Trent*=Colombia:

Isaac Brandon & Bros.	5,500	
Andean Trading Co.	3,000	
G. Amsinck & Co.	3,000	
A. M. Capen's Sons.	3,000	
A. Rosenthal & Sons.	2,000	
J. Sambrada & Co.	2,000	
Wessels, Kulenkampff & Co.	1,000	19,500

SEPTEMBER 12.—By the *Santiago*=Tampico:

Continental Mexican Rubber Co.	*35,000	
Chas. T. Wilson.	*11,000	
Arnold & Zeiss.	*10,000	
For Europe	*60,000	*116,000

SEPTEMBER 14.—By the *Esperanza*=Frontera:

Harburger & Stack.	7,000	
Chas. T. Wilson.	5,000	
E. Steiger & Co.	3,500	
Meyer & Brown.	2,500	
Geo. A. Alden & Co.	2,500	
G. Amsinck & Co.	1,500	
H. Marquardt & Co.	1,000	23,000

AFRICANS.

	POUNDS	
AUGUST 26.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Henderson & Korn.	11,000	
Arnold & Zeiss.	4,500	
Muller, Schall & Co.	3,000	18,500
AUGUST 28.—By the *Kroonland*=Antwerp:		
Meyer & Brown.	45,000	
Rubber Trading Co.	5,000	50,000
AUGUST 28.—By the *Touraine*=Havre:		
Ed. Maurer		25,000
AUGUST 29.—By the *Oceanic*=London:		
Charles T. Wilson.		17,000
AUGUST 31.—By the *Cedric*=Liverpool:		
J. T. Johnstone	15,000	
Rubber Trading Co.	10,000	25,000
AUGUST 31.—By the *Dinnamare*=Lisbon:		
Arnold & Zeiss.		34,000
SEPTEMBER 3.—By the *St. Louis*=London:		
General Rubber Co.	13,500	
Charles T. Wilson.	9,000	
George A. Alden Co.	2,500	25,000
SEPTEMBER 3.—By the *Mayaro*=Havre:		
Meyer & Brown.	90,000	
Robinson & Co.	9,000	99,000
SEPTEMBER 3.—By the *Cleveland*=Hamburg:		
Meyer & Brown.	65,000	
W. L. Gough Co.	30,000	
Rubber Trading Co.	25,000	
Ed. Maurer	30,000	
General Rubber Co.	15,000	
Arnold & Zeiss	7,000	
R. Badenhop	7,000	179,000
SEPTEMBER 5.—By the *Carmania*=Liverpool:		
Arnold & Zeiss.	30,000	
General Rubber Co.	5,000	35,000
SEPTEMBER 7.—By the *Celtic*=Liverpool:		
Arnold & Zeiss.	34,000	
General Rubber Co.	30,000	64,000
SEPTEMBER 10.—By the *Prince Cecile*=Hamburg:		
Meyer & Brown.	35,000	
Ed. Maurer	35,000	
General Rubber Co.	5,000	
Rubber Trading Co.	7,000	
Arnold & Zeiss.	3,500	
R. Badenhop	3,500	89,000
SEPTEMBER 11.—By the *Finland*=Antwerp:		
George A. Alden & Co.	89,000	
Rubber Trading Co.	15,000	
Meyer & Brown.	9,000	
Arnold & Zeiss.	25,000	
W. H. Stiles Co.	9,000	
W. L. Gough Co.	3,500	150,000
SEPTEMBER 12.—By the *Majestic*=London:		
George A. Alden & Co.	56,000	
Chas. T. Wilson.	15,000	71,000
SEPTEMBER 12.—By the *President Grant*=Hamburg:		
Meyer & Brown.	140,000	
Ed. Maurer	5,500	
R. Badenhop	5,500	
Arnold & Zeiss.	2,500	
Rubber Trading Co.	2,000	155,500
SEPTEMBER 14. By the *Roma*=Lisbon:		
General Rubber Co.		33,500

EAST INDIAN.

[*Denotes plantation rubber.]

	POUNDS.	
AUGUST 26. By the *Philadelphia*=London:		
New York Commercial Co.	*40,000	
Ed. Maurer	*40,000	
Arnold & Zeiss	*15,000	
Charles T. Wilson	*10,000	
Robert Badenhop	*15,000	
J. Warren Bird	11,500	131,500
AUGUST 26.—By the *Drachenfels*=Colombo:		
Meyer & Brown	*70,000	
General Rubber Co.	*33,000	
New York Commercial Co.	*15,000	
Robert Badenhop	*4,500	
Muller, Schall & Co.	*2,500	*125,000
AUGUST 27.—By the *Minnehaha*=London:		
General Rubber Co.	*80,000	
Arnold & Zeiss	*60,000	
J. T. Johnstone	*20,000	
Raw Products Co.	*5,000	
Henderson & Korn.	*7,000	
Robert Badenhop	*5,000	
General Rubber Co.	11,000	
For Exposition	*34,000	*222,000
AUGUST 29.—By the *Oceanic*=London:		
Arnold & Zeiss.	*110,000	
New York Commercial Co.	*50,000	
Ed. Maurer	*33,000	
Robinson & Co.	*20,000	
Charles T. Wilson.	*20,000	
Robert Badenhop	*7,000	
In Transit	*11,000	*251,000
SEPTEMBER 3.—By the *St. Louis*=London:		
Arnold & Zeiss.	*120,000	
New York Commercial Co.	*35,000	
Ed. Maurer	*34,000	
Robinson & Co.	*11,000	
Charles T. Wilson.	*5,000	
Henderson & Korn.	*9,000	
Arnold & Zeiss.	11,000	*225,000
SEPTEMBER 3.—By the *Comeric*=Colombo:		
Meyer & Brown.	*115,000	
Ed. Maurer	*11,500	*126,500
SEPTEMBER 4.—By the *Minnewaska*=London:		
Ed. Maurer	*20,000	
J. T. Johnstone.	*15,000	
Raw Products Co.	*15,000	*50,000
SEPTEMBER 4.—By the *Ryndam*=Rotterdam:		
Rubber Trading Co.	*15,000	
Meyer & Brown.	*11,000	
Ed. Maurer	*5,500	
Robert Badenhop	*5,000	
Henderson & Korn.	*4,500	*41,000
SEPTEMBER 5.—By the *Olympic*=London:		
Arnold & Zeiss.	*80,000	
Ed. Maurer	*30,000	
New York Commercial Co.	*25,000	
Henderson & Korn.	*9,000	
Charles T. Wilson.	*5,000	
George A. Alden & Co.	12,000	
Arnold & Zeiss.	11,500	
In transit	*55,000	*227,500
SEPTEMBER 7.—By the *Celtic*=Liverpool:		
Ed. Maurer		*18,000
SEPTEMBER 9.—By the *New York*=London:		
Ed. Maurer	*65,000	
New York Commercial Co.	*25,000	
Arnold & Zeiss.	*15,000	
Robinson & Co.	*9,000	
Robinson & Co.	5,000	*119,000
SEPTEMBER 10.—By the *Minnehaha*=London:		
Ed. Maurer	*11,500	
J. T. Johnstone	*11,000	
Muller, Schall & Co.	*9,000	
For Exposition	*7,000	*38,500
SEPTEMBER 11.—By the *Finland*=Antwerp:		
Meyer & Brown.	*55,000	
Robinson & Co.	*9,000	
Arnold & Zeiss.	*5,500	*69,500
SEPTEMBER 11.—By the *Middleham*=Panama:		
J. Warren Bird		11,500
SEPTEMBER 12.—By the *President Grant*=Hamburg:		
Ed. Maurer	*9,000	
Robert Badenhop	*7,000	*16,000
SEPTEMBER 13.—By the *Majestic*=London:		
Arnold & Zeiss.	*60,000	
Charles T. Wilson.	*30,000	
Robert Badenhop	*10,000	
Robinson & Co.	*15,000	
W. L. Gough Co.	*6,000	
Raw Products Co.	*5,000	
In transit	*35,000	*161,000

GUTTA-PERCHA.

SEPTEMBER 4.—By the *Patricia*=Hamburg:	
R. Soltau & Co.	9,000
SEPTEMBER 11.—By the *Middlehom*=Singapore:	
L. Littlejohn & Co.	22,500
SEPTEMBER 15.—By the *Egremont*=Singapore:	
L. Littlejohn & Co.	20,000

BALATA.

AUGUST 28.—By the *Maracas*=Trinidad:		
Ed. Maurer	2,000	
Middleton & Co.	1,000	3,000
SEPTEMBER 4.—By the *Saramaca*=Trinidad:		
Middleton & Co.	22,500	
George A. Alden & Co.	11,500	
Schutte Bunemann & Co.	11,500	
Ed. Maurer	5,500	
G. Amsinck & Co.	5,500	
Bartling & De Leon.	2,500	59,000
SEPTEMBER 10.—By the *Marowijne*=Demerara:		
Schutte Bunemann & Co.	22,500	
G. Amsinck & Co.	11,500	
George A. Alden & Co.	7,000	
Middleton & Co.	7,000	
Frame & Co.	2,000	
Wessels, Kulenkampff & Co.	1,000	51,000

BOSTON ARRIVALS.

AUGUST 12.—By the *Walton Hall*=Singapore:		
State Rubber Co. (Ceylon)	35,000	
State Rubber Co. (Jelutong)	185,000	
Geo. A. Alden & Co. (Jelutong)	110,000	
L. Littlejohn & Co. (Jelutong)	500,000	830,000
AUGUST 15.—By the *Egremont*=Singapore:		
L. Littlejohn & Co. (Gutta-percha)	20,000	
State Rubber Co. (Jelutong)	125,000	
Geo. A. Alden & Co. (Jelutong)	200,000	
L. Littlejohn & Co. (Jelutong)	1,250,000	1,595,000

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR JULY, 1912 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					GRAND
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	TOTAL.
Zarges, Ohliger & Co.	109,332	21,717	21,296	14,540	166,885	61,388	6,560	10,359	94,344	172,651	339,536
Adelbert H. Alden, Ltd.	20,404	17,360	9,931	349	48,044	.....	.....	.....	2,146	2,146	50,190
General Rubber Co. of Brazil.	25,690	5,539	15,647	10,234	57,110	4,716	3,520	113	2,786	11,135	68,245
Ahlers & Ca.	2,240	3,360	.....	.....	5,600	47,435	384	12,689	16,709	77,217	82,817
De Lagotellerie & Co.	.....	.....	.....	.....	.....	3,207	1,563	1,535	7,511	13,816	13,816
J. G. Araujo.	.....	.....	.....	.....	.....	1,278	661	28,418	.....	30,357	30,357
Mesquita & Co.	.....	.....	.....	.....	.....	209	.....	203	1,817	2,309	2,309
Semper & Co.	.....	.....	.....	.....	.....	108	.....	.....	.....	108	108
W. Peters & Co.	.....	.....	.....	.....	.....	.....	.....	3,110	420	3,530	3,530
Assoc. Comm. do Amazonas.	19,890	.....	.....	.....	19,890	.....	.....	.....	.....	.....	19,890
	177,556	47,976	46,874	25,123	297,529	118,341	12,688	56,507	125,733	313,269	610,798
Iquitos, direct	231	.....	.....	11,828	12,059	12,954	432	3,051	90,858	107,295	119,354
Total	177,787	47,976	46,874	36,951	309,588	131,295	13,120	59,558	216,591	420,564	730,152

INDIA RUBBER WORLD
CAOUTCHOUC GUTTA-PERCHA

Vol. 47. OCTOBER 1, 1912. No. 1.

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Antwerp.

RUBBER STATISTICS FOR AUGUST.

DETAILS.	1912.	1911.	1910.	1909.	1908.
Stocks, July 31....*kilos*	434,311	465,734	519,965	524,512	695,551
Arrivals in August—					
Congo sorts	262,846	299,703	338,797	147,313	522,847
Other sorts	4,900	49,906	34,574	49,199	114,542
Plantation sorts	167,303	46,532	49,875	32,748	3,342
Aggregating	869,360	861,875	943,211	753,772	1,336,282
Sales in August	393,788	339,474	406,651	508,921	461,749
Stocks, August 31....	475,572	522,401	536,560	244,851	874,533
Arrivals since Jan. 1—					
Congo sorts 1,976,790		2,140,816	2,139,120	2,325,028	2,953,211
Other sorts	95,728	318,649	244,781	660,121	448,444
Plantation sorts	837,342	420,749	374,452	177,535	72,084
Aggregating 2,909,860		2,880,214	2,758,353	3,162,684	3,473,739
Sales since Jan. 1....3,108,826		2,946,025	2,763,303	3,513,568	3,606,119

RUBBER ARRIVALS FROM THE CONGO.

SEPTEMBER 3.—By the steamer *Leopoldville:*

		Kilos.	
Bunge & Co.	(Société Générale Africaine)	104,400	
do	(Chemins de fer Grande Lacs)	14,800	
do	(Cie. du Kasai)	119,300	
do	(Comptoir Commercial Congolais)	4,000	
do		1,600	
Société Coloniale Anversoise	(Haut Congo)	11,100	
do	(Comminiere)	5,400	
L. & W. Van de Velde	(Comfina)	19,200	
do		8,000	
Willaert Freres		20,000	
Congo Trading Co.		6,500	
Charles Dethier	(American Congo Co.)	5,000	319,300

INDIA RUBBER WORLD

CAOUTCHOUC — HEVEA BRASILIENSIS — FUNGIA ELASTICA — PACHYPOSIS GUTTA — GUTTA-PERCHA

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LESSONS FROM THE RUBBER SHOW.

NOW that the Exposition has come and gone the natural question arises—"What has it taught us?" It certainly should have taught us something, as it is hardly credible that this first experience in rubber shows in this country should have passed by without leaving certain lessons more or less valuable with the trade. As a matter of fact, the expression was not infrequently overheard in conversations between exhibitors at the Exposition: "Yes, this is a very good show—but wait until you see the next."

Trade expositions may properly be divided into three kinds—those that are distinctly technical in their character, that are intended only for people directly interested in that particular trade, and without any purpose of attracting outside attention; second, those that are planned expressly to attract the general public, and which carefully avoid everything of a too technical character; and third, those that seek to combine these two functions, having enough of a technical character to appeal to all those associated with the particular trade, and enough of general interest to attract the public at large. The Rubber Exposition just held belonged to this third class, but undoubtedly it was much stronger on its technical side than it was in its general appeal to the public at large. Viewed as a rubber show intended for rubber men, it left little to be desired. The exhibits of crude rubber, reclaimed rubber, compounding ingredients and manufacturing machinery were full and varied, and covered the ground with satisfactory completeness. But in the department of manufactured goods the same cannot be said, for while certain manufacturers made admirable exhibits, there were important branches of the rubber manufacturing industry which were practically unrepresented.

The exhibitors of crude rubber cannot be complimented too highly on the intelligence, enthusiasm and thoroughness with which they did their work. Brazil exhibited with a lavish hand—nor was the Middle East far behind. Both wild rubber from the Amazon and plantation rubber from the Federated Malay States and Ceylon were forwarded to the exhibition in generous quantity and impressive variety. It was altogether the finest collection of crude rubber ever brought together in this country. A certain rubber mill superintendent, after going over these exhibits carefully, remarked: "I have learned more about crude rubber in the ten days of this show than I had ever learned before in any ten years in the factory." Of reclaimed rubber and of compounding ingredients there was also a comprehensive exhibit; while the foundry men, with their machinery set up and in motion, contributed a great deal to the importance and value of the enterprise. Undoubtedly, all these groups of exhibitors—crude rubber producers, planters and importers, manufacturers of compounding ingredients and makers of machinery, found their ten days at the Exposition time profitably spent. Many of them indeed expressed great satisfaction over the results of their participation.

But among the manufacturers of finished rubber goods who attended the show and who undoubtedly derived great benefit from what they observed, there must have been a number who regretted that they had not seized upon this opportunity to exploit their products in a large way. Some of them when approached before the exhibition took the stand that they could see no particular benefit for them in showing their goods to other rubber men—which undoubtedly was true. But in a city like New York, with its five million permanent population and with its half million floating population, more or less—it would have been possible at a show of this character, covering so large a floor space, to have secured an extremely large attendance of people outside of the rubber trade—

consumers of rubber goods; and to this class the rubber manufacturer might have appealed, with no little profit to himself. And that undoubtedly is the chief lesson learned from the first rubber show, the result of which will be shown at the second American Rubber Exposition, whenever that may be held. There is a great deal connected with many lines of rubber manufacture that could be made extremely interesting to the general public. There are many articles made almost exclusively by hand, which, had they been manufactured at this show would have proved great centers of attraction. Some of the footwear manufacturers have gone to considerable expense in sending demonstrators around the country—and even abroad—to explain and to illustrate, by the actual operation, the making of rubber footwear. It is thought worth while to give the demonstration even before small groups of people. At an exposition in such a place as New York it would be possible to have thousands of spectators during a single day. The public can always be relied on to attend any sort of exhibition, if it is properly encouraged.

Nor would the attendance of the general public in large numbers interfere with the success of the more technical side of an exhibition, especially in a place like the Grand Central Palace, where (as was the case in the recent show) the technical departments were grouped chiefly on the upper floors, the main floor being reserved for exhibits of a more general character.

One of the speakers at the concluding banquet held at the Plaza said that if he had had his way, the public school children of New York and the members of all the commercial organizations would have been brought in to see the wonderful rubber display. It might not be feasible to include all the public school children of New York at such an exhibition, as their number runs in the hundreds of thousands; but certainly it would be beneficial, not only to the students, but to all exhibitors whose display was of a general character, if the older classes of the public schools should attend. Quite irrespective, however, of any such special arrangement for any particular class of visitors, it is always possible in this great metropolis to secure a large attendance of desirable people at an interesting trade exhibition.

One feature of the recent show—which on another occasion would undoubtedly be much enlarged upon, because it was one of the most successful features of the Exposition—consisted of the moving pictures. There were two of these moving picture shows, one on the main floor under the auspices of the Brazilian exhibit, the other on the second floor under the auspices of the Federated Malay States. Both attracted a great deal of attention, and to many of the visitors proved the most interesting part of the exhibition. The plantation pictures were particularly to be commended, as they set forth in such orderly fashion the whole process of rubber culture in the East, showing the clearing of the forests, the preparing of the ground for the seed, the planting of the seed, the destruction of weeds and insects, the tapping of the trees, the gathering of the latex, its coagulation, the preparation of the rubber for the market and its final shipment to the rubber centers of Europe. This feature could be—and probably would be at another exhibition—made much more prominent, and with most gratifying results.

The management of the recent Exposition is certainly to be congratulated. It was a most creditable achievement, far beyond the expectations of many American rubber men. But by reason of the lessons taught by this first experience, the next exposition (whenever that may occur) will undoubtedly be more complete, more fully rounded out and symmetrical. It will not only be highly instructive from a technical standpoint to rubber men, but will be equally attractive to the public at large.

THE ECHO.

THERE seems to be one persistent echo in the air today which sounds like "specifications, physical tests and chemical analysis." Wherever we turn that echo greets us. The consumer of rubber products is testing his hose and belting and what not; the manufacturer of rubber goods is determining by chemical analysis the quality of his raw material; and the producer of these raw materials is, as a matter of course, compelled to gather accurate information about his goods before he sells them. It does not astonish us, therefore, when we hear that the producers of crude rubber in the Middle East are establishing rubber testing stations in Europe and at the plantations, for the purpose of gathering accurate information concerning the physical and chemical properties of their product.

Brazil, the mother country of the rubber industry, is not lagging in this respect, and if we are to believe current reports, the delegates who attended the recent International Rubber Conference in New York were on the lookout for a scientific adviser in this matter. So far as Brazil is concerned, it is most natural that she should seek to establish in New York a research

laboratory which would study the South American rubber problem in a most thorough manner.

One of the rubber experts made this suggestion at one of the sessions of the Conference: "Brazil stands today at the point of decision. It will be possible for her now to take out 'insurance' for her rubber forests; or, if she chooses, she may neglect the opportunity, and lose forever her hold on that commodity. If she wishes to protect it, she will receive from America the most friendly co-operation and advice. The best solution of the problem lies very probably in the establishment of a permanent testing laboratory here in the North, and possibly an additional one at Pará, under the direct management of the Federal Government of Brazil. The New York laboratory would then be in a position to test the rubber according to conditions which prevail in the United States. This station would also be available as an umpire in cases of dispute between manufacturers and brokers."

The suggestion provoked not a little discussion. Something may yet come of it.

THE APPARENT HAPHAZARDNESS OF GREAT DISCOVERIES.

SOME modern philosopher has observed that "it's generally the fellow who doesn't know any better who does the thing that can't be done. You see, the blamed fool doesn't know it can't be done, so he goes ahead and does it"—a sententious observation, which contains more truth than is usually the case with such aphorisms.

Many of the most revolutionary inventions and discoveries in the history of industrial development appear to have been reached in a thoroughly haphazard way—seem in fact to have been stumbled upon in the dark. There was Goodyear, for example—to come down at once to the realm of rubber. Everybody knows how he got the idea of vulcanization. Practically speaking, it flew up and hit him. He was the most surprised man in a dozen townships—he could scarcely believe his eyes.

Then there was Christopher Columbus, whose discovery of America our Italian citizens and a few others celebrate with much fervor with every recurring October 12. When the great American continent and its outlying islands popped up in front of him it was the surprise of the centuries.

But this haphazardness is apparent—rather than real. It is true enough that Columbus stumbled on a new continent, but that was because he was looking for a continent. He made a great discovery because he was bent on a great discovery. The thing he found was not the thing he was looking for, but he never would have located America if he had not been out looking for Asia.

Goodyear's case was very much the same. That accidental knock against the stove told him that heat and sulphur were the secret of rubber. That particular hit was pure accident, but he had been hitting around in all directions for a number of years, and that was the way he came to hit the stove.

Year after year he had been at work trying to find something that would make rubber work. First he mixed it with magnesia. That seemed to hold out promise; but it was a blind lead and he had to abandon it. Then he boiled his rubber and magnesia in quicklime and water, but that didn't yield up the secret he was after. Then he washed his rubber with nitric acid. He was going in the right direction, but still was far from the goal.

But it was only a question of time when his persistence—you might say his fanaticism—in this quest would compel success. Great discoveries seem to come by accident, but it is a noticeable fact that they come to those who are bent on making great discoveries. That quick transformation that took place in Goodyear's handful of rubber and sulphur when it struck the hot stove would not have meant anything to the ordinary man—he never would have given it a second thought. But to Goodyear's mind—as sensitive to rubber impressions as the delicate mechanism of wireless telegraphy is to its own peculiar electrical waves—it was a complete revelation. His years of search were over—the secret was his. So it may be stated, without much fear of contradiction, that great discoveries, so far, from being of incidental and haphazard origin, follow as definite a law of cause and effect as any that obtain in the ordering of the universe.

The aphorism quoted at the beginning of this humble disquisition may therefore properly be revised as follows: "The fellow who does the thing that can't be done is the fellow who knows that it can be done, if he can only find out the way to do it, and who keeps hunting around for the way to do it twenty-four hours a day—year in and year out—until all of a sudden he plumps straight into it."

The Third International Rubber Exposition.

A FINE DISPLAY OF CRUDE AND MANUFACTURED RUBBER.

THE October number of THE INDIA RUBBER WORLD was called a "Special Exposition Number," and it contained nearly twenty pages of matter referring to the Third International Rubber and Allied Trades Exposition, giving lists of the delegates and commissioners who had been appointed by various governments and commercial organizations, describing the exhibits that were to be seen, and containing many photographs of the commissioners, exhibitors and exhibits But inasmuch as that issue came from the press on the opening day of the exhibition, and as all the matter referring to that event had necessarily to be prepared somewhat in advance, it was not possible to cover the ground as fully as the importance of the event demanded. It has been found necessary, therefore, to devote almost equal space in the present issue to features of the Exposition that could not be described in advance. Accordingly a considerable part of the present number of this paper will be found to be devoted to the Rubber Exposition. No apology need be offered for this fact, because it will be admitted that it was an event of exceeding importance to the trade; and as another exposition is not likely to be held for some time—certainly not for two or three years—it seems quite the wiser course for a journal devoted to the rubber industry to let other matters wait until a later issue, and to surrender to the great Rubber Exposition recently held in New York the space to which its magnitude and the interest it has created seem to entitle it.

THE PRESS LUNCHEON.

THE PRESS LUNCHEON.

The day before the Exhibition was formally opened to the public it was opened privately for inspection by members of the press, and in connection with this press view there was a luncheon, attended by about 130 people. It was a very successful affair, and unique in several of its features. It was held in the large restaurant located on the ground floor of the Grand Central Palace. The menu cards were printed on mottled green rubber—the work of the Manhattan Rubber Co. The luncheon itself was voted substantial and satisfying. It consisted of blue points, consommé, salmon salad with lobster sauce, *filet mignon*, celery salad, with generous contributions of Mumm's Extra Dry, the beverage which cheers but does not inebriate—when used with discretion; with coffee, crackers and Camembert.

Mr. H. C. Pearson, vice-president of the Exposition, presided at the luncheon, and introduced with sundry happy commentaries the various speakers, who included Admiral Carvalho, of the Brazilian Navy; Dr. Eugenio Dahne, Commissioner General of Brazil; Mr. Cyril E. S. Baxendale, of the Federated Malay States; Mr. Wilbur A. Anderson, Commissioner for the Hawaiian Islands, and Prof. William Goodyear, of the Brooklyn Institute of Arts and Sciences, a son of Charles Goodyear.

THE FORMAL OPENING OF THE EXPOSITION.

The Exposition was formally opened to the public at 12 o'clock, Monday, September 23. A large space in the centre of the main floor had been left clear of exhibits and was filled with chairs facing a raised platform. At the time set for the opening ceremonies, all the chairs—accommodating about 300—had been filled and there were several hundred people crowded around the seats, back of them, and in the balconies looking down.

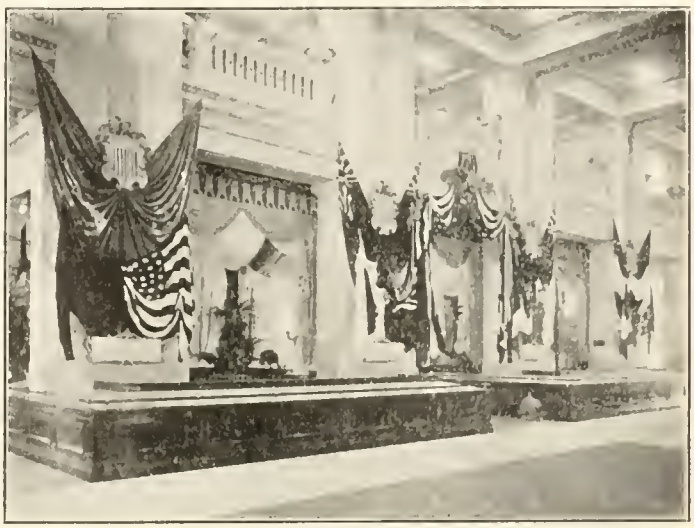
In the absence of Governor John A. Dix, president of the Exposition, who was unable to attend by reason of his official duties, the chair was occupied by Mr. Henry C. Pearson, vice-president of the Exposition. On the platform with him were Commissioner of Docks, Calvin Tomkins, representing the City of New York; A. Staines Manders, organizing manager of the Exposition; Miss D. Fulton, secretary of the Exposition; Mr. A. W. Stedman, Commissioner of the Commercial Association of Amazonas; Dr. Eugenio Dahne, Official Commissioner to the Exposition from Brazil; and Mr. Edward G Salmon,

Commissioner for the Imperial Institute of London. Promptly at the hour set, Acting-President Pearson arose and in a brief address which was very distinctly heard by all on the large floor—as well as by those looking down from the balconies—he stated the object of the Exposition, described the stupendous amount of work that had been done to accomplish it, and spoke of the beneficial results which were expected to accrue from it, in the increased acquaintance with one another of the different members of the great rubber industry, and in the wide interest that would be created in the industry among the people at large. He then introduced Commissoner Tomkins, who in the inability of Mayor Gaynor to be present—as had been his intention—spoke in behalf of the mayor and welcomed the commissioners and delegates to the city of New York. Commissioner Tomkins' address had been carefully prepared, and it contained a wonderful volume of rubber information—considering the speaker had never been intimately identified with the rubber trade. The Commissioner was listened to with deep interest; and he represented the great city of New York—which receives about half of the crude rubber of the world at its docks—most acceptably.

At the expiration of his address the Chairman pronounced the Exposition to be formally opened, and remarked that he would take Commissioner Tomkins on a tour of inspection, beginning with the crude rubber exhibits in the balcony, passing thence to the allied trades on the second floor, and coming down to the manufactured products and manufacturing machinery on the main floor. He suggested that this would be a profitable schedule for all those present to follow—either at that time or later—at their inclination. This concluded the opening exercises, and most of those present adopted the Chairman's suggestion and started for the wonderful exhibits of crude rubber in the Brazilian, Malaysian, Ceylon, and other departments on the balcony floor.

WHERE COMMERCIALISM YIELDED TO ART.

Taking it all in all the most noticeable exhibit on the main floor was that of the United States Rubber Co., which was conspicuous, both by reason of its position at the head of the grand stairway, and by reason of its character. It is quite safe to say, that there never was an exhibit in the Grand Central Palace more sumptuously conceived. The space was 1,800 feet, divided into two reception rooms of about 30 feet square; the two rooms being divided by the central aisle of the hall. These two reception rooms were closed in by a solid mahogany partition, handsomely panelled, running all the way around and having an aggregate length of about 240 feet. At the top of this mahogany partition, there was a sloping glass showcase containing pictures of the 36 different factories whose product is sold by this company.



The United States Rubber Co.

There were eight marble pillars included in these booths, which were draped with flags, with extremely fine effect, each having four—the two flags at the top representing rubber producing countries, and the two lower flags representing rubber manufacturing countries. As these flags were combined in a way that gave an exceedingly artistic color effect, it might be interesting to mention the various combinations.

The Opening Exercises.

The first pillar had at the top two Brazilian flags, and below them the flags of Canada and France. The second pillar had an arrangement of British Malay and Ceylon flags, with the flags of England and Holland beneath.

The other combination ran after this wise—the two flags mentioned first being always at the top.

British Malay and Ceylon—United States and Germany.

Two Peruvian flags—Australia and Russia.

Two Brazilian flags—Belgium and United States.

British Malay and Ceylon—Japan and England.

British Malay and Ceylon—Hungary and France.

Again, two Peruvian flags, and below, Germany and Italy.

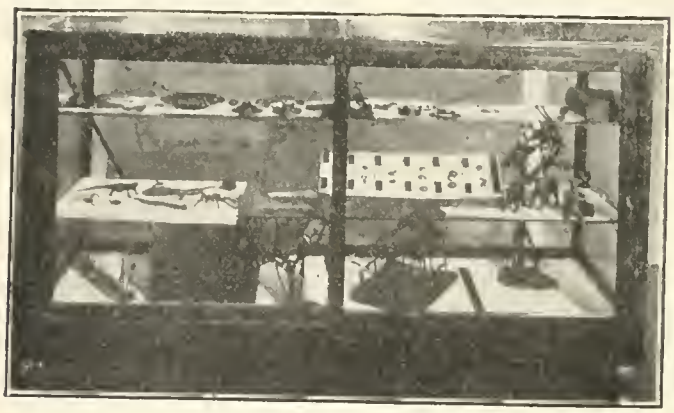
In addition to these flags, decorating the pillars, the entire two booths were covered with a silken canopy of silver-gray with side drapings of cadet-blue. Between the pillars were handsome signs of the United States Rubber Co., and of its two constituent companies—the "Rubber Goods Manufacturing Co." and the "General Rubber Co.," while inside the booths there was luxurious furniture of leather and mahogany, and palms in various corners.

The only suggestion of rubber was found in the interlocking tiling—made by one of the subsidiary companies—of which there were 1,300 square feet, surrounding the two booths and in the aisle between them.

Catalogues of the company's various footwear factories, and of its mechanical rubber goods factories, handsomely printed, were seen reposing unobtrusively on side tables; but the whole aspect of the place savored rather of art than of commercialism.

THE CHARLES GOODYEAR EXHIBIT.

Measured by its volume, there was no other feature in the entire Exhibition that attracted a fraction of the notice or ex-



SHOW CASE OF GOODYEAR RELICS.

cited a tithe of the interest that the exhibit of the Charles Goodyear relics in THE INDIA RUBBER WORLD booth received. It was the note of human interest that appealed to the visitors, for here were articles that belonged to the great Goodyear—the founder of the whole rubber industry—some of them presented to him in the days of his triumph, many of them made under his direction, and showing some unique applications to which he put his great discovery.

These Goodyear relics were on the upper shelf of the large showcase, as shown in the accompanying cut. They included the famous rubber book—Goodyear's Autobiography—printed in a volume of several hundred pages, every page of which is made of rubber thinner than parchment, the cover and everything about the book being rubber. This is the only volume of this sort in existence. Then there were many of the medals tendered Goodyear by various governments and scientific associations, including the large gold medal, of very considerable intrinsic value, aside from its association, given Goodyear by the Emperor of France at the time of his notable rubber exhibit at the Paris Exposition in 1854, and also the Cross of the Legion of Honor, bestowed on him on the same occasion. There were a number of wonderful pieces of jewelry made of hard rubber mounted in gold, showing the most delicate carving. There were bracelets and brooches and medallions and miniature statuary. The most noticeable piece of jewelry there was a replica of a remarkable chatelaine design which Good-

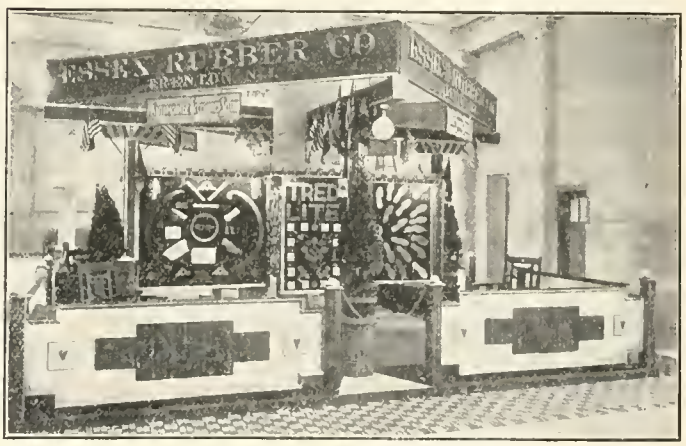
EXHIBIT OF THE INDIA RUBBER WORLD.

year presented to the Empress Eugenie, consisting of three short chains, the links of which were made of hard rubber of a dark brown color rimmed with gold, each chain terminating in an ornamental pendant, one being a seal, one a watch key, and the third having at its end a small watch in a hard rubber case edged with gold and elaborately set with jewels, including many small diamonds and several large rubies. This duplicate of Goodyear's gift to the Empress he made and presented to his wife, and it is one of the choice heirlooms of the Goodyear family. There were many other interesting items in this Goodyear collection, and it is not to be wondered at that every visitor to the Exhibition took a deep interest in these relics.

In the same case on lower shelves there was a variety of miniature creations—boats, trees, coagulating camps—made from balata by the natives of Venezuela. These too, being unique in their character, received much attention from the general visitor, while the extensive herbarium arranged around the booth naturally excited the interest of botanists and rubber experts.

THE ESSEX' BUSINESS-LIKE DISPLAY.

The exhibit of the Essex Rubber Co. was distinctly a com-



THE ESSEX RUBBER CO.'S DISPLAY.

mercial one. All the space was occupied by rubber products of various kinds—the floor being covered with matting made

at the Essex mill, and the aisles around the booth being laid with the Essex rubber rugs. In the booth a great variety of

THE HOME RUBBER CO.

these rugs was shown in several combinations of color—red and black, and blue and white. These rugs consist of small rubber blocks fastened together with slender rods passing through steel eyelets; consequently, their shape and size can be adjusted to any conditions. A large display of rubber heels and soles, automobile accessories, from goggles to bumpers, was also made by this company. There were some interesting sporting goods, including rubber covered bits for horses; recoil pads for guns, rubber bottles for veterinaries; while of mats large and small there were many kinds. The president of the company, C. H. Oakley, was present at the exhibition much of the time.

THE HOME RUBBER BOOTH.

This company's exhibit was also very business-like. There were four fine trees—not rubber, but near enough—in tubs in the four corners of the booth, but all the rest of the space was given up to rubber goods, including piles of hose of various sizes and for all manner of purposes. There was also a good display of tires, tubes, mats and matting.

THE MANHATTAN'S BUSY BOOTH.

Everybody likes to see a working exhibit—something in motion. Hence the crowd always standing around the Manhattan

MANHATTAN RUBBER MANUFACTURING CO.

Rubber Co.'s exhibit, for here were three distinct varieties of rubber activity. One of the company's large "Condor" conveying belts was at work carrying off a continuous stream of leather refuse—as would be shown in a shoe factory. Nearby there was another machine, knitting the "Economy" brand of underwriters' fire hose, made by the company, the same sort that the fire department of Chicago is using to the extent of some 85,000 feet. In another part of the booth a stalwart workman was grinding tools on an emery wheel, filling the air with scintillating sparks. There were various rolls of belting in this booth. One roll contained about 400 feet of 24-inch 10-ply belting, and stood about 5 feet high. In addition there was a variety of hydraulic packing on exhibition, and garden hose. One interesting article—something of a novelty—was the "Vacuum Mirror," which can be attached to any wall and adheres by the suction of a rubber vacuum cap; a very convenient device for a man to carry in traveling.

THE FARREL FOUNDRY EXPERIMENTAL OUTFIT.

The Farrel Foundry & Machine Co.'s exhibit consisted of an 8" x 16" motor-driven experimental outfit mounted on a continuous bed-plate, made up of a washer, mill and calender. The washer had corrugated rolls, six V cuts to the inch. This washer was equipped with a patented coil clutch, type G, which gives an instantaneous release and picks up the load without shock. The calender and mill had bored rolls and were fitted up

FARREL FOUNDRY AND MACHINE CO.

with steam connections so that the required temperature could be obtained; whereas the washer rolls were solid and the machine was piped for washing the rubber.

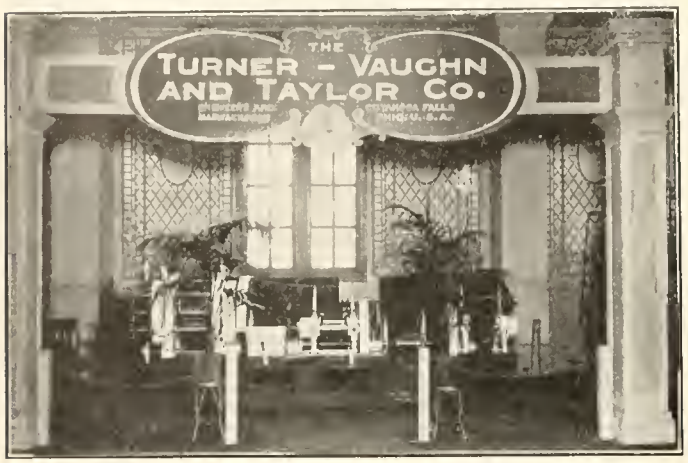
Both the mill and the washer run at a speed of 30 r. p. m., and the calender at about 15 r. p. m., and can deliver 10¼ yards per minute. Such an outfit as this is extensively used in laboratories for experimental work. It was a complete miniature of the company's larger machines.

THE TURNER, VAUGHN & TAYLOR MACHINES.

The Turner, Vaughn & Taylor Co., of Cuyahoga Falls, Ohio, also exhibited an experimental outfit, consisting of a 6" x 12" washer and mill, and an 8" x 14" 3-roll calender; the three machines being mounted on one bedplate and driven by an electric motor set inside the base, between the washer and the mill. The outfit was driven direct from the motor through a pair of double helical herringbone gears, the teeth being cut and staggered, and having a reduction ratio of 7.78 to 1. A patented multiple band clutch, equipped with an instantaneous release mechanism, controlled by a cord running over the washer mill and both sides of the calender, was attached to the gear on the main line.

The washer was fitted with chilled rolls, the back roll being cut 6 V threads per inch. The mill was equipped with chilled rolls,

both ground and polished, and connected up for steam. The frames were built with a quick movable adjusting screw and nut



TURNER-VAUGHN AND TAYLOR EXPERIMENTAL MILL.

(patents pending) to demonstrate an important feature on all large mills built by this company. The calender was equipped with 3 chilled iron rolls, ground and polished, with a two-speed control on the line shaft, and both friction and even connecting gears of cut steel, the latter being controlled by jaw clutches, which is a new feature. Further features on the calender were the disc friction let-off and wind-up, the latter being driven by small Diamond chain from the center roll.

The journal bearings throughout were all brass, and oiled by means of glass oilers. All line shaft bearings were ring oiling. All gearing was effectually protected by cast iron guards. The features which received much favorable comment—features found on "Vaughn" machinery only—were the method of changing connecting gears and the two speeds on the calender, the quick removable adjusting screw and nut on the mill, and the patented multiple band clutch on the line shaft.

The exhibit was in charge of Mr. Lee Vaughn, secretary of

BUFFALO FOUNDRY AND MACHINE CO.

the company, who was assisted by Messrs. M. A. Pearson and J. H. Ridgeway, the New York representative.

THE BUFFALO VACUUM DRYERS.

The exhibit of the Buffalo Foundry and Machine Co., though it was as far from the front entrance of the building as it could get, being against the Western wall—was still exceedingly conspicuous, because it faced the Grand Central aisle, and every visitor who mounted the marble stairway, on reaching its top was bound to see the illuminated sign and the large illuminated picture of the Buffalo factory at the head of the aisle, although they were all of 200 feet away. This exhibit was characterized by a great deal of illumination—a series of illuminated pictures of its various machines and machine parts forming a continuous railing around the booth.

But while the casual visitor was interested in these illuminated effects, the rubber manufacturer was most attracted to the working exhibits inside the booth—one of which was a large vacuum dryer with a capacity of 2½ tons of sheet rubber every twenty-four hours. These dryers are made of one piece, thus eliminating joints and the consequent leakage. They are also made

A DISTANT VIEW OF THE BUFFALO FOUNDRY EXHIBIT.

of very dense metal, preventing the seepage of air. The dryer is full of heating shelves, constructed either for steam or hot water circulation. One or two particular features may be mentioned regarding these dryers: First, that the steam manifolds are made of steel instead of cast iron, thus avoiding breakage; and secondly, that the shelves are connected to these steam manifolds by ground joints and in such a manner that no packing is used.

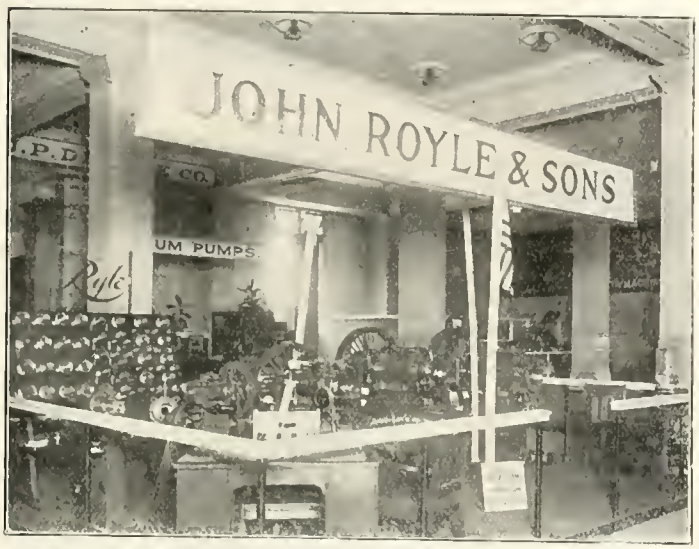
One interesting feature of the exhibit was a small laboratory vacuum shelf dryer where the centre of the stand formed the condenser—and the base a receiving chamber for condensed vapors. The vacuum in these dryers, by the way, comes within 1/10 inch of a perfect vacuum. The large dryer on exhibition was built for the Independent Tire Co., of Toronto, while the vacuum pump on exhibition was built for the General Electric Co. Mr. E. G. Rippel, sales manager, was in charge of the exhibit.

THE DEVINE VACUUM-DRYING APPARATUS.

The J. P. Devine Co., of Buffalo, New York, the pioneers and originators of vacuum drying apparatus in this country, had a working exhibit of a complete vacuum drying apparatus

for the drying of rubber and rubber compounding material, which consisted of a vacuum drying chamber made of cast iron, very strongly reinforced with bridged ribs on the outside to resist external pressure and prevent the chamber from collapsing when under very high vacuum. Inside of the dryer there is a series of welded heating shelves connected with expansion bands to steam headers for inlet and outlet of the steam. The chamber is connected to a condenser, the inside of which consisted of a number of copper tubes encased in a cast iron water jacket for condensing the vapors carried over from the vacuum drying chamber; the bottom of the condenser is a receiver, with two observation glasses, in front of which on the inside, is a copper drain pipe, permitting an ocular demonstration of the condensed vapor coming from condenser tubes to the receiver.

The condenser is connected to a dry vacuum pump, which obtains and maintains the vacuum on both condenser and dryer. The pump—an innovation in dry vacuum pump construction, as it has one rotary valve for both suction and discharge, attracted a great deal of interest at the exhibition, on account of its simplicity and effectiveness. A mercury column was attached to



The John Royle Tubing Machines.

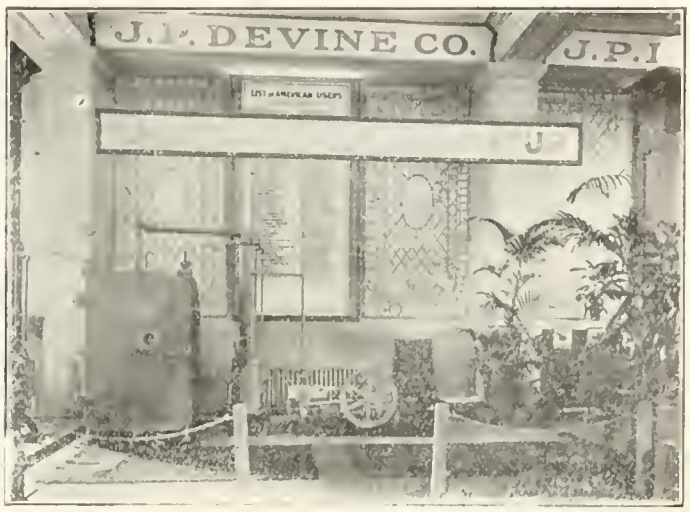
show the efficiency of the pump. This exhibit was in charge of Messrs. Chas. Devine and Howard Mason.

THE ROYLE TUBING MACHINES.

John Royle & Sons, of Paterson, New Jersey, exhibited five different tubing machines, making tubing of various sizes; the smallest machine making a tubing only 3/32 of an inch in diameter, used chiefly to hold artificial flowers on the feminine bonnet. The second-size tubing (machine made tubing) of a little larger size, but still of a small diameter, such as is used on children's toys—the jumping frogs, for instance, which one sees offered by venders on city sidewalks—to the great delight of the children, and to the equal distress of their elders who would like to get along about the more serious affairs of life. There were larger machines that made the rubber lining for garden hose. Where the hose is made particularly strong, as in some instances with three layers of rubber and two layers of fabric hose, it has to go through the machine three times—each layer representing a distinct operation. These machines make the famous garden hose that comes in 500 foot lengths. The largest machine displayed there turned out tubing of 2½ and 3 inches in diameter, for fire hose; and also for the making of jar rings.

INTERESTING WASHING AND COMPOUNDING MACHINES.

Werner & Pfleiderer, of Saginaw, Michigan, and four or five places on the continent, had a fine working exhibit of their washing, masticating and rubber solution machine. If any factory man went to the show and missed this exhibit, he was un-



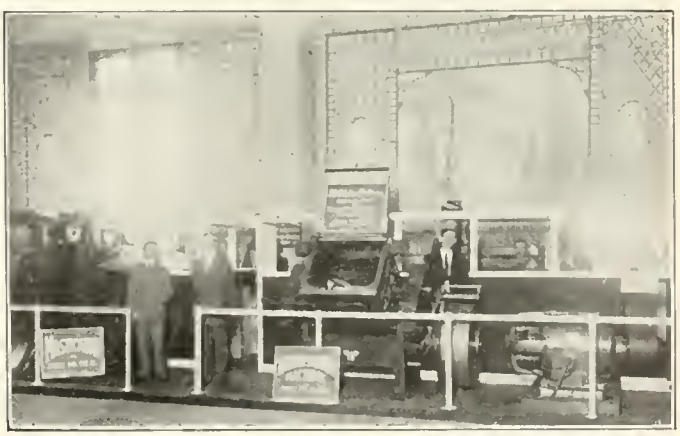
J. P. Devine Vacuum Dryers.

fortunate; because all of these machines were exceedingly interesting. The washing machine does its work rapidly and with wonderful thoroughness. The same can be said of the other two machines. Incidentally, the Michelin Rubber Co. has just ordered 30 more of these rubber solution machines for its works in France—in addition to the 60 that it is using now, which seems to indicate that this machine has at least the unqualified Michelin approval.

In fact their masticator and solution mixer have long been used by rubber mills throughout the world. The booth was in charge of C. Pletcher, W. J. Ennis and M. L. Johnson. During the Exposition the booth was visited by Mr. Emil Staehle, of Saginaw, manager of the company in this country.

THE CURTIS & MARBLE BRUSHING MACHINE.

The Curtis & Marble Machine Co., of Worcester, Massachusetts, made a convincing demonstration of their various machines, emphasizing particularly their brushing machine, which takes in a piece of fabric of any sort—from the thin fabrics used in dress shields to the heaviest tire fabrics and turns them



Werner & Pfleiderer Co.

out with smooth surfaces—all the lint and other undesirable matter being entirely removed, so that the fabric can receive a rubber coat to the best advantage. This brushing machine also takes fabric that has been coated with rubber and covers the

rubber coating with talcum, soap stone or starch to remove the stickiness and the rubber smell that it otherwise would have. In addition, they exhibited their sewing machine, which sews together widths of fabric so as to make a continuous surface.

CURTIS MARBLE MACHINE CO.

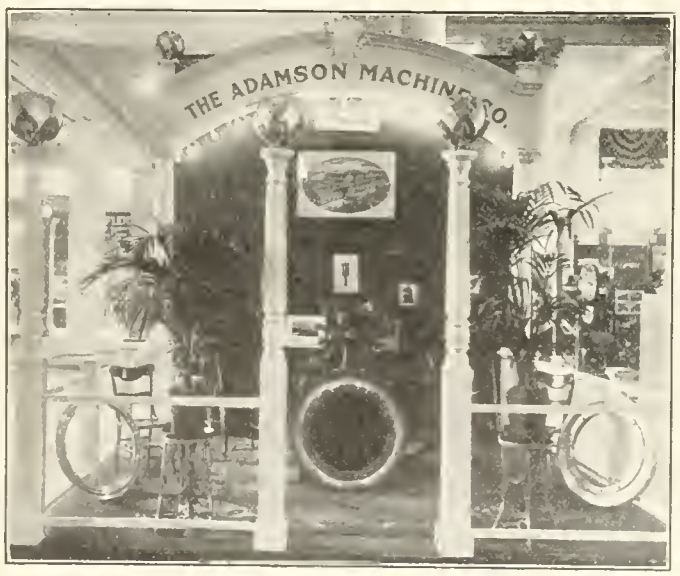
These machines, together with a measuring drum were in operation so as to give a complete demonstration of their work. Mr. E. H. Marble was present most of the time in this booth answering the questions of those who were interested in this machine.

THE ADAMSON MACHINE CO.

The Adamson Machine Co., of Akron, Ohio, did not make a display of its machinery, but exhibited a large photograph of the factory and smaller photographs of the machinery produced in the factory; in addition to distributing literature descriptive of the various machines.

THE GOVERNMENT TESTING APPLIANCES.

The exhibit of testing machines made by the Bureau of Standards of the United States Government attracted a great deal of



THE ADAMSON MACHINE CO.

attention naturally from rubber manufacturers, who were able by examining these machines to get some idea of the methods employed by the Government in testing the goods offered its various departments by American manufacturers.

E. H. CLAPP RUBBER CO.

The E. H. Clapp Rubber Co., and its subsidiary, the New Jersey Rubber Co., had an interesting exhibit of their combined product and merchandise. This stand was in charge of Messrs.

THE E. H. CLAPP RUBBER CO. AND NEW JERSEY RUBBER CO.

J. S. Clapp and Harold P. Fuller. During the show, Mr. E. H. Clapp and Mr. G. H. Clapp were among the visitors. In addition to a display of sheets and blocks of their reclaimed rubber there was quite an exhibit of tennis shoes—and other rubber footwear—tiling, cloth and tubing, manufactured from their material, including some belting that was impregnated with a rubber solution of their reclaimed rubber. Perhaps the most interesting product was a set of tires which had stood hard service without any appreciable effect, and which were composed of 20 per cent. of their reclaimed rubber.

THE LOEWENTHAL CO.

An exhibit of general interest to visiting manufacturers, was the showing of old rubber made by the Loewenthal Co., whose

THE LOEWENTHAL CO.

booth was the center of much interest, and was in charge of Messrs. Ralph and Paul Loewenthal and H. G. Armstrong. These gentlemen were among the busiest at the show, and did much during its progress to promote interest in their offerings.

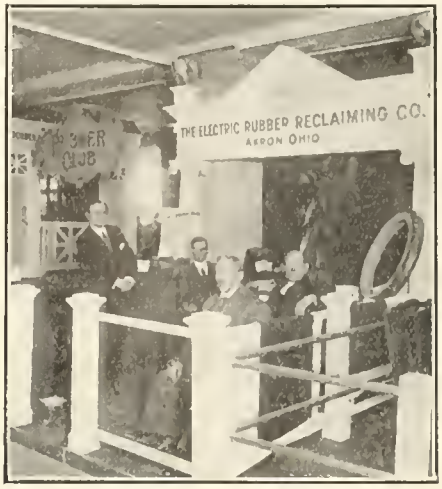
THE HOGGSON & PETTIS RUBBER TOOLS.

Those well known specialists in rubber manufacturing tools and devices, Hoggson & Pettis, exhibited a comprehensive and attractive line of their products, which display attracted much attention. The members of this company have been recognized experts for a great many years, in the production of mechanical devices adapted for rubber manufacture, and their output is to be found in practically all of the rubber mills of this country and Canada. The company was established in 1849.

Hoggson & Pettis Mfg. Co.

THE ELECTRIC RUBBER RECLAIMING CO.

The exhibit of the Electric Rubber Reclaiming Co., in charge of Messrs. Emil Gammeter, president of the company, W. A. Byrider and Shreve Clark, was among the attractive exhibits at the show, and these gentlemen were busily engaged in answering questions in reference to the company's product. The headquarters of the company are at Akron, Ohio, while the factory is at Barberton, in the same State. They claim a superior product, owing to their short time method, low temperature, and electrical process. While this is a new concern, it has already succeeded in stimulating considerable trade interest.



The Electric Rubber Reclaiming Co.

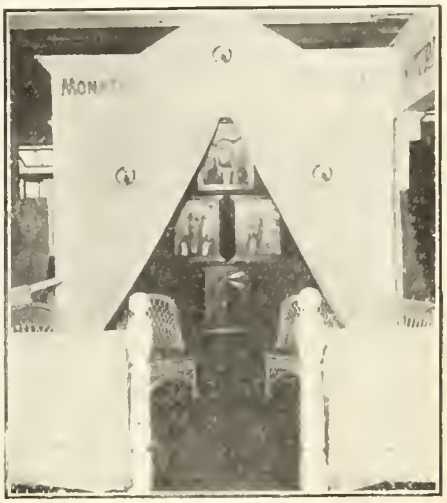
THE GAMMETER BRODBECK SALES CO.

The Gammeter Brodbeck Sales Co., whose headquarters are in Akron, are important distributors of rubber manufacturers' supplies and their exhibit attracted many users of this class of goods. Their booth was in charge of Messrs. Emil Gammeter and F. E. Ranney.

The Gammeter Brodbeck Sales Co.

MONATIQUOT RUBBER WORKS CO., SOUTH BRAINTREE, MASS.

The old proverb that the only good Indian is a dead one, does not hold good of the products of this company, whose "Four Good Indians" are very much alive. As the handsome booklet issued by it under this title tells us in attractive form, "Naturized" rubber is made under four brands, in a range of qualities, known as "Monatiquot," "Squanturn," "Massasoit" and "Samoset."



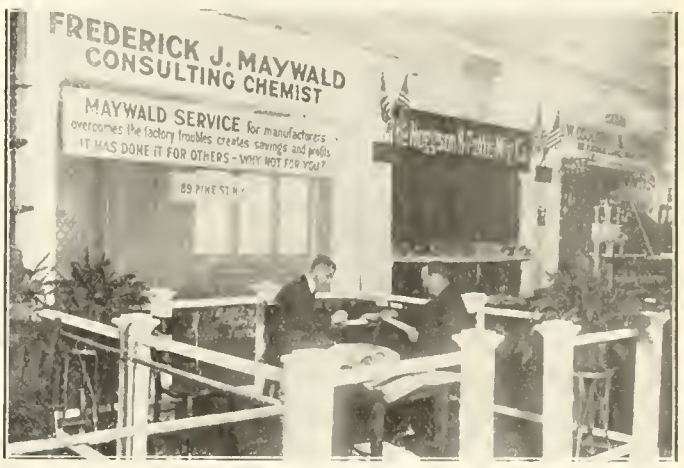
Monatiquot Rubber Works Co.

"Naturized" rubber was introduced some three years ago by the Monatiquot Rubber Co., and has proved a most available substitute for certain medium grade rubbers, and is said to be equally available for combination with the higher grades. It is adapted for a variety of purposes, especially for auto tires and mechanical rubber goods. The company's exhibit, in charge of Mr. Merton A. Turner, was most effective.

THE RUBBER CHEMIST IN EVIDENCE.

The chemist who specializes in rubber analysis has become an important factor in the trade, and Frederick J. Maywald, F. C. S., is a very well-known chemist specializing in rubber work. The Maywald booth attracted many rubber men, and Maywald methods were effectively shown.

The particular scope of these laboratories may be classified as the improvement and invention of processes, testing of new methods, experimental work, investigations, working out formulae, reduction of manufacturing cost, analyses and examination. The booth was in charge of Dr. Maywald and Mr. Clare Kennedy.



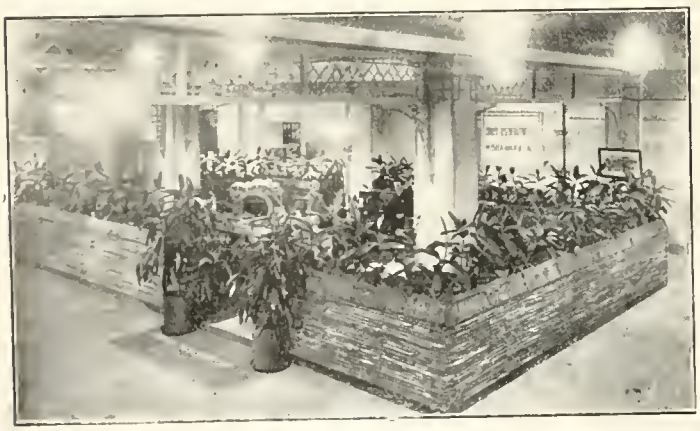
Dr. Maywald's Booth.

GEORGE A. ALDEN & CO.

"Emarex," the celebrated mineral rubber exploited by George A. Alden & Co., was the subject of attention and interest on the part of visiting manufacturers from the beginning of the

A FINE DISPLAY OF M. R. X.

show to its close. The exhibit consisted of a large number of drums attractively painted in red, containing the company's product, and in the center of the booth was a very heavy weight supported by a strip of rubber in which was incorporated a large percentage of "Emarex." Another particularly interesting feature of this exhibit was a treadmill, the flooring of which was of the Alden Mineral Rubber, operated alternately by two horses,



RUBBER REGENERATING CO.

during the progress of the exposition and showing on the closing day that "Emarex" is impervious even to the continuous hoof beats to which it was subjected for ten days. George A. Watkinson, who operates the mineral rubber department of George A. Alden & Co., was in charge of this exhibit, as he was of that in London last year, and his genial personality did much to promote the attractiveness of this exhibit and the popularity of this product.

WHERE ALL WAS RUBBER.

One of the most unique exhibits in the whole Exposition—combining art with business, was the booth of the Rubber Regenerating Co. This occupied a space of about 30 x 40 feet, and was walled in all the way around—a distance probably of 140 feet—with a solid wall about three feet high and a foot thick, built up of the regenerated rubber made by this company. On top of this wall, forming a continuous parapet, was a row of flourishing rubber trees—probably a hundred of them all told. This exhibit was in charge of Mr. W. A. Inwood, who received a great many congratulations on his conspicuously effective display.

A CHEMICAL EXHIBIT FROM HAMBURG.

Lehmann & Voss, of Hamburg, had an attractive showing of chemicals of interest to the rubber trade; in addition to which they distributed two publications of genuine value to the trade, namely:—"Handbook for India Rubber Engineers," and "Tables for India Rubber Engineers," publications which are very highly appreciated by all those fortunate enough to have acquired copies. The booth was in charge of Mr. R. Bardewyck, the company's manager in the United States.

J. W. COULSTON & CO.

This firm makes a specialty of imported red oxides of iron and of antimony in various forms, while in colors of American manufacture it carries greens and yellows for rubber compounding.

J. W. COULSTON & CO.

It likewise makes a particular feature of sulphide of zinc. Mr. Thomas Coulston, who had been in charge of the exhibit, expressed himself as much pleased with results obtained.

THE U. S. RUBBER RECLAIMING CO.

There was probably no more magnetic exhibit than that of the United States Rubber Reclaiming Co., which among other interesting features, operated a Birmingham mill, which demonstrated the process of grinding rubber in a reclaiming plant.

THE U. S. RUBBER RECLAIMING WORKS.

This booth was recognized as a center of hospitality and many good things, including "The Celebrated Loewenthal Cigar" and "Reclaimed Rubber Purses" were dispensed. Among the members of the company and its representatives present at different

times, were Messrs. Rudolph A. Loewenthal, Clarence Loewenthal, Theodore W. Bassett, L. J. Plum, D. McCallum and V. P. Schmidt.

TYSON BROTHERS.

Tyson Brothers, Inc., of Carteret, N. J., had one of the most attractive exhibits at the show.

In addition to a full line of substitutes they make a specialty of chlorinated oils, and have likewise a complete range of antimonies, whitings and fillers. In regard to substitutes, their facilities place them in a position to duplicate any quality at present on the market. Among their specialties is the "special brown adhesive," of which they are the originators and sole manufacturers. Their facilities of distribution are on a par with

TYSON BROS., INC.

the excellence of their manufactures. The capacity of their factory enables them to fill all orders promptly, while the special needs of Akron manufacturers are met from a full stock carried at that point.

The concern is managed and controlled by Messrs. R. E. and T. H. Tyson, who have brought it to its present importance.

PFALTZ & BAUER.

This firm showed a full line of the chemicals for india-rubber manufacture, made by E. de Haen, "List" Chemical Factory, Seelze, near Hanover, Germany. It included a range of colors in sulphuret of antimony, without free sulphur, which enables the manufacturer to cure rubber according to his own requirements. They also showed chrome yellows, arsenic sulphide and zinc chromates, with Japan red and iron oxides in various shades. Black hypo (with and without free sulphur), lithopone and other rubber chemicals were also shown.

An interesting feature of their display was the range of cured

AMERICAN ASPHALTUM AND RUBBER CO.

rubber samples made with their products free from sulphur. These samples were specially imported for the Rubber Exposition. The display was in charge of Mr. F. Bauer, and the firm's Philadelphia representative, Mr. J. Fred Lieberman.

AMERICAN ASPHALTUM CO.

American Asphaltum & Rubber Co., of Chicago, exhibited a number of attractively arranged drums of their well known "Pioneer" M. R., the booth being in charge of Mr. W. D. F McIntosh. The exhibit attracted many visiting manufacturers, who manifested great interest in this product.

HERMAN MUEHLSTEIN & CO.

Herman Muehlstein, a well known dealer in waste rubber, entertained a number of visiting buyers at his booth, to which he gave personal attention during the entire period of the Exposition.

DERESINATED RUBBER.

The Acushnet Process Co., of New Bedford, Massachusetts, had an attractive showing of high grade deresinated rubbers, in which visitors were much interested. The booth of this company was in charge of Messrs. F. R. Peabody, A. T. Weeks and Philip Endicott Young. Their selling agents are Geo. A. Alden & Co.

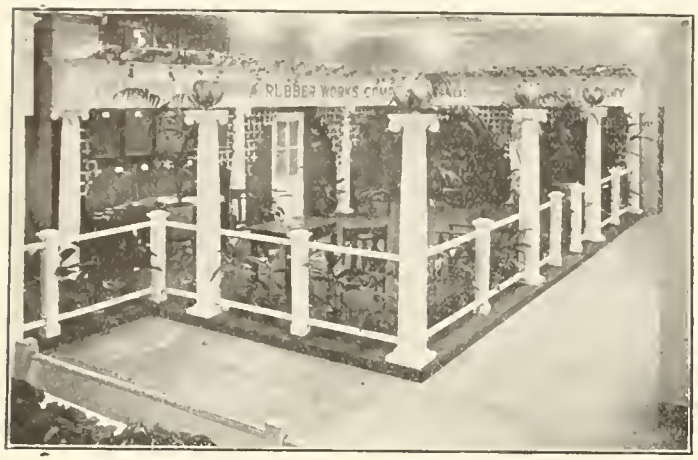
E. DE HAEN CHEMICAL WORKS.

ACUSHNET PROCESS CO.

H. MUEHLSTEIN & CO.

THE PHILADELPHIA RUBBER WORKS CO.

The exhibit of the Philadelphia Rubber Works Co., Akron, Ohio, was distinctly artistic. In the first place, it occupied generous space, so that there was no crowding. In the second

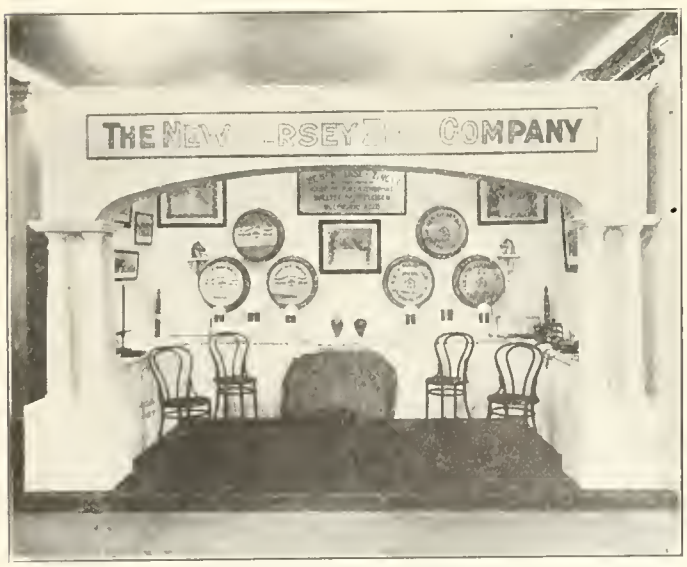


The Philadelphia Rubber Works Co.

place, it was a wonderfully fine color combination of pure white and dark green, the space being enclosed by a white rail with fluted pillars at short intervals, these pillars being topped by illuminated globes, while within the railing there was a row of rubber plants and ferns fringing the entire enclosure. Some simple furniture—not too much to clutter up the place—completed the general effect, while against the wall in the background—observable but not obtrusive—were samples of reclaimed rubber made by the company. The accompanying cut gives an idea in miniature of the general effect of this display.

DISPLAY OF NEW JERSEY ZINCS.

The exhibit of the New Jersey Zinc Co. was distinctly business-like. It consisted of tubs of oxide of zinc, taken from the company's mines at Franklin Furnace and Sterling Hill, New Jersey. There were also fine specimens of Franklinite and Willemite, concentrated forms of zinc ore. There were likewise



An Exhibit of Zinc Ores.

bottles of Lithopone, used in rubber compounding. The man from the street looking for general excitement probably did not linger very long before this booth, but the superintendent in the rubber factory found it exceedingly interesting.

COMMISSIONERS TO THE EXPOSITION.

THE following were the commissioners or delegates to the Exposition from various countries:

FEDERAL GOVERNMENT OF BRAZIL.

Dr. Candido Mendes de Almeida, president of the commission. Admiral José Carlos de Carvalho, vice-president. Dr. Eugenio Dahne, general secretary. Mr. Dillwynn M. Hazlett, assistant secretary. Mario Baptista Nunes, Dr. Oscar Sayao de Moraes, Adalberto de Sousa Aranha, Ivo Graca Campos, Dr. Carlos Cerqueira Pinto.

STATES OF BRAZIL.

Amazonas—Dr. Manuel Lobato. Mr. A. W. Stedman (New York), and Mr. J. Levy (Manáos), (Associacao Commercial do Amazonas).

Pará—Mr. George E. Pell (New York), (Associacao Commercial do Pará). Dr. Jacques Huber.

Federal Territory of Acre—Dr. Manuel Lobato, Mr. A. W. Stedman (New York).

Matto Grosso—Dr. Manuel Lobato, Mr. A. W. Stedman (New York).

Bahia—Dr. Jayme do Argollo.

Minas Geraes—Dr. J. Santiago Cardwell-Quinn.

OTHER COUNTRIES.

England—Mr. Edward G. Salmon (Imperial Institute), Mr. Noel Trotter (Rubber Growers' Association).

Federated Malay States and Straits Settlements—Mr. Leonard Wray, Mr. Cyril E. S. Baxendale.

Ceylon—Mr. F. Crosbie-Roles.

Hawaiian Islands—Hon. Wm. Williamson, Mr. Wilbur A. Anderson.

Province of Moro, Philippine Islands—Dr. James Walter Strong.

Republic of Honduras—Señor R. Camillo Diaz.

CRUDE RUBBER EXHIBITS.

WHILE Brazil at one time supplied the largest part of the world's consumption of rubber, that country has for some years had to experience the growing competition of southern Asia; notably of Malaya and Ceylon. At one time such an exposition as the recent one would have been needless. Every consumer knew what Brazilian rubber was, and the only question was, to what extent was the price to be affected by supply and demand. The possibility did not exist of an alternative variety.

Now, however, that Malayan and Ceylon rubber are daily assuming greater importance, it has become necessary for Brazil to assert her position by inviting comparison on a large and comprehensive scale.

This comparison could not be thoroughly effected in warehouses or brokers' offices, but called for a spacious building, such as those in which the first three international rubber exhibitions have been held—"Olympia," and the Agricultural Hall, London, and the Grand Central Palace, New York.

On each new occasion the arrangement of the sections has been improved, and that of the exposition just closed may be regarded as having achieved the best possible result in this respect. The close proximity of the three principal exhibits, from Brazil, British Malaya and Ceylon, was a great convenience to buyers and others interested in comparing the different varieties of rubber. It had another advantage—that of facilitating the comparison of notes between the planters of various countries, or their representatives.

Among the principal features of modern rubber cultivation is the recognition of the principle that the adoption of the processes of one country for the treatment of the *latices* produced in other countries, may lead to improved results. On this and other topics calling for the daily interchange of opinions between interested parties, the recent exposition probably did more than can now be realized, to unite and facilitate the exchange of views incidental to a successful gathering of such a nature.

BRAZIL.

The general character of the Brazilian exhibit was described in detail in the Special Exposition Number, so that many features of interest have been covered by the preliminary description. Suffice it to say that the harmonious and artistic setting was fully appreciated by the visitors.

From a comparison of the destinations (as shown by the statistical chart) to which the Brazilian rubber exports of 1911 were sent, the 36,547 tons were shipped as follows: United States, 16,146; Great Britain, 15,662; Germany, 1,058; France, 3,221; other countries, 460.

It was thus seen that about 90 per cent. of the total yield of Brazilian rubber went in about equal quantities to this country and to England.

As furnishing in about equal quantities 90 per cent. of the total Brazilian rubber shipments, the States of Pará and of Amazonas (including Acre and Matto Grosso) appropriately occupied the two principal divisions in the Brazilian section.

The Commercial Associations of Pará and Manáos had organized the exhibits from the States of Pará and Amazonas; the latter body having also undertaken the charge of the exhibits from Matto Grosso and the Federal Territory of Acre. The total weight of the samples exhibited in the Brazilian section amounted to about 70 tons, thus divided: State of Pará, 20; State of Amazonas, 30; Territory of Acre, 10; Matto Grosso and smaller States, 10.

PARA.

In the collection of samples from the State of Pará the following descriptions were included:

Low Xingu fine; High Xingu fine; High Xingu Caucho Bali; Islands coarse; Islands fine; Cameta coarse; Cavianna fine; Weak fine; Weak coarse; Cajary fine; Anapu; Tocantins; Tiras coarse; Tapajos fine strip and Itaikuba fine.

Mr. George E. Pell, of the General Rubber Co., was Commissioner for the Pará Commercial Association. Dr. Jacques Huber also represented Pará.

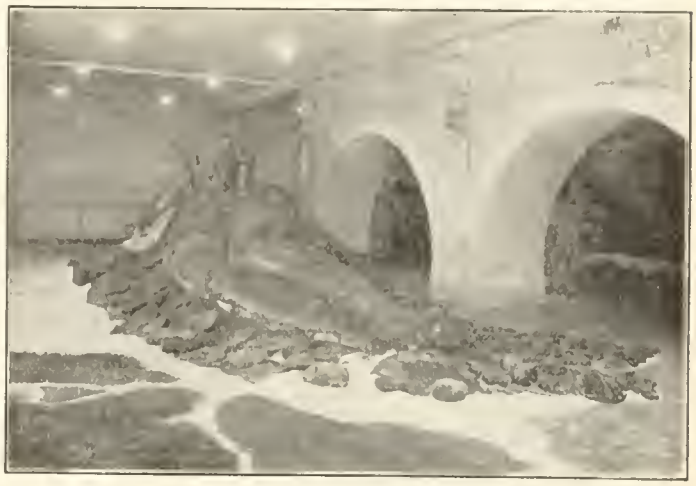
AMAZONAS.

The samples from Amazonas included: Up river fine from up the rivers Madeira, Jurua and Purus belonging to Amazonas,

30 TONS OF AMAZON RUBBER.

Matto Grosso and Acre. They also comprised *Hevea* Scrap (Sernamby) as well as Caucho ball. Smoked and smokeless sheets of *Hevea* rubber treated by the process of Mr. Monteiro da Costa were also shown. Dr. Carlos de Cerqueira Pinto also had specimens of Pará rubber treated by his patent process, which was further illustrated by the exhibits of various American manufacturers. Dr. Manuel Lobato was Commissioner and was in constant attendance.

The pyramid composed of 30 tons of Amazon rubber, illustrated in the last number of THE INDIA RUBBER WORLD, proved one of



THE GENIUS OF THE AMAZON.

the marked attractions. The Commercial Association of Amazonas was represented by Mr. A. W. Stedman and Mr. J. Levy.

MATTO GROSSO.

Matto Grosso sent the following up-river samples, which were in charge of the State of Amazonas:

Matto Grosso Samples.

Source.	Shown by
Valley of River Machado,	Avensi & Co.
River Mutumparaná,	Julio Müller & Co.
Valley of River Javary,	Aruda Bros.
Valley of River Guaporé,	Guaporé Rubber Co.
Valley of River Jacy—Paraná,	Fidel Bacca & Co.

The Commissioners for Matto Grosso were Dr. Lobato and Mr. A. W. Stedman.

BAHIA.

The Bahia samples, which only arrived on September 28, included Maniçoba, from Moraes & Co., J. C. da Costa Santos and S. Hess & Co.; Maniçoba Superior from M. Ullmann & Co.; Maniçoba Especial, from the Commercial Museum of the State of Bahia, and Maniçoba, from F. Stevenson & Co., Jequié.

Dr. Jayme do Argollo, the Commissioner of the State, gave full and courteous explanations regarding the samples.

MINAS GERAES.

The samples exhibited included types of Maniçoba from Clemence & Co., Resacca Estate and the Chamber of Commerce, of Minas; also of wild Maniçoba cleaned by Werner & Pfleiderer's machine.

Two comparative samples were of special interest: Wild Maniçoba sheeted on washer, and plantation Maniçoba, also sheeted on washer.

One very tranparent quality of sheet Maniçoba was exhibited by the British and Brazilian Rubber Plantation Co., Ltd., Lagoa Estate. Another sample came from Restinga Estate.

An interesting feature of the exhibit was the specimen of transparent sheet Maniçoba, through which could be read a card with the words "Rubber Window Panes from Minas, by Cardwell-Quinn's Coagulating Process." Dr. J. Santiago Cardwell-Quinn, the Commissioner from Minas Geraes, stated that 87 per cent. of the Maniçoba rubber produced there could be delivered in equally transparent condition.

OTHER STATES.

Samples from other States included small exhibits from Piauhy, Pernambuco, and Alagoas.

RECEPTION TO THE BRAZILIAN AMBASSADOR.

The greatest number of people gathered at any time during the Exposition attended on the afternoon of September 28, on the occasion of a reception tendered to the Brazilian Ambassa-

RECEPTION TO THE BRAZILIAN AMBASSADOR.

dor to Washington, Dr. Domicio da Gama. The reception committee consisted of Count Candido Mendes de Almeida, Admiral Jose Carlos de Carvalho and Dr. Eugenio Dahne. The reception proper was held on the spacious landing at the head of the grand marble staircase at the east end of the main floor as shown in the accompanying illustration. Immediately after the formal reception the entire company repaired to the balcony floor to visit the wonderful Brazilian exhibit, which, notwithstanding the large space devoted to it, was crowded in every nook and corner. After every one had had an opportunity to look at the samples of crude rubber displayed by the different organizations of Brazil, refreshments were served to the accompaniment of most excellent music. Brazil Day was a conspicuously successful feature of the Exhibition.

THE POPULAR MOVING PICTURE SHOWS.

One was always sure of finding a good crowd in the moving picture room, which was located on the main floor, in the southeast corner, and had seating accommodations for about 250 people, besides standing room, which was quite frequently utilized. These shows were given at two and four o'clock in the afternoon, and at 8 o'clock in the evening; and as new series of pictures were being constantly put on, one could attend a number of these picture displays without seeing any repetition. The pictures for the most part showed scenes along the Amazon, in the rubber exporting cities and in the rubber producing jungles. This feature was a valuable addition to the general exhibition.

One exceedingly interesting series of films showed the Madeira-Mamoré Railroad, which has recently been opened, after years of labor and millions of expense. One immediately sees as he travels over this road in these of moving pictures, why it should have taken so long to build and cost so much. The road is only 180 miles long, but it is a succession of bridges made of steel and cement, over streams and ravines, followed by deep cuts through solid stone—the whole road going through the densest imaginable jungle. As the road was built entirely by American engineers it reflects extreme credit upon our national engineering skill. This road starts at Porto Velho. Though this port is 1,800 miles up the river from the mouth of the Amazon, the largest steamers in the world can dock comfortably at its wharves.

ALGOT LANGE'S INTERESTING LECTURES.

Occasionally in place of the moving picture films Algot Lange, the well-known Amazon explorer, delivered a lecture, accompanied by stereopticon slides, on his twelve months' experience during 1910-1911 in the Amazon forests. It will be remembered that last spring his publishers issued his book, entitled "In the Amazon Jungle," an exceedingly interesting narrative, full of adventure and moving incidents. Mr. Lange's lectures traversed practically the same ground that was covered in his book, but to hear a story from an explorer's own lips is always more interesting than to read it in cold type, consequently his lectures always crowded the auditorium. He described the extraordinary features of the Amazon, which, he says, counting all its tributaries, has 100,000 miles of navigable waters. The river, hundreds of miles from its mouth, widens out in several places into a great inland lake, sometimes 24 or 25 miles in width.

He showed several pictures of a forlorn little hamlet, perched up on the banks of the river, called Remate de Males—being in English "The Culmination of Evils." This is at the point where the Javary River flows into the Amazon, a thousand miles from the Atlantic Ocean. The lecturer had spent several months in this forsaken spot, and he gave a graphic account of the place and its peculiar life. This is the resort of rubber gatherers during the rainy season, when their work is interrupted.

He also recounted his experiences up the Itecoahy River, where, among other interesting encounters, he fell in with a boa-constrictor, 54 feet and 8 inches long, which with the help of six trusted assistants was dispatched and duly skinned. Some American pessimists have doubted that 54 feet 8 inches —at least the 8 inches. But it seems that quite recently an English explorer alleged that he had an encounter with a boa-constrictor 65 feet long, which would appear to be ample endorsement of the accuracy of Mr. Lange's measurements. The lecturer's pictures of the animal life in the jungle proved of absorbing interest to his audiences.

Mr. Lange expects, in a few weeks, to start on another exploring expedition in the Amazon country, to cover the next three years, taken under the auspices of the University of Pennsylvania. He states that notwithstanding the fact that during his twelve months' residence in that country he had 17 distinct attacks of fever, with practically no respite between, he feels the most profound affection for the Amazon and cannot get away from the fascinating spell that it seems to cast over the natural explorer.

BRITISH MALAYA.

The bringing under British protection of the various

THE BRITISH MALAYAN DISPLAY.

native States in the Malayan Peninsula was the first step to the consolidation of their business interests. This combination has

rendered possible an exhibit in which all parts of the Peninsula would share, as was done in this case.

The growth of the Malayan rubber industry is a stimulus to renewed effort. From the interesting booklet distributed in this section, "The Story of the Rubber Industry in Malaya," its progress is clearly shown:

MALAYAN RUBBER EXPORTS.

	Pounds.
1906	1,035,601
1907	1,998,889
1908	3,186,099
1909	6,112,023
1910	12,245,864
1911	23,914,263
(Estimated) 1912	34,000,000

Such a development is probably without a parallel in the history of the world's commerce. Whether the increased yield will

FEDERATED MALAY STATES.

continue at the same rate depends on the number of trees reaching maturity. The acreage planted from 1906 to 1909 averaged about 50,000. That for 1910 was about 70,000, and that for 1911, 180,000. The direct result of the "boom" of 1910 was the heavy planting in 1911 and the prospectively heavy yield for 1916.

The samples shown were from about 80 estates and were distributed as follows among the various classes of rubber:

	Samples.	Pounds.
Crepe	58	6,949
Smoked sheet	33	5,406
Scrap	22	3,264
Sheet	6	628
Block, etc.	16	1,388
	135	17,635

One of the features of the Malayan exhibit was that companies which had in London exhibited independently now in almost all cases joined in the general British Malayan display.

Among the miscellaneous exhibits were specimens of good tapping and recovery of bark, as well as a model of the Kuala Lumpur Experimental Station. The tapping of gutta percha was shown by photographs. The samples were in most cases about 100 pounds each, but in the instance of the Sungei Kapar Rubber Co. were much larger; the exhibit including 1,548 pounds of smoked sheet rubber and 1,104 pounds of block rubber. The exhibit was in charge of Mr. Leonard Wray, I. S. O., assisted by Mr. W. J. Graham, who had come out from England for that purpose.

While the subject of Malayan rubber is probably today the most interesting to the industry, its products are to a large extent uniform in character.

Mr. Wray referred to the hearty co-operation he had met with from Mr. Cyril E. S. Baxendale, representing the Malayan Planters' Association, and Mr. Noel Trotter, acting for the Rubber Growers' Association of London. Malayan interests have undoubtedly gained by the exposition.

In the arrangement of the British Malayan exhibit the idea of unity of feeling among the various states and possessions on the Malay peninsula, has been very happily carried out. Mr. Wray had been appointed by the secretary for the colonies, as commissioner to the exposition from the Federated Malay States and the Straits Settlements. Although his official commissionership only extended to the above two governments, Johore and the other native states outside the Federation were likewise acting under Mr Wray's advice. The geographical—if not strictly political unity of all parts of the Malay peninsula was illustrated by the fact that the enclosure surrounding the space occupied by the British Malayan section bore the names of the various states on the peninsula.

HIGHLANDS & LOWLANDS PARA RUBBER CO.

The Highlands & Lowlands Pará Rubber Co. (Thomas Barlow & Brother, Ceylon House, London) exhibited the following samples:

a. Finest smoked sheet plantation Pará rubber.
b. Unsmoked sheet plantation Pará rubber.
c. Smoked crepe plantation Pará rubber.
d. Unsmoked crepe plantation Pará rubber.

This company received the first award and gold medal for smoked sheet; being likewise commended for unsmoked sheet. Its property, comprising 8,137 acres, is situated near Port Swettenham, Federated Malay States. The planted area is 3,760 acres, three-quarters of which had been planted before 1907, while the output of dry rubber has been as follows: 1907—193,505 pounds; 1908—222,287 pounds; 1909—346,259 pounds; 1910—511,724 pounds; 1911—637,449 pounds. Its dividend for 1910 was 50 per cent., while an interim dividend of 22½ per cent. was paid for 1911.

WATCHING THE RUBBER WORKERS.

One of the most interesting features of the whole Exposition —but one that possibly was missed by quite a number of visitors, because it was at the remote end of the mezzanine floor—was a display of moving pictures given every hour or so during the afternoon and evening, showing the work that goes on in the plantations of the Middle East. In a half hour's time the spectator could get a better idea of plantation operations than hours of reading could possibly give him.

The first films showed the virgin forests, and then the work of clearing. When the land was cleared off and burnt clean the planting began. Two coolies moved along over a bed of soft earth prepared for them—each at the end of a long board about one foot wide, with notches at even intervals along the edges. They put the board down on the ground, and at each notch pushed a seed into the earth. The board was then moved along its width and the process repeated. In this way, seeds were planted at perfectly regular intervals, and the whole work was done simply and rapidly without the necessity of any mathematical calculations.

Then the process of weeding and keeping the plantations clear of ants and other insects was shown. The scene was then transferred to a plantation of young trees about five years old and the tapping was shown. The natives were seen moving swiftly from tree to tree, making their incisions very deftly and attaching the little tin cups. Next came the gathering of the cups full of latex which was poured into pails and the pails in turn emptied into a large tank on wheels, drawn through the plantation to re-

ceive the rubber milk. The scene was then transferred to indoors where workmen were busy coagulating the latex and skimming the rubber off the top. The next step showed husky laborers kneading the rubber as a baker kneads dough. It was then put through rollers, coming out in long crepe sheets. After that came the shipping room, where the rubber was boxed up and made ready for the market. Then followed a dock scene with the boxes going on shipboard, and finally the ship was seen steaming down the harbor on its way to the London market.

It gave a very fine picture of all the plantation methods, and held the spectators in rapt attention. Many a rubber manufacturer who wants a good advertising medium might with advantage possess himself of a set of these films; they would make a marvelously interesting introduction to a brief story regarding his own product.

CEYLON.

The Ceylon exhibit, which was replete with interest, was in charge of Mr. F. Crosbie-Roles, whose previous experience at Chicago and St. Louis rendered him specially qualified for the office of Commissioner for Ceylon. He was assisted by Mr. E. B. Nathanielsz, a Sinhalese, who had come over with the exhibit. Rubber samples to the number of 64 were contributed by 32 estates, through 15 managing agents, distributed among the following classes: crepe, 2,192 pounds; scrap, 800 pounds; sheet, 150 pounds; smoked sheet, 104½ pounds; worm, etc., 129 pounds; total weight, 3,375½ pounds. The samples showed a judicious selection of the qualities in which Ceylon is at its best. They included one sample of block worm rubber from the Gikiyanakande estate of G. H. Golledge, Neboda, which had been shown at the 1906 Ceylon exhibition and which was still in unimpaired condition.

Another sample exhibited was one of 30 pounds from L. Bellerio specially prepared without acid by his new process. This sample was to be tried by a prominent American rubber company, after the close of the exposition.

In connection with the Ceylon exhibit there was distributed a "Ceylon Handbook," by R. H. Lock, M. A. Sc. D., Acting Director of the Botanic Gardens, Ceylon, and C. O. Macadam. An interesting series of tables shows the growth of rubber cultivation in Ceylon from 1,750 acres in 1900 to 230,000 in 1912.

The plantings show since 1909, a yearly increase of about 7 to 10 per cent. In Mr. Crosbie-Roles' opinion, it would be safe to reckon on an augmentation of 10 per cent. a year in plantings. The percentage of increase in yield depends, he added, not upon the recent plantings, but on those of five years before. Hence the increase in planting from 40,000 acres in 1905 to 100,000 in 1906 finds an echo in the advance of yield from 3,194 tons in 1911 to the estimate of 6,000 tons for 1912.

Exports increased from 19 tons in 1903 to 3,194 tons in 1911; having been for the last three years: 1910, 1,600 tons; 1911, 3,194 tons and 1912 (estimated, 6,000 tons).

Among the exhibits were 12 bottles of rubber latex from the director of the Royal Botanic Gardens, Peradenya, as well as five trunks of rubber trees from the same source. Desiccated cocoa nuts, plumbago, cocoanut oil, cardamoms, and other Ceylon products were likewise shown. Though not directly connected with rubber, they represent the produce of the island, on which was built up the present development of the rubber trade. Ceylon kept well in line at the exposition, which marks another step in its commercial progress.

Mr. Crosbie-Roles in conversation alluded to the advantage which American manufacturers had derived from being thus brought into touch with plantations, through the various Colombo managing agents, whose names appeared in conjunction with the plantation exhibits. The object of the exposition, in the dissemination of information about Ceylon had been fully attained.

One of the Ceylon samples (of the the Rosehaugh Estate) has been awarded the Silver Medal in the competition of the Rubber Growers' Association.

MORO PROVINCE, PHILIPPINE ISLANDS.

This exhibit was under charge of Dr. J. W. Strong, general manager of the Basilan Co., Commissioner of the Moro Provincial Government, as well as Mr. M. L. Stewart, Director for Commerce of the Philippine Islands, and Mr. J. R. Wilson, Assistant Director of the Government Bureau of Lands. Dr. Strong was obliged to return to the Philippines almost immediately after the opening of the exposition, so that his colleagues had charge during the greater part of the time.

In speaking with a representative of the INDIA RUBBER WORLD, Dr. Strong gave some interesting particulars of the present state of Philippine rubber planting. There are now, he stated, about 6,000 acres in the islands planted in rubber, chiefly *Hevea*, the larger portion having been planted since 1909. The Basilan Co., which has 660 acres planted, has been the first to enter the market with finished product from earlier plantings, having made shipments within the last few years to Hamburg and London. Arrangements have been made with Gravenhorst & Co., New York, to receive shipments of Basilan rubber, which was recently awarded a prize at the Philippine Exposition, Manila, and has been well received in Europe.

Among the samples exhibited were smoked and unsmoked Pará sheet; smoked Pará block; smoked Ceara sheet and block and Castilloa scrap.

The Moro Government exhibit also represented hemp, as well as the cabinet woods which abound in the Philippines.

HAWAIIAN RUBBER GROWERS' ASSOCIATION.

The commissioners for the Hawaiian Islands were the Hon. Wm. Williamson and Mr. Wilbur A. Anderson; but only the latter gentleman attended, the former having been unavoidably detained at San Francisco. Mr. Anderson occupies an important position, being general manager of the combination formed of the Nahiku Rubber Co., Hawaiian-American Rubber Co., and Koolau Rubber Co., as well as superintendent of the United States Experimental Station at Honolulu.

Special interest attaches to Hawaiian rubber from the fact that there are about 500,000 trees in the islands, mostly *Ceara*, chiefly planted before 1909 and thus now approaching the bearing stage. Further planting has been on a small scale from the desire to see the results of the earlier plantings now soon to reach maturity.

Tapping has just commenced of the trees planted in 1906, several thousand pounds having been shipped, larger and growing shipments being anticipated in the immediate future.

Analyses of the Hawaiian rubber which has reached New York have been extremely favorable. The samples exhibited were of pressed Ceara, the exhibit being in charge of Mr. C. A. Dann, representing Alexander and Baldwin (Ltd.), 82 Wall street, New York, agents of the combined companies referred to.

IMPERIAL INSTITUTE.

The interesting and valuable exhibit of the Imperial Institute, of London, was in charge of Mr. E. G. Salmon, the Commissioner. It was in two parts; the herbarium and the collection of rubber specimens; these covering, respectively, the botanical and the rubber growing features of the question. Upwards of 200 specimens of various kinds of rubber were displayed geographically arranged under their different sources. The inspection of these specimens was much facilitated by cards, with explanatory details as to the principal countries represented.

An interesting card attached to the exhibit of the Imperial Institute showed the distribution of the rubber production for 1910 among the British Crown Colonies and Protected States.

BRITISH GUIANA.

British Guiana was represented in the general collection of rubber samples exhibited by the Imperial Institute, as well as by samples of plantation Pará, *Sapium* rubber and balata shown by courtesy of the Institute in a separate glass case near its exhibit.

REPUBLIC OF HONDURAS.

Senor R. Camilo Diaz, Consul General at New York, looked after the interests of Honduras, which was represented by samples of crude rubber from the Republic.

FRENCH INDO CHINA.

This exhibit consisted of sheet rubber made in 1910. In connection, there was distributed a booklet by M. J. Lan on *Hevea Brasiliensis* in Cochin China, translated into English by M. G. Jason, of Sargon.

DUTCH GUIANA CULTURE CO.

Messrs. Ray C. Holbrook and J. E. Williams were in charge of the exhibit of this company, which included plantation Pará from trees 5-8 years old; wild Pará; *Castilloa elastica* ball and scrap.

Planting has been carried on for about 18 months at Plantation de Vrede, Dutch Guiana, where there are now 50,000 rubber trees which have been planted a year and a half. In addition there are 5,000 which have been planted 12 months, and 2,000 planted six months ago.

This company is specially interested in pushing Dutch Guiana products, and distributed a neat booklet descriptive of the Plantation de Vrede, as well as another of a more general character, entitled "Description of a Surinam Plantation." The trees now planted cover an area of about 300 acres interplanted with coffee trees. It is in contemplation to increase the plantings at an early date by a further area of 500 acres. The company's headquarters are at Chicago, Harris Trust Building.

THE BARTICA CO.

This company, which had an exhibit, reports that it has on its plantation in British Guiana, 250 acres in Sisal, interplanted with rubber, and 600 acres only in *Hevea*. It contemplates planting 600 to 1,000 acres a year in rubber.

ED. MAURER.

Mr. Ed Maurer and Mr. W. Greutert had charge of this exhibit, which included the following classes of rubber; Ceylon and Malay plantation; Brazil of all kinds; Africans (fifteen varieties), Borneo and Central American; as well as guayule and balata, which form a specialty of this firm's trading; and finally gutta percha. The exhibits were shown to advantage in a handsome pavilion made of Ceylon rubber.

Ed. Maurer's House of Rubber.

NEW YORK COMMERCIAL CO.

This exhibit attracted many visitors. It included: Upriver fine; Islands fine; wild rubber from Congo, Kamerun, Mexico and Panama; Guayule; Maniçoba, Sierra Leone niggers; plantation rubber from Dutch Guiana and Java. Mr. A. W. Stedman was in charge of the exhibit. The Boston-Bolivia Co. exhibited samples of fine Pará through the New York Commercial Co.

New York Commercial Co.

MEYER & BROWN.

This firm showed samples of *Hevea* in pale and smoked crepe, also block, smoked sheet and scrap, as well as Rambong crepe. In addition, they showed Congo Lobay, white Lopari, Congo Sangha, Central American Sausage; besides Massai, Java and Mozambique rubber.

HENDERSON & KORN.

The samples exhibited by this firm included pale, brown and dark crepe, also smoked sheet and ribbed smoked sheet; in addition to Java crepe and block. They were represented by Messrs. Ernst Korn, F. R. Henderson and Bancroft Henderson, of the New York office, and H. Henderson, of the Akron office. A comfortable inner room enhanced the attractiveness of the pavilion occupied by this firm.

THE UNITED MALAYSIAN CO.

The United Malaysian Co., of New York, London and Singapore, had an interesting exhibit in the balcony with the other crude rubber exhibits. Its booth was not elaborate, but was picturesque and inviting, being roofed over with palms, indicative of the Tropics, and having many sheets of crepe rubber hanging from the posts, and covering railings; besides many large photographs of the country in which this company operates, showing its plants, its coolies at work tapping trees in the jungle, and other interesting scenes.

Elsewhere in this issue there will be found an illustrated description of the work done by this company, with some facts relative to its particular product—Jelutong. This article will probably be of interest to all those who have given any attention to the various products of the Middle East.

A VARIETY OF RUBBERS.

Charles T. Wilson showed guayule grades: Mexican crude and refined Colorado; deresinated Colorado; *Hevea;* Maniçoba crepe from German East Africa; Mozambique crepe; *Castilloa.* Mr. Wilson and Mr. Henry Perlish were in charge of the exhibit.

RUBBER TRADING CO.

The samples exhibited by this company included a general line of Parás, plantations, African and Centrals, in which a satisfactory business had been done in the course of the exposition. Mr. Robert B. Baird was in charge of the exhibit.

OHIO GROWN RUBBER.

An excellently arranged show case was displayed by Mr. Charles P. Fox, of Akron, containing samples, representing Ohio-grown rubber in various forms. These had been respectively derived from *Apocynum* or Indian hemp and *Asclepias* or milkweed and represented the latex, as well as the resin, coagulum and rubber.

THE GENERAL RUBBER CO.

This company had an attractive pavilion, showing the names of its subsidiaries: General Rubber Co., of Brazil, Pará and Manáos; General Rubber Co., of Singapore; Wm. Symington & Co., Limited, London and Liverpool; Holland-American Plantations Co., Kisaran, Ashan, Sumatra; Netherlands Langkat Rubber Co., Tandjong Poera, Langkat, Sumatra.

A CENTRIFUGAL RUBBER COAGULATOR.

At the booth of the Empire Cream Separator Co., Bloomfield, New Jersey, Mr. G. M. Lescher, inventor of the process, was in charge and explained the advantages of the Empire Centrifugal Rubber Coagulator. This machine has met with much success in Mexico.

THE RAW PRODUCTS CO.

Mr. Samuel Kubie, president and treasurer, and Mr. F. H. Peaty, secretary and manager, represented this company. They received the visits of many friends during the exhibition.

OSTERRIETH & CO., ANTWERP.

This firm of prominent Antwerp importers showed a small but interesting exhibit of standard qualities of crepe plantation rubber. It included thin pale, grade I; thin, grades II and IV; thick pale, grade I; thick, grades II and IV.

THE FOREIGN PRESS.

The "Gummi-Zeitung" of Berlin, "Grenier's Rubber News" of Kuala Lumpur, and the "Rubber World" of London, were represented in the crude rubber section.

RUBBER FERTILIZERS.

The German Kali Works, 42 Broadway, New York, representing the Kalisyndikat of Berlin, distributed copies of literature descriptive of their fertilizing products, including a pamphlet on the "Manuring of Rubber," by Arthur Stephen, an English expert on the subject.

THE MANHATTAN COMPANY IN JAVA.

The Manhattan Rubber Manufacturing Co., Passaic, N. J., has found it desirable to add the cultivation of rubber to its manufacture, by means of its own plantation in Java. Increased importance is anticipated for this branch of its business.

SALE OF SAMPLES BY INSCRIPTION.

The large quantity of samples sent to the Exposition for display or competition (and which had not been sold privately, or otherwise cleared) was disposed of by "inscription," on the plan customary in various continental markets. Bids were received by the New York Commercial Co. until 4 p. m. on October 3, the last day of the exposition. Following are the prices obtained, which turned out to be exceptionally good, as the market has since been a declining one:

Brazil Rubber—

Amazon Fine Pará	$1.15 per lb.
DaCosta Process Hevea, smoked	1.64 per lb.
" " " unsmoked	1.64 per lb.

Rubber from Federated Malay States,
" " Ceylon, and
" " the Rubber Growers' Association—

Block Rubber	$1.19¼
Smoked Sheets	1.13—$1.18¾
Unsmoked Sheets	1.10
Crepe	1.11— 1.17½
First Latex Crepe	1.11— 1.12
Scrap Crepe	1.03½

In this distribution of the samples exhibited, throughout the American industry, the main object of the Exposition has been attained, through the more intimate knowledge consumers have thus gained of the rubber supplies at their disposal, both in wild and plantation varieties. The weights of the samples have ranged in most cases from 50 to 112 pounds. There was in all instances enough for a practical test.

AN INTERESTING CHECK.

Here is a rubber check of more than passing interest—not because of the size of the amount—for that is not so particularly large. The interest in the check shown below lies in the fact that this represents the first payment made for plantation rubber ever sold at a public sale in New York. This sale took place on the last day of the Third International Rubber Exposition, recently held at the Grand Central Palace.

CHECK PAID FOR FIRST PLANTATION RUBBER EVER SOLD AT PUBLIC SALE IN AMERICA.

THE EXPOSITION PRIZE COMPETITIONS.

TWO competitions marked the course of the Exposition. One was for the $1,000 silver trophy, which had been presented by Mr. Henry C. Pearson, editor of THE INDIA RUBBER WORLD, an illustration of which appeared in the special Exposition number. It was awarded on the merits of the samples exhibited, no special entry being required. It was won by the State of Amazonas. The presentation of the shield through the Brazilian Ambassador was one of the features of the closing banquet.

The other consisted of the gold, silver and bronze medals (each with diploma) of the Rubber Growers Association, London, awarded for the three samples of Plantation Rubber (irrespective of the method of preparation or country of origin), specially entered for this competition, which may be placed highest by the jury. The entries were 135 in number, of which 75 were from Malaya, 54 from Ceylon, 3 from Burma, 2 from Brazil and 1 from German East Africa. The list of awards follows:

Highlands and Lowlands Estate, Federated Malay States—First award, smoked sheet; gold medal.

Rosehaugh Estate, Ceylon—Silver medal.

West Country Estate, Federated Malay States—Bronze medal.

Klanang Estate, Federated Malay States—Smoked sheet; highly commended.

Bukit Rajah Estate, Federated Malay States—P. R. crepe; highly commended.

Maddagebera Estate, Ceylon—crepe; highly commended.

Cicely Estate, Federated Malay States—Pale thin crepe; commended.

Highlands and Lowlands Estate, Federated Malay States—Unsmoked sheet; commended.

Batu Caves Estate, Federated Malay States—Smoked sheet; commended.

The West Country Estate, Federated Malay States—Commended.

The medals were presented to the successful competitors at the Exposition banquet, through Messrs, Cyril E. S. Baxendale, F. Crosbie-Roles and Leonard Wray; the results of the two competitions illustrating the views expressed on that occasion that wild and plantation rubber can harmoniously co-operate for the benefit of the industry.

RUBBER STREET PAVING.

LOOKING ahead a few years when low priced rubber may make the article economically available for street pavement, the "Standard Asphalt & Rubber Co." of Chicago, through their selling agents, Geo. A. Alden & Co., of Boston,

made an exhibition of what "Sarco" and "M. R. X." will do for the purpose.

The exhibit consisted of rubber bricks 8 x 4 x 2½ inches, having grooves along the sides as shown in the accompanying cut.

The wearing surface on top, one inch thick, contains 50 per cent. of M. R. X., and 25 per cent. of rubber, etc., a mixture of

sufficient tenacity to resist the wear and tear of street travel and to remain unaffected by weather changes.

The base or underpart of these bricks is of "Sarco." They are to be laid an inch apart, the spaces all around being filled with melted "Sarco." This, flowing into the horizontal grooves, will form, when cooled, a dove-tailed anchorage to prevent the bricks being pried up in the night and carried off to the junk shop; and at the same time prevent the slipping of the horse and the skidding of the motor car.

A practical demonstration of the wearing quality of the top rubber and "M. R. X." surface of the bricks was given by means of an old fashioned tread mill, in which a relay of horses sharp-shod with heel and toe caulks, pounded along in an endless journey to nowhere, on lags or treads made of the "M. R. X." mixture, without in the least cutting or bruising them.

An amusing incident occurred in connection with this exhibit that affords a striking illustration of the eccentricities of the human mind. These horses, one white and the other black, were hired from the "Ben Hur" show, where they nightly appear in the great feature of the chariot race, running on movable platforms revolving against them.

The groom in attendance on these animals, a thoroughbred circus man, knowing horses from forelock to fetlock, after observing the pair go through their paces in the tread mill for several days, finally toward the close of the exhibition, circled curiously around the machine and said to Mr. Whitehouse, Alden's attendant: "Say! I don't see where the power is jined on that makes this thing go!"

NORTH BRITISH RAILWAY TESTS.

In the specifications for buffers, issued by the North British Railway Co., it is stipulated that after 48 hours' compression, the rubber should return to one-half its original size, and should likewise sustain without injury 40,000 strokes of a hammer.

This certainly is rather heroic treatment for rubber buffers, but buffers can be made to stand these tests if a sufficiently good quality of rubber is used. The question naturally arises whether this class of goods would warrant the use of such high grade rubber as this test would call for.

The Exposition Banquet.

ON the evening of October 2, the Grand Exposition Banquet was held in the ball room of the Hotel Plaza, New York. It was a signal success—both in the number and character of those present, and in the quality of the after-dinner speaking which was of an unusually high order. About 120 were present, including the officials of the Exposition, commissioners and delegates from foreign countries, and American exhibitors. Fifteen or twenty ladies, wives of officials and delegates, were also present as guests. The hour was set for 9 o'clock, and with unusual promptness all were at their places at the tables very soon after that hour. Mr. Henry C. Pearson presided, with the following gentlemen seated at his table: On the President's right, Dr. Domicio da Gama, Brazilian Ambassador to the United States; Leonard Wray, Commissioner from Malaya; A. Staines Manders, Organizing Manager of the Exposition; Dr. Candido Mendes de Almeida, President of the Brazilian Commission, and Admiral Jose Carlos de Carvalho. On the President's left: Hon. John Barrett, President of the Pan American Union; J. J. Broderick, Acting British Consul General in New York; F. Crosbie-Roles, Commissioner from Ceylon; Professor William Goodyear, Curator of the Brooklyn Institute of Arts and Sciences, and son of Charles Goodyear, and Professor Franklin W. Hooper, of the Brooklyn Institute of Arts and Sciences.

When all had found their places, the chairman arose and announced that in accordance with an excellent and time-honored custom which had come down to us from our fathers, the dinner would begin by saying Grace, and he called upon the Rev. Dr. S. Parks Cadman of Brooklyn.

The menu, to which nearly two hours were devoted, was unqualifiedly attractive, as will be seen below.

INTERNATIONAL RUBBER BANQUET

The International Rubber & Allied Trades Exposition

MENU

Pommes Plaza

Potage Julienne-Mongole

Céleri Olives

Filet de Fletan au Vin Blanc

Pommes à l'Etuvée

Quartier d'Agneau Rissolé

Garniture Printanière

Sorbet Palm Beach

Chapon Farci Rôti

Salade de Saison

Glace Aurore Boréale

Friandises

Graves Medoc — Dry Monopole Brut & Red Top 1904 — Liqueurs Kristaly

The PLAZA. Wednesday, October 2, 1912.

A little before 11 o'clock, the President arose and spoke briefly as follows: "These are times of much political interest in the United States, and there are, undoubtedly here present tonight adherents of the amiable Elephant, the docile Donkey, and the vociferous Bull Moose, but I think we can all join heartily in the toast which I am about to propose—a toast to the patron of this Exposition—the President of the United States." All arose to respond to this toast, which was drunk with enthusiasm.

The President then introduced the first speaker of the evening, as follows: "We have with us tonight a gentleman distinguished in diplomacy; he comes from a great country—great in rubber and great in other lines. It is difficult to propose a set toast to one who has been distinguished in so many different departments. He had served his country conspicuously at home—in Brazil—and in Peru and the Argentine Republic before he was sent to America. That he should come tonight from Washington especially to be with us on this occasion is a great compliment. I have the pleasure of presenting Dr. Domicio da Gama, Ambassador from Brazil to the United States."

Dr. da Gama: "I must ask your indulgence for the insufficiency of my English; and yet, perhaps, I should not be ashamed of my English, as with me it is a purely exotic product; but you see before you a truly embarrassed man, for while I have attended many banquets—some cheery and gay—some sad and gloomy—some given to me—and some which I had to give, I never before have attended a rubber banquet. You know a great deal more about rubber than I do, for I come from the south of Brazil, where rubber does not grow, and I confess that I never saw so much rubber before in my life as I saw today at your Exposition. But I esteem this a most important occasion, because it makes for international fraternity, through international trade. Those men down on the Amazon who are gathering the rubber may think that they are working only for their own interest, but in truth they are working for the interest and welfare of the whole world. We are the producers of rubber, and you the consumers, and I hope that the commercial relations between Brazil and the United States will grow better and stronger with the years, and that the United States will take an even more conspicuous position in the markets of Brazil."

THE PRESIDENT: "That was a happy thought in having the flags of Brazil and Great Britain draped together at the lower end of this room, for the exhibits that have been sent to us from Brazil and the Malay States have been wonderful; but the American flag which hangs back of this table should have been down there too, and the three hung side by side. Speaking of Great Britain, every American traveler has a most kindly feeling towards the British Consul, because—in years gone by, at least—whenever an American traveler in any part of the world needed help he invariably turned to the British Consul—and never in vain. I have the pleasure of introducing to you Mr. J. J. Broderick, Acting Consul General of Great Britain in New York."

MR. BRODERICK: "It might naturally be expected that I would address you on the subject of rubber, but I must confess a most Stygian ignorance of this subject, except that I know that the rubber industry—especially the rubber planting industry—has enjoyed a most extraordinary growth in the immediate past. It is my first duty to express the regrets of the British Ambassador at Washington, because of his inability to be with you tonight, and to express the regret that I know you must feel in not being able to listen to the Hon. James Bryce, whom

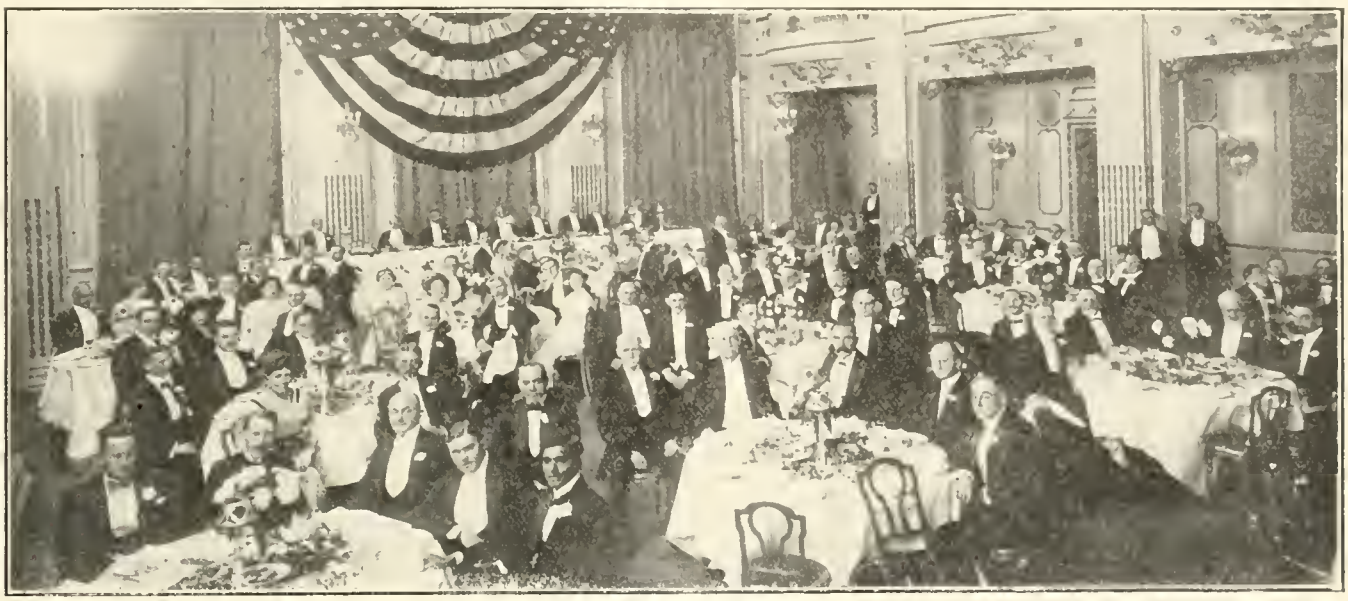
you have known from your school days; for his book on the American Commonwealth, has long been the *vade mecum* of American students. If he were here he would express to you in his admirable manner the importance that he attaches to this gathering of rubber men."

Mr. Broderick here introduced very cleverly one or two most amusing stories and then continued: "But your chairman has limited my time to 5 or 6 minutes, so I can only add that I esteem it an extreme honor to be asked to address you, and I speak not only for myself, but for all the representatives of Great Britain here, when I express my sincere appreciation of the great hospitality that we invariably receive from our cousins in the United States."

The President: "I think everybody on this round earth who knows either English, Spanish or Portuguese, knows of the Pan American Union, and of its live wire, the Hon. John Barrett."

Mr. Barrett: "In making a special effort to get to this banquet—leaving Washington last night on the midnight train, and returning thither on the midnight train tonight—I show the great importance that I attach to this occasion. I must congratulate you, however, on the fact that I am compelled to return on the midnight train—otherwise, I might not be so inclined to set a proper time limit on my remarks. Your chairman has spoken of our political emblems. In view of the unique character of the present campaign, I think a most fitting emblem would be a rubber ball. The Brazilian Ambassador has told you that among the banquets he has attended there have been some marked by gloom. I can hardly believe this; I do not think there is ever any gloom where the Ambassador is."

Mr. Barrett went on to describe a famous international banquet where the Brazilian Ambassador had spoken with unusual eloquence and had greatly impressed his hearers. He eulogized Dr. da Gama, and paid a fine tribute to his predecessor, Dr. Nabuco, whom he described as a man of gentle character, keen wit, and profound learning, and whom he called the greatest diplomat of his time. He spoke of the wonderful development of Brazil and the rapidity with which that country has taken her position among the great world powers. He sketched the awakening of the tropical countries because of the solving of the problem of tropical sanitation by Colonel Gorgas at the Panama Canal. He prophesied that by reason of this demonstration the tropics would be made perfectly sanitary, that the Amazon country, and other countries similarly situated would increase enormously in population and commercial activity. He spoke at some length regarding the natural advantages of the Amazon country, and of the rapidly growing cities of Brazil. He said that Brazil had spent more money and more energy in the last ten years in developing her resources than had been spent by the United States. He cited the building of railroads, the founding of agricultural schools and colleges, and other instances of the awakened spirit of modern progress. He outlined the work of the Pan American Union, of which he is the executive officer, which without any antagonism to the rest of the world, is seeking to bring all the countries of the American Continent together for their mutual good and permanent welfare. Referring again to the Rubber Exhibition he said: "If I had had my way, Dr. Leipziger would have brought all the boys and girls of the public schools of this city to this great exhibition so that they might realize something of the products of South America, and I would have had all the members of the commercial organizations of this city come to this great international show so that they might have some appreciation of what the countries to the south of us are doing. You have often heard cotton called 'king,' and you have often heard corn called 'king,' but I believe that rubber is now 'king.' I was walking along Fifth avenue this afternoon. I didn't see much cotton. The ladies promenading on the avenue were certainly not wearing cotton —nor did they look as if they were 'corn-fed.' But rubber was everywhere; the avenue was filled with automobiles, all moving swiftly and silently on their rubber shoes. It was time that we had in this country a great Rubber Exposition, and I heartily congratulate you on the pronounced success of this enterprise."



The Banquet at the Plaza.

The President: "It would be presumptuous to comment on this magnificent address. We are proud that Mr. Barrett is an American, and we are proud of his breadth of view, and we appreciate the truth of what he has said about the great Republic to the South."

At this point, several medals and diplomas were laid on the table before the chairman, and he was asked to hand them to those to whom they had been awarded by the various committees selected to pass upon exhibits.

A gold medal with diploma for the best plantation rubber was handed to Mr. Noel Trotter, who took it in behalf of the

Highlands and Lowlands Estate of the Federated Malay States. A silver medal with diploma for the second best sample of plantation rubber was handed to Mr. Crosbie-Roles in behalf of the Rosehaugh Estate of Ceylon. A bronze medal with diploma for the third best sample was given to Mr. Leonard Wray for the West Country Estate of the Federated Malay States. Mr. Pearson then took in his hand the large solid silver shield about 15 or 16 inches in height, very handsomely engraved, which had been offered for the best sample of wild rubber. He said that in presenting this he was obviously in an embarrassing position, because owing to the fact that this shield was offered by THE INDIA RUBBER WORLD he could hardly make the comments on it that he would have made if it had come from some other source; consequently, he handed it without comment to the Brazilian Ambassador in behalf of the state of Amazonas, to which it had been awarded.

After the awards of medals and diplomas the chairman continued: "The brave spirit that made such trophies possible, that made our presence here tonight possible—was Charles Goodyear. Many have forgotten his struggles and successes, but during the past ten years—what I might call the rubber conscience has been considerably disturbed, because nothing has been done in commemoration of this great man, and we have come to hear much about the propriety of erecting to him some suitable memorial. Professor Hooper, of the Brooklyn Institute of Arts and Sciences, will speak upon Charles Goodyear.

Professor Franklin W. Hooper, who responded to this toast, made an exceedingly eloquent address, and paid a fine tribute to the great genius and exalted character of Charles Goodyear. He spoke in part as follows:

"It is indeed true, as the chairman has said, that this exhibition would have been impossible—it is true the whole progress of the arts and sciences would have been held in check, had it not been for the discoveries and inventions of Charles Goodyear. We have had many famous inventors and discoverers in this country, but he was the greatest of them all. Beginning as the son of an inventor, his genius displayed itself before he was 27 years of age, and following out a God-implanted purpose and a destiny that he could not resist, he sought how he could serve humanity by making rubber, which up to that time had been a valueless product, serve some widely useful end. Between the ages of 34 and 44—for 10 long years—he wrought day and night, in season and out of season, and under all conditions, to make this product, not profitable to himself, but valuable to all mankind. When in 1844 he took out his first patent for Vulcanite, he laid the basis of the great industry which we are here tonight to celebrate."

Professor Hooper called attention to the fact that while other great discoverers and inventors like Morse with the telegraph, and Dr. Wells with the discovery of anesthesia, had the assistance and co-operation of collaborators, Goodyear worked alone through a long period of unrelieved hardship and self-sacrifice. "To show how thoroughly Goodyear did his work," Professor Hooper continued, "at the time of Goodyear's death rubber had been applied to 200 of the leading industries, and of these 200 different applications Charles Goodyear was the inventor of over 95 per cent. There has been no important new application of rubber since his death. The tire, of which we hear so much today, is but an amplification of the tubes he made in the 40's. But he was more than an inventor and discoverer. He was a wonderful character, and we are to be thankful not only for his industrial victories, but for the purity and simplicity of his heart and mind. He had the qualities of that other great American whom we all love and revere, Abraham Lincoln, and as on the banks of the Potomac there stands a fitting monument to the life and character of Abraham Lincoln, so in the national capital there should be some fitting memorial to Charles Goodyear. There should be a permanent exhibition of all the processes and discoveries in the rubber industry during the last three-quarters of a century, and in the midst of that great exhibition should stand a noble monument to that great inventor and American saint Charles Goodyear."

THE PRESIDENT: "The next toast is a very comprehensive one, 'The Rubber Industry,' but I will ask Dr. Huber to speak specifically on the rubber forests."

DR. JACQUES HUBER: "Having been summoned by our chairman to speak in the name of the forest or wild rubber industry, I am aware that I am not only representing the State of Pará (the typical locality of the typical rubber tree, as we botanists would say) and my Brazilian friends here present, but the whole community of the wild rubber producers of tropical America. But who are these wild rubber producers of tropical America? As a rule, you will not meet them in rubber conferences or expositions, nor even in rubber banquets. If we make exception of Guayule and some other rather exceptional concerns, there are no well organized companies with directors and advisers and staff of managers and visiting agents. Even the owners of rubber forests cannot be considered as the true producers, as they generally buy the rubber from the rubber gatherers, the hard-working and intrepid pioneers of the South American 'selvas.' These plain and often ignorant men are the true producers of the best kind of rubber. Their heroic struggle with the wilderness of the Amazonian forest is perhaps one of the most emotional chapters of human efforts to conquer the treasures of nature. Without the activity of these men, the streets of New York would probably present quite another aspect, as it can hardly be imagined that the motor car industry would have taken its actual development without 'Upriver fine.'

"The origins of the wild rubber industry are humble, but they are characteristic of the genius of the American race, and they can be considered as the starting point not only of the present flourishing wild rubber industry, but also of the whole manufacturing industry. The South American Indians, who made the gambling balls, the boots and the bottles of crude rubber, were not only crude rubber producers, but also manufacturers. The modern times, of course, require specialization, and the rubber boots we wear are no more made by Indians. Specialization is not possible without scientific work and scientific organization. In the planting industry, organization has already shown astonishing results. Science and scientific methods have now to be applied also to the wild rubber industry; increasing its vitality by giving it a proper organization.

"The plantation industry is like to a field, where, on the advice of men of science, wealthy England has sown broadcast the golden seed of its capital and initiative, harvesting already promising results. The forest rubber industry, on the other hand, is comparable to a large and venerable tree, whose birthday is unknown, but whose roots are well fixed in tropical America's early history and industrious population. The tree has grown up with a large trunk and wide-spreading crown, but although it has already produced a number of golden fruits, it has not yet given its full crop. Many branches must be cut out to give it light and air, but under the hands of skilful gardeners it will make a new start and grow and flourish to honor its American origin and the American genius."

THE PRESIDENT: "Mr. Cyril Baxendale will continue this subject, speaking from a planter's standpoint."

MR. BAXENDALE: "I feel very much like a certain character in one of Disraeli's novels. I have a feeling in my heart which may be indigestion, or it may be gratitude—I cannot tell which. I have a subject to which I would like to devote 6¾ hours, but I am limited to 6¾ minutes. By those who know my country, it is recognized that its representatives are famous for their

humility. We came here expecting to teach America, but we have found that there was much more for us to learn. We came to teach the American manufacturer to try our plantation rubber, and here discover that out of 10,000 tons shipped this year 6,500 tons came to New York. I find an idea in America that all plantation rubber is 'Highlands and Lowlands.' I assure you that while 'Highlands and Lowlands' rubber is of excellent quality, it is not quite so elastic as that. Our plantation rubber comes from 600 estates. It is very desirable for you to induce the growers to brand their rubber. The American manufacturer should insist on receiving rubber in the cases in which it is shipped. There are some dealers in London and Liverpool—or let us say of the Old World—who do not respect brands and do not forward rubber in the cases in which it is received. Americans should import their rubber direct from the East." Mr. Baxendale laid considerable emphasis on this point.

"In conclusion I would like to express the sense of the obligation felt by the whole industry to Mr. Manders, who has been so active in interesting the various powers in this exhibition, and for the very successful result he has achieved, with the assistance of his indefatigable and ever charming secretary, Miss Fulton, and finally I wish, in behalf of the rubber planters, to thank you for the great kindness which you have shown the 'stranger within your gates.'"

The President: "Mr. Baxendale anticipated me in what he said about Mr. Manders. I was and am going to call upon Mr. Manders to tell us something about this Exposition, and about the prospects of another."

Mr. Manders: "We have heard a good deal this evening about the hospitality of this country. I endorse it all—for yesterday it presented me with a first-class cold—as you will observe—rendering it impossible for me to make any detailed remarks. I wish simply to express my thanks and the thanks of Miss Fulton to all those friends here and abroad who helped us to bring this Exposition about—to the Governments that have sent their exhibits and their representatives here, that have sent to New York such fine specimens of rubber from every rubber producing country on the globe. I shall not speak of the tremendous amount of labor that has been involved in bringing this Exposition to pass—nor shall I undertake to speak regarding another Exposition here, but as you doubtless all know, there will be another in London in 1914, where I sincerely hope to meet my many friends from this and other lands. Because of this atrocious cold I will have to ask you to excuse me from further remarks."

Chairman: "We have with us tonight a friend from Dutch Guiana, who enjoys a wide reputation for his gift of oratory—Mr. O'Connor."

Mr. J. L. O'Connor: "After listening to all these words of eloquence I am more than ever impressed with the art of the after-dinner speaker. The first duty of the after-dinner speaker is to be surprised." Mr. O'Connor went on in an amusing vein to depict the science of after-dinner oratory, and the best methods of preparing an eloquent after-dinner effort. He cited an instance in his own career where he attended a Venezuelan dinner, and had made more or less elaborate preparation for the oration which he knew would be expected. To his great consternation, the speaker who immediately preceded him delivered his own address verbatim—having bethought himself of the same source of supply—the Encyclopedia Britannica. He told a story of a farmer in Ohio who had read some of Mr. Pearson's writings on the West Indies, and was quite impressed with the possibilities of those islands, but seemed to feel considerable apprehension regarding the hurricanes that are alleged to visit that section from time to time; so he wrote to one of the officials at Trinidad and asked if there was not some variety of rubber tree sufficiently elastic to be able to bend before the hurricanes without being injured. In conclusion he said, "We are all under obligations to Mr. Manders and Miss Fulton for the work they have done here and the difficulties which they have overcome, of which we have little conception. We are greatly indebted to them for bringing here to America—the country that uses over one-half of the rubber production of the world—this great Exhibition of crude rubber and of all the myriad articles that are manufactured out of it."

The President: "Now that the representatives of the New York press have withdrawn, I will call upon Mr. Salmon to speak for the press of Europe."

Mr. Edward G. Salmon spoke in part as follows: "We have just been told that over one-half of the crude rubber of the world comes into New York. I am disposed to think that quite a little of that goes into the offices of the New York newspapers—judging from the extreme elasticity of many of their statements. This Exposition has been a great object lesson in many ways—chiefly perhaps in the rivalry it has shown between the great rubber country of the South—Brazil, and the planters of the Middle East. Great credit is certainly due my countrymen in Ceylon and Malaya for the wonderful way in which they have developed this adopted tree. Their success has been a challenge to Brazil, and we have seen in this Exhibition the alert and aggressive manner in which Brazil has accepted this challenge. It is a rivalry on a stupendous scale—but entirely friendly. I wish there were present here to speak for the press of Europe, some representative of a great European paper, but as a humble representative of the European press I thank New York and America for the courtesy and hospitality that has been shown to us all, and simply express in addition the hope that we may all have an opportunity to accept your hospitality again."

The President: "Mr. Salmon has spoken to us about the wonderful development in the Middle East. I am going to ask Mr. Crosbie-Roles to tell us more about it."

Mr. A. Crosbie-Roles: "To the man who sits at his desk—to the stay-at-home—the Middle East seems far distant; but way beyond us—out in the Spice Islands—they have a daily paper. Colombo, by the way, has five daily papers, and it is the seventh harbor for tonnage in the world—an alert and enterprising town. We perhaps could hardly expect American capital to be attracted such a distance, but some of it has been attracted to the Middle East, as is shown by the enormous plantation of the United States Rubber Co., in Sumatra, where over 22,000 acres have already been planted, and well planted to rubber. Direct trading between the rubber growers of the Middle East and the American manufacturers is natural and logical, and will soon come about. Unfortunately, cable rates still stand at 2s. a word, notwithstanding the decrease in cable rates across the Atlantic. One great benefit from an Exposition—like this just closing in your city—lies in bringing together the different members of the same industry from the different quarters of the earth. These Expositions make for good will and friendship and for increased commerce."

The President: "In conclusion we will have a final word from Dr. Argollo, who will speak on the press of Brazil."

Dr. J. de Argollo: "Hard lines indeed for me to speak after the eloquent toast made by my clever colleague of the European press. I am not a wealthy citizen of the growing and powerful United States nor an Englishman, but only a Brazilian, a stranger. I feel alone, but morally obliged to say something, because in rubber questions and interests, Brazil cannot remain silent.

"Dr. Huber, the greatest scientist of Brazil on this subject has exhausted the most interesting side of the question of wild rubber as a product of the enormous Amazonian Valley, but most fortunately for me, he did not mention one of the sources of Brazil's progress, development and wealth; he did not refer to the press, as useful as dangerous, according to its display of power.

"In Brazil, the press is a political and instructive guide, but

in the present case we shall only mind about the latter and consider it as a school where the free citizens of the greatest Republic of South America try to learn what is going on throughout the world. There, they have followed the growing wealth of rubber plantation in the East. They have seen appearing on the stage of commercial struggle, a young competitor born from the seeds taken over, less than forty years ago, from the Amazonian Valley, by a clever and intrepid explorer, Mr. Wickham. In this growing child, in the *Hevea* of the East, they have not only seen a competitor in the near future, but also a teacher who has opened their eyes and showed them what they had to do to keep up their rubber wealth and avoid a crisis, in consequence of their indifference, in the East. Brazilians welcome healthy rivalry; they know the world is large enough, and will grow larger still in the using of rubber. Yearly the markets increase.

"There is no reason why the rubber of the Brazilian jungles and the fine product of the East should not live in peace. It is sometimes said that one of the rubbers will knock out the other. But why? Rubber is rubber, and very elastic, and you know it does not split. We Brazilians think that rubber of the jungles and rubber of the East are born to live and grow together as healthy friends. Brazil and the East will grow like brothers, for their respective common weal, and the necessities of humanity. Drink to the everlasting union of the two rubbers by the aid of the international press."

At the conclusion of Dr. Argollo's speech, Mr. Arthur W. Stedman arose and said: "I wish to propose a toast to a noted writer, the editor of a great paper, a strong character, frank and fair with all alike, beloved by his friends and admired by his enemies—Mr. Henry C. Pearson." This toast was drunk standing, and was immediately followed spontaneously by the song, "For He's a Jolly Good Fellow," in which every one joined.

MR. PEARSON: "I have been exceedingly touched by this toast so pleasantly expressed; I wish that I could say all that is in my heart; I wish that I could tell you how much I appreciate this expression of your kindly feeling; but you know it is now tomorrow, and if I should respond fittingly it would be day after tomorrow, so I will simply thank you all.

"In the refrain that you just now sang, I heard one exceedingly musical voice—I think it was Mr. Baxendale's. I am going to ask him to sing the solo of "Auld Lang Syne," with all the rest of us joining in the chorus, and with this we will bring this exceedingly happy occasion to a fitting close."

The Third International Rubber Conference.

FIRST SESSION, TUESDAY, SEPTEMBER 24, 1912.

THE Third International Rubber Conference opened in one of the spacious chambers of the Grand Central Palace, Tuesday afternoon, September 24, at 2 o'clock, with an attendance of about 150 delegates, including representatives of the plantation interests of the Far East, exporters of wild rubber from the Brazilian forests, manufacturers of rubber goods, as well as consumers of those products.

This is the first time in the history of the rubber industry in America that a successful attempt has been made to bring together such varied interests under one roof. The importance and interest of the gathering, and the discussions which were brought out, as the result of the papers offered, fully justified the large attendance, which was observed at all the meetings of the Conference.

After an address of welcome by the president, Mr. Henry C. Pearson, the session opened with a paper on "Rubber Contracts," by Mr. Arthur W. Stedman, a rubber importer of New York City.

This was followed by a most interesting paper on "The Plantation Industry" by Mr. Cyril E. S. Baxendale, Special Delegate from the Malay States Planters' Association. This paper was followed by a very animated discussion, in which both producers and consumers of plantation rubber took a lively interest. Among the speakers were: Mr. Frederic C. Hood, Mr. Crosbie-Roles, Mr. Geo. B. Hodgman and Dr. J. de Argollo of Bahia.

The paper on "Various *Manihots* Producing Rubber in the Central States of Brazil" by Dr. Cardwell-Quinn, was read by title only.

This was followed by a very interesting contribution by Mr. Charles P. Fox, of Akron, Ohio, on "Possible Rubber Producers in the Temperate Zone," in which the author showed that there were several plants at our disposal in this climate, which would be of commercial importance for the production of rubber, if the cost of production could be reduced sufficiently.

This paper was followed by an essay on "Some Effects of Acclimatization upon Guayule" by Mr. Francis E. Lloyd, Professor of Botany at McGill University, Montreal, Canada (read by title only).

Mr. Frederic C. Hood in discussing Mr. Stedman's paper called attention to the fact that we are at present comparatively ignorant of the exact definitions for most of the commercial varieties of crude rubber. Terms such as "Hard Para," "Up-River Fine," "Weak Fine" and the like are used in such a loose manner at the present day that the manufacturer is handicapped both in the purchase and in the use of these rubbers. On his motion, the question of "The Commercial Nomenclature of Crude Rubber Varieties" was referred to a committee of four, appointed by the president of the Conference.

At the suggestion of the president, it was agreed that the matter should be presented at the meeting of the Executive Committee of the Rubber Club of America, Tuesday night, September 24. As a result of this motion, the following members were appointed by the Rubber Conference:

Mr. Cyril Baxendale, Federated Malay States; Dr. Jacques Huber, State of Para, Brazil; Mr. Leonard Wray, Straits Settlements; Mr. F. Crosbie-Roles, Island of Ceylon; Mr. Noel Trotter, London and Federated Malay States.

The following members were appointed by the Rubber Club of America:

Mr. Albert Zeiss, Arnold & Zeiss, New York; Mr. Arthur W. Stedman, New York Commercial Co., New York; Mr. Wm. J. Bass, General Rubber Co., New York and Sumatra; Mr. Henry C. Pearson, THE INDIA RUBBER WORLD, New York.

These committees were appointed with instructions to present a preliminary report of their deliberations at the final meeting of the Conference, Saturday morning, September 28.

Note: The sessions of the "Nomenclature Committee" were continued daily during the week beginning Monday, September 30, 1912.

MORNING SESSION, WEDNESDAY, SEPTEMBER 25.

The first session of Wednesday opened at 10 A. M. with a paper on "The Present and Future of the Para Rubber Industry" by Dr. Jacques Huber, Director of the Goeldi Museum and Botanical Gardens at Para, Brazil. The paper called forth a very lively discussion from the manufacturers. Among the questions brought out were: "What is the cost per pound of gathering Up-River Fine Para and delivering it in the city of

Para?" and "What appears to be the difference between the acid coagulation and the smoking process?" Dr. Huber explained this point by stating that the smoke of the urucuri nuts probably contained certain chemical products which had a beneficial influence on the gum during the process of conversion. Any laboratory preparation used for coagulation should in his opinion be thoroughly tried out before it is finally adopted. Dr. Dannerth called attention to the fact that the smoke used in Para apparently contained volatile gases and liquids of low-boiling point. In that case a careful examination of the distillate would have to be carried out, in order to determine the constituents of the smoke.

The opening paper was followed by one on "Problems in Vacuum Drying" by Mr. J. P. Devine, which developed considerable discussion and brought out such questions as "Can rubber be taken direct from the dryer and put on the mixing rolls, for the purpose of increasing the efficiency of the plant?" and "Why is it that certain rubbers which have been dried in vacuum appear tacky after removal from the apparatus?"

The paper by Mr. T. W. Miller, manufacturer of dipped goods, was omitted, in the absence of the author.

Mr. P. L. Wormeley, of the Bureau of Standards, Washington, D. C., delivered a most enlightening address on "Physical Methods of Testing Rubber and Rubber Products." The paper showed that the National Bureau at Washington is at present exerting itself to a considerable degree in devising standard methods for physical and chemical testing of rubber products.

One of the questions brought out at this meeting was that by Dr. Dannerth—"What is the allowable variation in the tensile strength test on crude rubber?" In other words, "How close is it possible to make two results agree, provided the samples have been cured and cut from the same compound?"

EVENING SESSION, WEDNESDAY, SEPTEMBER 25.

On Wednesday evening, at 8 o'clock, a special meeting of the Conference was held to hear the papers on "Factory Management and Organization Methods" by Mr. J. C. Jurgensen and Dr. Frederic Dannerth, in which a plan was proposed for the systematization of laboratory work in rubber factories.

These papers were followed by one on "A Method of Determining the Density of Vulcanized Rubber Goods" by Mr. B. Denver Coppage, of Wilmington, Delaware, in which he demonstrated an instrument which was devised primarily for determining the plasticity of rubber-covered rolls for paper manufacturers. He has given this instrument the name of "Plastometer."

These papers started a very lively discussion by Messrs. Stone, Baxendale and Saunders. The meeting adjourned at 10 o'clock.

MORNING SESSION, THURSDAY, SEPTEMBER 26.

The Thursday morning session opened at ten o'clock with a paper by Mr. E. A. Barrier, of Boston, on "A Brief History of Fire Hose Specifications in the United States," in which he outlined the present status of the specifications issued by the two principal underwriters' laboratories. Mr. Pearson drew attention to the wisdom of the recent action of the Isthmian Canal Commission in eliminating from its specifications the phrase "Approved by the National Board of Fire Underwriters."

The second paper of the morning was by Dr. Lothar Weber, of Boston, Massachusetts, on "The Commercial Possibilities of Synthetic Rubber." In the discussion which followed, many interesting questions were asked by Messrs. Boggs, Driscoll, Crosbie-Roles, Smythe and Saunders, as well as by Dr. Huber and Mr. Fol of the Government Rubber Testing Station at Delft, Holland. Mr. Weber showed in the course of his remarks that the production of synthetic rubber at this time is handicapped by the fact that it is difficult to control the process of polymerization.

The statement made by one gentleman from London that automobile tires made of synthetic rubber would cost £1,000 or more was contradicted by Prof. Hinrichsen of the Royal Testing Station in Berlin, Germany. He drew attention to the fact that a certain large German chemical works is now producing synthetic rubber at a cost slightly above that of Hard Fine Para.

AFTERNOON SESSION, THURSDAY, SEPTEMBER 26.

Thursday afternoon, the Conference convened at two o'clock, with an attendance of about 110. This session was attended by a large number of railroad chemists and testing engineers. Fifteen of the principal railroads of the United States had sent delegates to the Conference, in order to hear the views of the manufacturers on such vital topics as "Air Brake Hose and Steam Hose." The discussion was led by Mr. C. D. Young of the Pennsylvania Railroad, presenting the case of air brake hose from the standpoint of the consumer in a concise manner. He called attention to the fact, in the course of a long paper presented by him, that the quality of air brake hose had deteriorated approximately seven years ago, and showed that train detentions on account of defective hose are more frequent in summer than in winter on railway lines in the United States. In continuing his remarks, he called the attention of the manufacturers to the fact that 82 per cent. of the air brake hose of the present day showed the defect of "porosity." His examination extended over 5,800 pieces of air brake hose. Other representatives brought out many facts, showing this decline in the quality of the product to be a matter frequently observed in various sections of the country. Chemists and engineers representing the manufacturing interests felt disinclined to discuss with the consumers this most important question. Mr. E. A. Barrier of the Factory Mutual Laboratories, Boston, called attention to the fact that after all it might be that the Master Car Builders' specifications were incomplete and not properly protecting the interests of the consumer.

Among the railroads represented were: The New York Central, Pennsylvania, Philadelphia & Reading, Illinois Central, Lake Shore & Michigan Central, Norfolk & Western, Lackawanna, Erie, Chicago & Northwestern, Atchison, Topeka & Santa Fe and Canadian Pacific; in addition to many other of the prominent trunk lines.

MORNING SESSION, FRIDAY, SEPTEMBER 27.

The Friday morning session opened at ten o'clock with a paper by Mr. E. S. Land, which was a report of the Navy Conference held in Washington in December, 1911. This conference was attended by 40 representatives of rubber manufacturers in the United States, and was called for the purpose of discussing the specifications at present in use by the Navy Department. The paper called forth considerable discussion on the part of Messrs. Boggs, Hinrichsen, Barrier, Cutler, Smith, Geer, Driscoll, Weber and Stone.

Mr. E. B. Tilt (Montreal) presented the report of the Rubber Committee of the American Society for Testing Materials and stated that the committee had been at work on a definite plan since February, 1912. The questions taken up will bear on the quality of manufactured rubber goods chiefly from an engineering standpoint.

This report was followed by official reports from the several rubber sections and committees now at work in the United States on standard specifications for rubber goods, and standard methods of rubber goods analysis.

Mr. W. A. Delmar (New York) presented a preliminary report of the activity of the Railroad Committee. This committee, composed of men representing railroads, United States Government departments and the manufacturers of insulated wire, has been at work since 1911 devising accurate methods of chemical analysis for rubber-covered wires.

Mr. D. A. Cutler, chairman of the Rubber Section of the American Chemical Society, presented to the Conference an outline of the work which is contemplated by that Section. He stated that steps had already been taken to determine the ac-

curacy of certain analytical methods used in the examination of rubber goods.

Attendance at this morning session reached 200 and the interest in the meeting was very keen, as was shown by the fact that most of those present remained to the close.

AFTERNOON SESSION, FRIDAY, SEPTEMBER 27.

The meeting was well attended. Mr. Loudenbeck presented the following motion: That the secretary be instructed to preserve the records of this Conference, publish the papers and minutes, and notify the members of this Conference when these are ready for distribution or sale.

The topic "Standard Methods for Testing Textile Materials Used in Rubber Manufacture" was then called up for discussion.

DR. FREDERIC DANNERTH.

HENRY C. PEARSON.

DR. JACQUES HUBER.

Little interest in this subject was manifested by those present so that the regular business was proceeded with.

The paper of the afternoon was by Mr. A. O. Bourn, of Providence, R. I., entitled "A New Theory of Vulcanization." Owing to the absence of the author of the paper, it was impossible for the members present to put directly the questions bearing on it.

MORNING SESSION, SATURDAY, SEPTEMBER 28.

The Saturday morning session opened at ten o'clock.

The chairman announced that the International Rubber Banquet was planned for the evening of Wednesday, October 2, at the Hotel Plaza. He also announced that the initial meeting of the Nomenclature Committee had been held in the main hall reception room on the afternoon of the previous Thursday. (This meeting was followed by a full meeting on Monday afternoon, September 30.) In this committee Mr. Baxendale had consented to develop a glossary of terms for the plantation rubbers, while Dr. Huber had been entrusted with a similar duty on the wild rubbers of Brazil.

The chairman stated that he had been requested by Dr. Weber to make an official denial of the statement, which a daily paper had attributed to him, to the effect that synthetic rubber cost a thousand dollars a pound. He went on to say that an American reporter is expected by his city editor to turn in interesting matter, and that he is for that reason constantly under the temptation of making his copy interesting rather than accurate. Dr. Weber added that he would communicate with the paper that attributed this statement to him and ask it to publish a contradiction. He went on to observe that it would be quite impossible to tell what synthetic rubber up to the present time had cost, but, inasmuch as a half ton of it had been made at the Elberfeld factory, it was fairly obvious that it could not have cost a thousand dollars a pound.

Dr. Weber, in presenting the subject of government specifications, said that the manufacturer is at present seriously handicapped when delivering goods to the government on specifications. It has been the policy, up to the present, to reject goods on the strength of certain analyses, and at the same time the government chemists who have made these analyses have omitted to publish their methods of testing. This, he thought, was a very undesirable state of affairs, and requires early attention and serious consideration. He presented this resolution: "It is the opinion of this Conference that all specifications should include complete descriptions of the methods of physical testing and chemical analysis, to which materials delivered on any particular specification will be subjected."

In explanation of his motion, Dr. Weber added that the Brooklyn Navy Yard had at various times rejected materials, as a result of analyses and analytical methods which are unknown to the general public.

Mr. Rodman advised Dr. Weber of the fact that the Railroad Committee on Standard Methods of Analysis would have its report ready in two or three months. He said that we should not confuse the Bureau of Standards with the Chemical Laboratory of the Navy Department, as the methods issued by the former are official, while those issued by the latter are the private methods of a consulting chemist who happens to be in the employ of the government.

Mr. Cottle stated that the American Chemical Society is now engaged on the preparation of standard methods, and that related work in the same field is being carried on by the Railroad Committee. He felt assured that these methods would be presented to the United States Government departments for their approval, and that the ability and standing of the men who have prepared these methods would insure for them serious consideration. It was inadvisable, in his opinion, at this time to publish methods of analysis, which would in any case have to be revised very shortly. This had been observed in the case of the methods published by the Bureau of Standards, which had to be revised shortly after they were published.

Prof. Hinrichsen said that the Royal Testing Station at Berlin at one time experienced difficulties similar to those recited by Dr. Weber. He stated, on this point, that the policy of the

German Government was to publish the methods which were used for analysis of specification material, at any particular date, in order to insure the co-operation of the manufacturer, and thus make possible a more rational examination of the goods than would otherwise be possible. He believed it to be a very simple matter to inform the manufacturer by mail, if need be, when a new and better method of analysis was discovered.

Mr. Earl presented a resolution, that The India Rubber World be designated as a means of intercommunication among the members of this Conference. This resolution was unanimously adopted.

Dr. Dannerth offered a resolution, that the present form of Conference Committee and Officers be continued as a means of intercommunication among the members of this Conference until the next Conference shall convene. This resolution was also unanimously adopted.

It was announced that The India Rubber World planned to publish in full the papers that had been read before the Conference.

Dr. Weber's suggestion that the U. S. Government be called upon to state its methods of analysis in all government specifications, was discussed by many members of the Conference; and while it was the consensus of opinion that the manufacturer was entitled to know to what tests his goods would be put, under government specifications, it was the general view that inasmuch as this was an international conference, it could not with propriety submit any request or memorial to the United States or any other government.

Mr. Pearson paid a tribute to the organizer of the Exposition, speaking as follows: "The exposition to which our friend Mr. Manders has invited us is most unique. He has brought to us commissioners and exhibits from the far-away countries of Brazil, the Island of Ceylon and the Federated Malay States. Mr. Manders and Miss Fulton have rendered us an inestimable service. It was they who originated the idea of a Rubber Conference, and an expression of appreciation is assuredly due them."

Mr. Wood of the New York Commercial Co. made the following motion: "Be it moved that a vote of thanks be extended the able organizer of this exposition and his niece, Miss Fulton, the secretary of the exposition, and that a copy of this resolution be engrossed and presented to Mr. Manders and Miss Fulton." The vote was carried unanimously.

Dr. Huber moved a vote of thanks to the chairman, Mr. Pearson, who, by reason of his thorough and intimate knowledge of the whole rubber world, and his conspicuous ability as a presiding officer, had directed the sessions of the Conference so smoothly and so successfully. This vote was also unanimously carried.

Mr. Van Derbeck referred to the fact that the producers, manufacturers and consumers of rubber goods had on no previous occasion been so successfully brought together. He moved a vote of thanks to Dr. Dannerth, the honorary secretary, for the efficiency with which he had served the Conference.

This vote was unanimously carried, whereupon the Conference adjourned *sine die*.

The following gentlemen were invited by the president to serve as honorary chairmen at the several sessions: Mr. G. Stone, Dr. Jacques Huber, Mr. C. R. Boggs, Mr. D. A. Cutler and Dr. Frederic Dannerth.

Cyril E. S. Baxendale.

Richard B. Earle.

Dr. Luthar E. Weber.

THE AFTER-EXHIBITION SUPPERS.

At the end of each day a supper was held in the Palace restaurant, attended by the exhibitors and their friends. These occasions were for the most part quite informal. At the opening supper on Monday night, September 23d, there were several speakers, among them, Mr. Salmon, Commissioner from the Imperial Institute of England, Dr. Dahne and Mr. Algot Lange, the explorer of the Amazon—a particularly delightful feature of the initial supper being the German student songs, contributed by Dr. Dahne. The suppers held later in the week were equally interesting and all well attended.

A COMMITTEE ON RUBBER NOMENCLATURE.

Early in the sessions of the Rubber Conference a committee was appointed from the members of the Conference to act in conjunction with the committee appointed by the Rubber Club of America to bring about the standardization of the nomenclature of crude rubber. The chairman of the committee was Henry C. Pearson and the three members from the rubber club were A. Zeiss, A. W. Stedman and W. F. Bass. The members appointed from the conference were, in addition to the chairman, C. E. S. Baxendale, from Federated Malay States; Leonard Wray, from British Malaya and Straits Settlements; F. Crosbie-Roles, from Ceylon; Noel Trotter, from London; Dr. Jacques Huber, from Pará; Dr. J. de Argollo, from Bahia; and W. A. Anderson, from the Hawaiian Islands.

NEW YORK ELECTRICAL EXPOSITION AND AUTOMOBILE SHOW.

THE increased application of electricity to all branches of industry is exemplified in the development of the annual Electrical Show. Started in the year 1907, it is now regarded as a yearly event of importance, bringing under one roof exhibits illustrating the varied applications of electricity to modern life and industry.

Lasting from October 9 to 19, the time of its duration, permitted all those interested to visit it and study its features, either from an industrial or a domestic point of view. Its removal from its original home at Madison Square Garden to the more commodious premises at the Grand Central Palace, has proved a marked success, both as to participation and attendance.

One of the features of the development which the change in location has permitted is the display of automobiles and motor trucks. To accommodate this section, a demonstration track had been arranged on the third floor, permitting manufacturers to make indoor demonstrations of the merits of electric vehicles and trucks. Among the former were the exhibits of the Anderson Motor Car Co., the S. R. Bailey Co., Buffalo Electric Vehicle Co. and the Studebaker Corporation.

Special prominence was given to commercial and industrial electric trucks, in which field electricity is making rapid strides, to the advantage of the rubber tire industry. Various sizes and models were displayed by the Studebaker Corporation, the Atlantic Vehicle Co., the Champion Electric Vehicle Co., the Lansden Co., the Ward Motor Vehicle Co., and the General Motors Truck Co. The facility of being able to demonstrate them indoors gives electric vehicles an advantage not enjoyed by those using gasoline.

In connection with automobile accessories, interest had been manifested in the announcement by the Westinghouse Electric and Manufacturing Co. of a tire vulcanizer, which would greatly simplify the problem of repairing tires. The model, however, had not arrived by the close of the exposition.

The government exhibits were varied and included those of the Department of Agriculture, the Department of Commerce and Labor, the Department of the Interior, the United States Navy and the War Department. The first-named department illustrated the stimulation of plant growth by electricity, while the application of electricity to cultivation on a more extensive scale was demonstrated by the produce of the electrified farm exhibited by Dr. Emilio Olson. These two exhibits were of special interest by reason of the possible application of electricity to the germination of seedlings and the cultivation of rubber trees.

Wireless outfits and signalling apparatus were displayed by the Navy Department, but particular interest attached, from a rubber point of view, to the model harbor built by the Government for the Alaska-Yukon-Pacific Exposition at a cost of $35,000 and operated by representatives of the United States Coast Defense. The harbor showed in miniature form the mines and batteries used for purposes of protection, in the manner explained in the October, 1912, issue of THE INDIA RUBBER WORLD, page 16. Miniatures of the cables used for transmitting the electric current were exhibited and explained by the attendants. They consisted of three copper wire strands covered with rubber, enclosed in rubber tubing, the whole constituting in miniature a section of a cable. From time to time electric current was sent through the cables, the ignition of a red light taking the place of an explosion.

Models of the Gatun Dam of the Panama Canal, and of one of the locks and the movable dam on the Mohawk River at Yosts formed interesting features.

The Habirshaw Wire Co. exhibited samples of their insulated wires and cables, showing their various qualities made in accordance with official requirements.

A distinctively rubber exhibit was that of the Canton Rubber Co., of Canton, Ohio, which appealed to most visitors. It consisted of seamless fine Pará rubber gloves and mittens, specially intended for electricians, to whom they are a vital necessity. They are of standard quality for 4,000 volts, and of heavy make for 10,000 volts. One pair was shown which had withstood as high as 23,000 volts. In addition to those for electricians, gloves for acid workers, tanners and similar operatives were also shown. Household gloves, finger cots, special rubber goods and druggists' sundries also formed part of the line.

The H. W. Johns-Manville Co. made a strong exhibit of asbestos roofing and waterproofing, making a special feature of their "Regal Roofing" of natural asphalt. Friction tapes and splicing compounds formed part of their full line of electrical supplies. Refrigerating machinery was a prominent feature of the exhibit, as well as "Transite" asbestos wood and other asbestos compounds.

One of the most interesting specialties was the "Acousticon," or electrical aid to hearing, which is largely composed of hard rubber. Besides facilitating ordinary conversation, it has an earpiece which, in conjunction with an "Acousticon" connection, enables deaf persons to hear and thus attend church or the theater with the same comfort as if their hearing were normal. It is made by the General Acoustic Co., of Jamaica, Long Island.

The prominent companies identified with electric light and power were fully represented, such as the General Electric Co., the Westinghouse Electric and Manufacturing Co., the New York Edison Co., the United Electric Light & Power Co., the Edison Electric Illuminating Co., of Brooklyn; the Electric Lamp Association, the Yonkers Electric Light & Power Co., the Wagner Electric Manufacturing Co., and others.

Office appliances and labor-saving household devices were largely represented, the object of most of the exhibits being practical utility, and that end having been fully accomplished.

Among other interesting exhibits was that of the Dodge & Zuill Manufacturing Co., of Syracuse—the "Easy" Motor Washer—with a wringer composed of rubber rolls. The combination of the two appliances economizes time and labor.

The exhibits of electric accessories were typical in character and marked various interesting stages in the progress of electrical science.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta-percha from the United States for the month of July, 1912, and for the first seven months of five calendar years:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
July, 1912	$225,102	$141,583	$741,902	$1,108,587
January-June	1,156,546	512,881	3,850,713	5,520,140
Total, 1912	$1,381,648	$654,464	$4,592,615	$6,628,727
Total, 1911	1,290,415	927,644	4,162,495	6,380,554
Total, 1910	1,218,628	1,013,834	3,273,268	5,505,730
Total, 1909	996,859	637,090	2,393,563	4,027,512
Total, 1908	714,125	656,333	2,120,145	3,490,603

The above heading, "All Other Rubber," for the month of July, 1912, and the first seven months of the two calendar years, includes the following details relating to Tires:

MONTHS.		For Automobiles.	All Other.	TOTAL.
July, 1912	*values*	$297,340	$54,326	$351,666
January-June		1,537,705	292,178	1,829,883
Total, 1912		$1,835,045	$346,504	$2,181,549
Total, 1911		1,464,060	337,130	1,801,190

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

W. W. WUCHTER has resigned as general manager of the Swinehart Tire and Rubber Co. and John Walsh has been elected to fill that position. The new board of directors consists of Joseph Dangel, John Walsh, R. A. May, T. E. Borton, Oliver Tomey, William McWeldon, A. C. Hoff, A. Polsky, and Dr. E. L. Mather. The new board of directors authorized the sale of $150,000 worth of treasury stock at par. C. O. Baughman was re-elected secretary and R. A. May, treasurer. J. W. Cully, of the New York branch, was given charge of the Detroit branch. A. T. Carnahan has been appointed district manager in charge of Ohio, West Virginia, Kentucky, western New York, western Pennsylvania and eastern Michigan.

* * *

The Marathon Tire and Rubber Co., organized for the manufacture of tires and a general line of rubber goods, have secured land at Cuyahoga Falls, Ohio, just below the Glen Bridge, and are constructing their first building 65 x 300 feet. They expect to commence operations before the first of the year. The men interested in this company are experienced in rubber manufacturing. The board of directors consists of I. Walter Jenks, of Pittsburgh; John R. Scott, of Cleveland; C. W. Vaughn, a manufacturer of Cuyahoga Falls; W. F. Ridge, of Akron, and W. H. Jenks, of Akron. The officers of the company are John R. Scott, president; W. F. Ridge, vice-president and general manager; W. H. Jenks, secretary and treasurer. W. H. Jenks has been connected for five years with the engineering department of the Firestone Tire and Rubber Co., and W. F. Ridge has also had seven years' experience in the pneumatic department of the Firestone company. Franklin Kesser, formerly with the Hartford Rubber Works Co., and later with the Firestone, is manager of the sales department of the new company.

* * *

The B. F. Goodrich Co. have just completed a new route book covering the entire State of Michigan. This has been made from original data, the amount of which is voluminous. It develops the fact that many parts of the State are almost impassable, owing to the bad-road conditions.

F. H. Mason, first vice-president of The B. F. Goodrich Co., who has made the Akron boys and girls happy by donating parks and playgrounds, has come forward with another fine gift. He has given to the Akron Public Library $2,000, to be used in purchasing books for the school children. The library board will at once equip a room for that purpose. Certainly Akron should appreciate the generous spirit of its many rubber manufacturers.

* * *

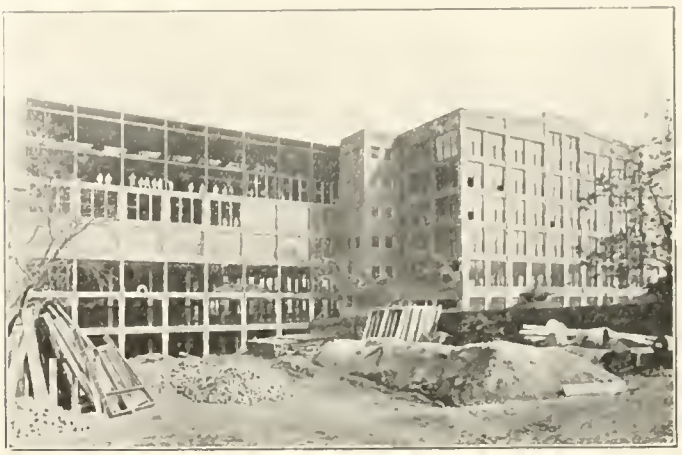
The Goodyear Tire and Rubber Co. has opened 16 new branches in the past 12 months. They are located at Albany, Rochester and Syracuse, New York; Dayton, Ohio; Kansas City, Missouri; Denver, Colorado; Newark, New Jersey; Oakland, California; Omaha, Nebraska; Portland, Maine; Rochester, New York; St. Paul, Minnesota; Spokane, Washington; Salt Lake City, Utah; Syracuse, New York; Worcester, Massachusetts, and Mexico City, Mexico. The company has erected several new buildings in the larger cities to accommodate the increased demand for their products. It is their plan to own all their branch buildings throughout the country. The new Goodyear buildings have been erected in Grand Rapids, New York, Buffalo, Columbus, Birmingham, Kansas City, Louisville, Minneapolis, Memphis, Newark and Philadelphia. The company has 11 branches in Canada, 55 in the United States, and with a new field being opened in foreign countries.

* * *

The Summit Rubber Co., which was destroyed by fire March 28, 1911, has been rebuilt and has commenced work. The force numbers about 100, including men and women. The company at present owns two acres of land and anticipates building another addition next summer. The plant is now located between Akron and Barberton, and has three railroad lines on one side and a street car line on the other. This is an independent company and manufactures rubber sundries. The officials claim that they have a large number of orders, which will insure their running for some time without any further orders.

* * *

Recent additions to the B. F. Goodrich Co.'s plant at Akron, Ohio, do not appear to indicate any anxiety on their part as to



NEW ADDITION TO THE B. F. GOODRICH FACTORY.

the future of the rubber industry. Although their present floor space is between sixty and seventy acres, this is at the present moment being augmented by the new building here illustrated. This structure of six stories and basement is 270 feet long by 157 feet wide. It is of the most modern fireproof construction, the materials used being solely steel, concrete and brick.

The office staff is growing with the growth of the factory, and a new six-story office building is also in course of construction. These illustrations show the buildings in process of erection, while it is stated that, owing to the rapid growth in the demand

NEW OFFICE BUILDING OF THE B. F. GOODRICH CO.

for Goodrich Wireless and other truck tires, the capacity of that portion of the factory will shortly be almost trebled. In the course of the past five or six years, practically the whole of the plant has been made over, the present buildings being uniform in design, and of modern fireproof construction, with exceptional facilities for lighting and ventilation.

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The various Akron rubber companies are putting forth a

special effort to supply their help with the best of drinking water, and careful chemical and bacteriological tests are made from time to time to assure the companies that the drinking water is safe and healthful.

* * *

Mr. J. A. Ford, of the Cleveland Mechanical Rubber Co., has resigned his position to join the force of the Goodyear Co., of Akron, where he has accepted a position in the experimental department in connection with mechanical goods. Mr. Ford also had several years' experience with the Morgan & Wright Co.

* * *

The Swinehart Tire and Rubber Co., of Akron, are sending out an official denial of the report that they are going to build a factory at St. Louis. "I have heard that a new rubber company was going to build in St. Louis," says C. A. Swinehart, the sales manager, "but it has no connection whatever with this concern."

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

BUSINESS in the various lines continues much the same as was reported last month. The clothing manufacturers are rushed with orders, and although the salesmen are on the road, they are refusing to guarantee deliveries except subject to delay. The call for plain coated rubber coats is not so marked as for the finer mackintosh and cravenetted goods; and these are in many cases delayed because of the unusually heavy demand upon the textile mills for the cloth, the run on some patterns and colors being remarkable. Belting and packing lines are none too brisk at present, the tendency today being to allow the manufacturers to carry stock, rather than to purchase heavily and carry large quantities in the stock-rooms of the mills and factories. Hose is called for only to a limited extent, the municipal contracts being mainly let in the spring, while the garden hose demand, of course, is over, as far as consumers' trade is concerned, though dealers are already placing fairly large contracts for early 1913 delivery. Druggists' goods in soft and hard rubber are in normal call. Tire manufacturers are busy. The steady increase in the use of automobiles, and the lengthening of the season—if, indeed, there can be called a season today—makes the demand for tires strong, both for immediate delivery and on early spring contracts.

Footwear trade, as is to be expected, is not very brisk, though there is more doing than the manufacturers anticipated, after the heavy advance orders taken previous to July 1, in order to secure the extra discount. It appears that many retail shoe merchants preferred to hold back more or less of their regular orders in order to be certain of the trend of style of leather footwear, and this now being established, they are ordering suitable rubbers to fit these lines. The tennis shoe business is excellent, and already advance orders for next season's delivery are far ahead of a year ago. Taken altogether, the rubber industry is in fine condition in New England.

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Last month the city of Malden was the scene of a trade carnival, when the local industries vied with each other in educating citizens and visitors as to the importance and extent of the manufactures of the city. Among those which made interesting exhibits were at least three, well known in the rubber trade.

The John H. Parker Co. exhibited the celebrated leather-soled rubber boots which have made the late Mr. Parker's name famous, and also Parker's Arctic Socks, which are sold by many dealers in rubber footwear. Mr. Charles Parker's little eight-year-old daughter, Elinor, had the proudest moment of her young life, when she presented to President Taft a pair of Arctic Socks, and was rewarded by one of that gentleman's most expansive smiles as he thanked her, and complimented her on her beautiful blue eyes.

The Converse Rubber Shoe Co. had a working exhibit, a rubber shoe maker being at work; and there was also shown the process of making the Converse Automobile Tires, a branch of manufacture recently added by this company.

By far the most interesting exhibit was that of the Boston Rubber Shoe Co., whose booth was a continuous centre of attraction throughout the entire week. A most ornamental structure was erected, in which were large, deep show cases, in which were displayed a full line of the many kinds of rubber footwear made by the company. Interspersed among the standard samples were shown pairs of shoes made of fancy colored rubber, many novel effects being produced. Perhaps the freakiest of these were rubbers made of mottled colors, so mixed as to resemble the "marbling" of bookbinders' lining papers. The rubber of various colors was so blended and mixed that though each was of a different composition from every other, the mixing in no way interfered with a perfect composition, or with the subsequent vulcanization, and the result was as interesting from the standpoint of the rubber chemist or manufacturer, as the shoes were to the general observer as a footwear novelty.

But that was by no means all that was interesting. At one corner a man made Boston boots, and at another a girl made "Hub-Mark" rubbers. In one case were three or four pairs of

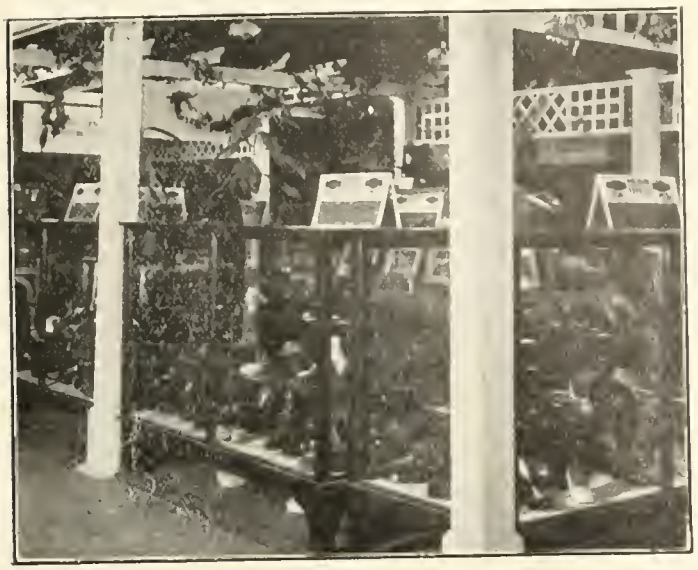
PRESIDENT'S BOOTS IN THE CENTER CASE.

hip boots. One of these pairs was a special one, made to measure for a gift to President Taft. This case, while shown in the illustration, was not sufficiently illuminated for THE INDIA RUBBER WORLD photographer to secure more than a faint outline of this pair of boots in the picture here presented.

Besides these, a table in the centre of the booth held a large number of curios collected by the company in its many years of purchasing crude rubber. There were specimens of gum, samples of Indian rubber working tools, including those for tapping and smoking. There were also a number of the crude rubber shoes made by the Amazonian natives, many covered with quaint barbaric ornamentation. Perhaps the greatest of all these curiosities was a human head, preserved after the fashion of the ancient Peruvian aborigines, who thus recorded their triumph over an enemy by showing his head as proof. The skull is removed, the eyes, nasal cavity and ears stopped up, the lips sewed together with coarse thread which is left with many long hanging ends. Then the head is immersed in and also filled with a strong tanning solution which not only turns it into a tough black leather, but, while retaining its shape, causes the head to contract until it is reduced to the size of a man's fist. In this condition it is as black as tar and as tough

and unyielding as bone. The specimen shown is supposed to be several hundred years old.

The company distributed several kinds of souvenirs to visi-



Boston Rubber Shoe Co. Exhibit at Malden Fair.

tors, among them being blotters and other advertising matter, miniature boots and rubbers, and pins bearing the trade mark of the company.

* * *

Francis H. Appleton, the popular head of the rubber reclaiming house bearing his name, has been signally honored by being elected president of the Perkins Institution and Massachusetts School for the Blind, at its meeting early last month. This institution is famous the world over for its wonderful success in its systematic education of the blind. It was founded in 1829 by Dr. Samuel G. Howe, beginning with six blind children who were taught in his father's house. It is named in honor of Colonel Thomas H. Perkins, one of the institution's most generous friends, who gave his mansion-house on Pearl street for its use. It was the first institution of its kind in the world, and has always served as a model for others of its class in America and Europe. The first books for the blind printed in this country were set up, electrotyped and printed here. For many years it occupied a commanding site in South Boston, but has now removed to a beautiful spot in Watertown, where a series of handsome buildings has been erected, and where for the first time the annual meeting was held, October 9, when Mr. Appleton was elected president, and Francis H. Appleton, Jr., an auditor.

* * *

Another philanthropic institution owes its establishment to one of the members of the rubber industry, Abraham Sydeman, president of the Plymouth Rubber Co., after learning of the difficulties encountered by able but impecunious men to secure even limited capital, and the reluctance of banks to assist such ambitious men, together with the greed and usurious practice of loan sharks, conceived the idea of forming a philanthropic credit union to aid small business men of limited financial means, by loaning money at very low interest, 1 or 2 per cent., instead of the 30 or 50 per cent. demanded by loan sharks.

Mr. Sydeman detailed his plan to several prominent business men, and the result was the incorporation in this city of the Boston Credit Union, which will probably have its plans perfected and be doing business by the time this journal is in the hands of its readers. The incorporators include: Edward A. Filene, whose magnificent new store, opened in September, is one of the show places of Boston; David A. Ellis, chairman of the Boston School Committee; Max Mitchell, vice-president of a leading trust company; importers, manufacturers and merchants; a Hebrew rabbi and a prominent attorney. They intend to raise a permanent fund of $100,000 to $200,000 from which loans will be made. It was Mr. Sydeman's idea that the institution might loan without interest, but as the stability of the capital was an important consideration, on legal advice it was decided to charge a small interest to cover costs of clerical force, rent and running expenses. When the union is solidly established, however, Mr. Sydeman hopes to reduce the interest rate to 1 per cent., thus doing far better for the small business man than any other credit union, most of which charge 10 and 12 per cent., and none less than 8 per cent. This union, founded strictly on a philanthropic basis by wealthy men, can, of course, greatly reduce these current rates.

* * *

The Walpole Rubber Co. has for years been a Maine corporation, its charter having been granted in that State under its corporation laws. Last month a new corporation was formed, under the laws of Massachusetts, entitled the Walpole Tire and Rubber Co., its purpose being to acquire the good will, rights, property and assets of the former company. The new company is capitalized at $4,500,000, of which $3,000,000 is 7 per cent. cumulative preferred stock, and $1,500,000 common stock. The preferred stock has no voting power, and is retirable at the option of the directors, at $120 per share and accrued dividends after five years from date of issue, in lots of $50,000 at a time.

The incorporators of the Walpole Tire and Rubber Co. are: E. W. Tinkham, Harrisville, Rhode Island; A. T. Baldwin, E. C. Green and J. C. Blanchard, Jr., Boston; F. J. Gleason, Walpole; E. W. Furbush and L. O. Duclos, Roxbury.

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A. S. Foster, of Lamkin & Foster, an authority on rubber footwear styles, submitted to a severe operation early last month, and at present writing is convalescing in a most satisfactory manner at the Corey Hill Hospital.

* * *

It may interest our readers to learn that the heaviest individual tax paid in the city of Beverly is that of Mrs. R. D. Evans, widow of the late rubber magnate. Her property in that city is assessed at over $5,000,000, and her tax $76,319. Beverly now rivals Lenox as a summer residence for millionaires, and has grown rapidly in popularity since President Taft chose to make it his hot-season residence, and for some years he rented Mrs. Evans' "palace" there.

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The B. & R. Rubber Company of North Brookfield is advertising in the Boston papers for a sales and department manager. The company is doing a steadily increasing business in its specialties.

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The new plant of the Plymouth Rubber Co. at Canton, Mass., is already too small to accommodate the constantly increasing business of this wide-awake concern, and plans are being prepared for the erection of an additional building.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

IN all branches of the rubber trade in this city there is heard the hum of prosperity. This briefly tells the condition of the trade locally despite the fact that this is presidential year, when usually the business outlook is discouraging, especially during the last stages of the campaign.

From the Cincinnati Rubber Co. comes the statement that business is very good and the outlook is bright.

W. G. Brown, of W. G. Brown & Co., crude rubber brokers in the Provident Savings Bank building, said: "The rubber business is flourishing, and the outlook is the best in years. There is a heavy demand for crude rubber at this time for hose, belt, packing, tires and other purposes."

* * *

To acquaint and interest Cincinnati capital in the possibilities of Mexico as a rubber growing country is one of the principal objects of the establishment in this city of a Mexican consulate. Enrique Ornelas has been sent to this city by the Mexican government to make a study of American industries, and at the same time interest Americans in the possibilities of his country. It is more than likely that within a short time there will be organized here a company that will operate an extensive rubber plantation in Mexico.

* * *

Setting out with the aim of answering satisfactorily the annoying "tire question," the Ideal Steel Wheel Co. has located a factory in this city under auspices most promising. Its chief product is to be the Ideal Steel Wheel, which they describe as "stronger than a wooden wheel, more easily cleaned, and with sufficient resiliency in itself to make possible the use of a puncture-proof cushion tire, at all speeds, with the same comfort attending a pneumatic tire on a wheel of wood." The officers of the new company are J. B. Fitch, president; J. E. Strietelmeier, vice-president and inventor of the patent; B. L. Mattox, secretary, and E. H. Maffey, treasurer. The capital stock of the company is $500,000.

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The Diamond Rubber Co. filed petition in the Common Pleas Court in this city September 25 asking for the appointment of a receiver for the Ohio Motor Car Co., of this city, for the benefit of its creditors. The Diamond Rubber Co. claims to be a creditor of the defendant company on a note of $6,000, which was payable September 15. The Diamond Rubber Co. alleges in its petition that because of irreconcilable differences existing between the officers in active control of the business and some of the stockholders, unless harmony is restored the assets of the company will be wasted and reduced in value to the loss of its creditors. According to the statement of the officers of the company the assets amount to approximately $404,000, and its liabilities to $177,000. The Diamond Rubber Co., besides asking for the appointment of a receiver, asks for judgment on its claim of $6,000. The court appointed Edward G. Schults receiver.

* * *

"I believe I have absolutely the newest system of tire repairing," said F. B. Williams, local agent for the Jackson Motor Car. "One of my men was returning from a trip to the country the other day, and within 20 miles from town had a blow-out in one of his rear tires. He had an extra inner tube, but there was a hole in the casing that he could put his hand through. Unfortunately his tire repair outfit was left behind, and there was not an emergency patch to be had within 20 miles. After some figuring he went to the nearest farm house and secured an old grain sack and a couple of straps from a discarded harness. Pumping up the new inner tube just enough to bring it up to its shape, he tore the grain sack into strips, and wrapped several layers around the tube at the place where the casing was damaged. He then put the tube in the casing, put it on and pumped it up a little harder, wrapping the harness straps around the outside of the tire and between the spokes. The tire was then pumped up to its normal pressure and he went on his way rejoicing."

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Articles of incorporation of the Federal Motor Supply Co. of this city have been filed with the Secretary of State. The capitalization is $250,000. While the company is authorized to manufacture and sell automobiles, motor vehicles, motor boats, motor-driven air vessels and the supplies and accessories for the same, one of the principal features of the new concern will be the handling of tires and other rubber accessories. The officers and directors of the new concern are: President, George W. Platt; vice-president, Fred H. Belohs; secretary, Jesse W. Wozencraft; treasurer, Emil G. Schmitt; directors, Edward H. Maffey, William C. Strachley, C. T. Woodrow, J. William Theobold and F. W. Stukenborg. The company's principal retail store and warehouse will be in this city, with branches in a number of other surrounding cities. Executive offices have been opened at No. 506 Fourth National Bank building.

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That rubber clothing is coming to the front as one of the important mercantile lines in the larger cities is evident from the fact that very recently this line of business has grown from a mere side line in the various department stores in this city to a business all by itself. Perhaps no one forecast the possibilities of the rubber clothing business more accurately than did the Schaefer Rubber Co., which is now operating one of the largest retail rubber stores in the Middle West, and has a branch house in Detroit, Michigan. Then followed the Ohio Rubber Co., with a store on Race street, and then came the Goodyear Raincoat Co., of New York, which secured a store room at one of the busiest corners in the downtown district. Recently the London Raincoat Co. opened a branch store here.

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There were few, if any, of the local representatives of the different rubber tire manufacturers who missed the opportunity of attending the first sales convention of automobile dealers and manufacturers which was held in Indianapolis October 8-9. This convention was the founding of what is to be known as the General Sales Convention Association. Perhaps the most important speaker representing the rubber industry at the convention was F. A. Seiberling, president of the Goodyear Tire and Rubber Co., of Akron. In his address to the convention Mr. Seiberling said in part: "I am in charge of the department of visions of my concern and am expected to see ahead, far and away. The total value of automobiles and accessories sold in the United States during the past year summed to the enormous total of $1,000,000,000, this as a result of a short ten years of activity and growth. But we are just under way and well going, and with better roads at our service and the sequeling possibility of connecting all cities, towns and villages through the agency of the motor truck I predict that in another ten years the income value of our automobile outputs will exceed that of all the railroads in operation everywhere. Before this can be accomplished, however, the motor car salesman must tone up and become more dignified, while the dealer must lay his mind more acutely on the matter of taking care of the machines he has sold. As to the 'Ocean to Ocean Highway' now being planned and appearing almost insurmountably stupendous, I say that it will be built and nothing on this earth can stop it. The need of a national highway from coast to coast has been so obvious that its possibility, in fact, its almost definite assurance, seems to be the most natural thing in the world. The plan proposed by C. J. Fisher of Indianapolis is the first practical plan to my knowledge that has yet been advanced. In pledging its *pro rata* of approximately $300,000 the Goodyear Tire and Rubber Co. feels that it has done nothing remarkable or unselfish. We look upon the pledge as a movement on which we will expect to realize dividends. The fact that the industry is supporting this move argues to my mind that the manufacturers look upon the project in the same light. In my opinion the move will succeed, it deserves to, and the men behind it are calculated to see that anything that they back gets its deserts. In other words, they are business men and it takes business men, not politicians, to do all of the really big things of today."

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

THE winter season approaches with the rubber industry in Rhode Island in as fine a condition as it has been in its history. Three concerns, the National India Rubber Co., Bristol; the Phillips Insulated Wire Works, Pawtucket, and the International Rubber Co., West Barrington, are increasing the size of their plants. One new company, in which Providence men are interested, has been chartered under Massachusetts laws. Practically all of the plants in the State are running to their full capacity.

The opening of a wire-making plant in connection with the insulating work at the plant of the National India Rubber Co. has proved one of the most successful ventures that concern has ever undertaken. It began with a large quantity of orders, and the business has developed so rapidly since the substitution of this work for several departments which were moved to Cleveland, Ohio, that the size of the building is being increased and new ones are being erected.

Night and day work did not relieve the congestion, so recently the company officials let a contract for the erection of a one-story building on the north side of the insulating plant, to be used as a shipping room. It is to be 68 feet x 63 feet. W. G. Murphy has the contract. The structure is to be of wood with a concrete foundation. The old scrap room in the yard was recently remodeled and put into use as a storehouse. Two thousand persons are employed at the plant—more than ever before.

On September 26 the plant was closed for stock-taking in accordance with the plan of the United States Rubber Co. to have semi-annual inventories in the factories under its control. Operations were resumed on October 2. Repairs to machinery were made during the short period of idleness.

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The Washburn Wire Co., Phillipsdale, Rhode Island, declared a quarterly dividend of 1¾ per cent. late in September on its first preferred stock, which was payable to stockholders of record September 20 on October 1.

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Eighty-five persons were entertained by the Mikado Club, an organization made up of employes of the Davol Rubber Co., at an outing and clambake at Emery Park, near this city, recently. One of the interesting features was a ball game between the married and single men, the former winning by a 10-4 score. The committee in charge of the arrangements included L. Page, R. Starritt, A. Cody, William Brennan and John Thornton.

* * *

Residents of Bristol were elated a few weeks ago when announcement was made that Col. Samuel P. Colt had completed an agreement with the New York, New Haven and Hartford Railroad Co. whereby he will stand half the expense of the elimination of a grade crossing on Asylum road.

This road leads from the mainland to Poppasquash, a neck of land which forms the western side of Bristol Harbor, and has a beautiful frontage on Narragansett Bay. By this arrangement a shore walk, corresponding to the famous right of way for the public across millionaires' estates in Newport, will be opened to the public in Bristol.

Col. Colt will build tar macadam roads as approaches to a bridge which the New Haven road is to erect across its tracks, and will keep the roadway in condition for five years. The estimated cost of the improvement is $20,000.

Shortly before this agreement was reached, Col. Colt also pleased his townspeople by offering a strip of land to the Government, so that it would be unnecessary to have a sharply sloping right of way across a sidewalk in the rear of the post-office.

During a campaign in Providence recently to raise $350,000 for a new Y. M. C. A. building, Col. Colt presented the committee in charge of the work a check for $10,000.

* * *

Augustus O. Bourn, head of the Bourn Rubber Co. and former governor of the State of Rhode Island, entertained friends at his home, "Sevenoaks," Hope street, Bristol, in honor of his birthday on October 1. Dinner was served early in the evening and an entertainment was provided from 9 until 11.

Owing to the illness of Mrs. Bourn, the usual reception was not held. Floral decorations were much in evidence, however, and the sons and daughters of Governor Bourn assisted him in entertaining.

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William Sutcliffe, who was assistant foreman at the Cranston Worsted Mill, Bristol, recently became a member of the office staff of the National India Rubber Co., Bristol.

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The vulcanizing room, one story high, construction on which was started for the International Rubber Co., West Barrington, about a month ago, is practically complete. It is 70 feet x 70 feet. The new room gives much-needed space in the main plant for the manufacture of sheetings.

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Engineer Ernest W. Crawley, of the United States Engineering Department, New Haven, was present at an insulated wire test at the plant of the National India Rubber Co., Bristol, on October 10.

* * *

Mr. and Mrs. Roswell C. Colt, who were married in London last summer, left Linden Place, the home of Col. Samuel P. Colt, Bristol, for Montreal early in October. Mr. Colt is interested in the rubber business in the Canadian city.

Shortly before their departure Col. Colt entertained a large party of friends in their honor. The guests included the townspeople as well as many from Providence, and also a number of members of the Legislature and college friends of Roswell Colt. A clambake was served. Music at the reception was furnished by a large orchestra from Providence.

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Stockholders of the United States Rubber Co. in this State, of whom there are many, were pleased to receive notices on October 3 that the big company had declared from the net profits for the quarter beginning July 1, a dividend of 2 per cent. on the first preferred stock, 1½ per cent. on the second preferred stock, and 1 per cent. on the common stock.

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Tax lists just published in the city of Pawtucket show that the Collyer Insulated Wire Co. is taxed this year for $37,420 on its real property and $20,000 on its personal; that the United Wire and Supply Co. is taxed for $35,000 real and $10,000 personal; the Phillips Insulated Wire Co. for $186,320 real and $120,000 personal.

Herbert O. Phillips, head of the latter concern, is personally taxed for $44,180 real and $14,460 personal.

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The National India Rubber Co., Bristol, has purchased two large motor trucks for hauling raw materials and finished products between its plant and the New York, New Haven and Hartford Railroad Co.'s freight yards in that town.

* * *

John J. Patterson, of this city, is president of a newly organized rubber concern, which is to be known as the Patterson Rubber Co. and is to erect a plant of five buildings in Lowell, Massachusetts. The capital stock is $500,000. It will manufacture automobile tires.

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George F. S. Singleton, of Franklin, Massachusetts—a town

located just over the State line from Woonsocket, Rhode Island—is one of the directors, and it is understood that he has considerable capital invested. Work on the construction of the plant is to be started very soon.

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The Consumers' Rubber Co., Bristol, is daily shipping large quantities of rubber footwear. As the season progresses the business increases to proportions that it rarely attained before the Walpole Rubber Co. took hold of the plant following its financial difficulties several months ago.

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The Washburn Wire Co., which is located in the town of East Providence, is assessed this year on a valuation of $380,114. The assessed valuation of the Washburn Wire Co., located in the same section of the town, Phillipsdale, is $637,000, an increase over 1911 of $33,550. This was due largely to extensive improvements and additions to buildings.

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About a year and one-half ago Dana McGovern, who for many years had been a worker in the National India Rubber Co.'s plant at Bristol, went to Maine on a hunting trip, and was not heard from thereafter. His body was discovered near Limerick in the latter part of September.

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Theodore Duarte, who for many years was employed in the mixing department of the National India Rubber Co.'s plant, Bristol, died September 15. He was 67 years old.

* * *

Le Baron B. Colt, a brother of Col. Samuel P. Colt, and judge of the United States District Court, was given the unanimous indorsement of the Republican party of this State as a candidate for United States Senator at the State convention of the party held October 9 in Infantry Hall, Providence.

Judge Colt was practically the only party candidate for several months before the convention. Before his name was prominently mentioned it was expected in some quarters that Col. Colt himself would be a candidate again.

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Many of the rubber concerns in this State have accepted the provisions of an Employers' Liability Act which was passed at the last session of the Rhode Island General Assembly. This law removes, when accepted, the common-law principles of assumed risk and fellow-servant negligence, and makes the employer liable for fixed charges or payments for various kinds of injuries, or a death.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

THE few rains which came early this season did not continue, and for a long time the weather has not been altogether to the liking of those whose interests are benefited by the sale of waterproof garments. On the whole, however, the merchants report that business has been very satisfactory, and much better than the same month last year. Without question this city has experienced much quiet business during the past three years, but the fact that there has been steady improvement has given assurance to business men that the future is bright, and that there is no longer any question that this city will maintain itself as the great metropolis of the coast.

The other day a parade made its way down the principal streets of the city, and it was significant as a forerunner of prosperous times. It was an impromptu parade, made up of the work teams of various contractors who are to supply the materials for the first building which will be erected on the grounds of the World's Panama Pacific Exposition. The old but decorated work wagons contained the materials actually to be used in the buildings—lumber, cement, paint, etc. It was a homely parade, but it aroused genuine interest and enthusiasm in every merchant and business man who witnessed it.

* * *

The Federal Rubber Manufacturing Co., of Milwaukee, has announced its intention of opening a branch store in San Francisco, which will be the headquarters for an extensive Pacific coast system of stores. They have selected E. L. Rettig to act as their Pacific coast manager, and he is as capable and efficient a man as they could have chosen. For over twelve years he has been the sales manager for one of the most prominent and aggressive tire companies on the coast. The Federal tire is very well known in northern California—at least it is well known to those who study tires—and will have no difficulty in taking a place among the leaders. Although the company manufactures a complete line of goods, it will make a specialty on this coast of a non-skid tire called the "Rugged Tread." Mr. Rettig has left for the company's factory, where he will take up the matter of determining upon a location and many other details. This work will occupy him for at least a month. H. A. Githens, the general sales manager of the Federal Rubber Manufacturing Co., promises that no money nor pains will be spared in making this one of the leading tire establishments on the coast. E. L. Rettig has been connected with the Diamond Rubber Co. in San Francisco for many years, and has lately been manager of the solid tire, motorcycle and bicycle tire departments, and has acted as chief assistant to General Manager C. E. Mathewson. Before coming to San Francisco he was for three years with the Diamond Rubber Co., in Boston, Massachusetts.

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J. B. Brady and W. H. Gilbert, of the Gorham-Revere Rubber Co., are now visiting the factories in the East in the interests of the company, and will return within a week or two. W. H. Gorham, manager of the company, has returned from a trip to Denver, and states that business is good.

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F. M. Steers, president of the Pacific Mill and Mine Supply Co., has returned from a trip East, and while away he secured a number of valuable agencies. This firm's branch store in Los Angeles, California, has just moved into larger quarters in a store located at 432 East 3rd street. This is one of the busiest districts of Los Angeles, and places them right in the midst of the rubber fraternity. * * *

Charles A. Gilbert, western district manager for the United States Tire Co., announces several important changes in the coast organization. H. A. Farr, who was in San Francisco a year ago, and since then has been manager of the Portland branch, has been placed in charge of the Seattle branch on the first of October. He will succeed H. A. Jones, who has resigned to accept a position as manager for Ballau & Wright, at Seattle, Washington. Mr. Jones will still be a United States Tire man, however, as the firm he is now with has the Seattle and Portland agency for the G. & J. tires, owned by the United States company. C. H. Mayer, who has been traveling—making San Francisco his headquarters—has been placed in Portland to act as manager there. Mr. Gilbert, the district manager, has been over the entire territory attending to the changes indicated above.

Mr. Gilbert is assuring all of his constituents that there will be plenty of tires for the coast trade this winter, as his company informs him that all of its factories will be run on the summer schedule—*i. e.*, night and day, three shifts of workmen being employed. * * *

The Gutta-Percha and Rubber Manufacturing Co. reports that business in the mechanical rubber line is very good.

* * *

Jas. F. Jiles, general manager of the American Hard Rubber Co., will soon arrive in San Francisco to pay a visit to his coast agents, the Goodyear Rubber Co.

The India-Rubber Trade in Great Britain.

By Our Regular Correspondent.

DITMAR and Thieben in "Zeitschrift für Kolloide," August, 1912, draw attention to the change which certain fillers undergo during the steam vulcanization process. Sulphur and various chemical fillers were mixed and submitted to vulcanization temperatures. It is somewhat surprising to read of the production of magnesium and calcium sulphides from the carbonates—of zinc sulphide from the oxide—and of barium sulphide from the sulphate. These changes, they say must influence vulcanization, but their special importance, they add, is in regard to analyses which cannot give an accurate clue to the composition of the mixing. This deduction goes without saying, and it cannot be too clearly understood that an analysis of rubber goods, however accurately carried out, does not necessarily indicate the composition as put in the mixing. I am of opinion, however, that an expert can deduce the original mixing pretty accurately from the results of his analysis. Such work, by the way, should not be attempted by those who have attended a course of sixpenny lectures at some technical school or other, in order (*vide* prospectus) to enable them to undertake rubber analysis if called upon. But to revert to my theme, whatever may be the chemical changes which occur during steam vulcanization, these are further considerably modified when the rubber is incinerated. Potts in his recent book devotes one or two lines to this important topic, but the subject is worthy of greater elaboration. The analyst who works rapidly and cheaply does not always recognize the considerable errors which may be involved in the determination of mineral matter, by the convenient method of direct incineration and where the result obtained is returned without correction, this should be stated. Cases have come under my notice with regard to important contracts for rubber goods, where discrepancies in analyses have arisen from the fact that, while one chemist has returned the figures obtained by direct incineration, as representing the original mixing, another has obtained different and more accurate figures, by making important corrections. Such corrections are usually arrived at by a combination of analyses and intimate knowledge of the manufacture, and I do not see any likelihood of factors being obtained, which could be utilized as necessary corrections.

DETERMINATION OF MINERAL FILLERS IN RUBBER.

OLD-ESTABLISHED rubber works doing a general business are complaining of the amount of competition which has arisen in recent years in the mechanical branch. Not that they fear any disaster to themselves, but from the fact that the lower quotations, sent out by new people who are compelled to get business somehow, have an unsettling effect upon customers. Newcomers in many cases have rapidly acquired what appeared to be a good business connection, only to lose it when the customers find that, while the goods are certainly cheaper, they are at the same time decidedly inferior. Various works established for the manufacture of goods by some special process, or for the exploitation of a particular patent, have, owing to difficulties arising, gone into the ordinary mechanical rubber trade, an instance of this being given in an adjoining paragraph. In many cases also, the various small works, established primarily for the rubber heel manufacture, have added certain mechanical goods to their list. As a rule, the rubber manufacture in Britain in the past has been carried out, not on lines of specialization, but with the idea of covering a variety of branches. It has been thought that this is the best way to avert any disaster in the case of exceptional slackness in a particular branch. This view is strongly held today, judging from what the manager of a large general works told me recently. "Look at so-and-so and so-and-so," he said, as a warning illustration as to the unwisdom of engaging in one particular branch only, in face of the competition to be faced from those who could afford to lose on a special branch, in order to retain customers, and yet have a successful year owing to good business in other branches. "The new competition in mechanicals," he said, "is viewed by us with complacency, as we feel sure that in many cases the interference with our trade can only be temporary." The managing director of another old-established firm, when spoken to on the subject, said he really could not understand how some of the cheap mechanical goods (including cycle tires) now on the market could be sold at a profit. They were not attempting, he said, to compete; if they had any demand for such goods they preferred to buy them from the people making them, rather than risk the scratching of good machinery by the working of mineral instead of rubber.

CUTTING PRICES IN THE MECHANICAL TRADE.

To refer shortly once again to the explosion which occurred at the North Western Rubber Co.'s works in October, 1910, the commissioners who conducted the Board of Trade inquiry in the following year, and whose report has been issued recently, recommended that an automatic safety appliance should be used in the future. The devulcanizer, they added, could not be said to be worked under safe conditions without some safety appliance, though they did not propose to make any definite recommendation as to what form this should take. Now this expression of opinion is entirely disagreed with by Mr. J. F. L. Crosland, the chief engineer to the Vulcan Boiler and General Insurance Co. of Manchester, with whom the devulcanizers were insured. In an interview I had with Mr. Crosland he was emphatic that not only would any such safety appliance be useless, but it would be a positive source of danger under the special conditions, as it would be sure to get clogged. All that was necessary, he said, was to have the manhole at the top of the side of the devulcanizer instead of at the surface. By this means the overfilling which led to the explosion of hydrostatic pressure could not occur, and any danger would be entirely obviated.

SAFETY VALVES FOR DEVULCANIZERS.

A CASE of some importance to British manufacturers of transparent druggists' rubber goods, such as teats and soothers, has just been decided. Some little time ago a French patentee instituted proceedings against Messrs. J. C. Ingram & Son of Hackney Wick, London, the well-known rubber manufacturers, for infringement with regard to transparent rubber. The action was defended by Messrs. Ingram with the support of other English manufacturers, notably the Leyland & Birmingham Rubber Co., Limited. Judgment has now been given in the French courts to the effect that the French patent has been declared void.

LEGAL DECISION.

AN interesting and important development in connection with this well-known motor tire firm has to be recorded. This is that the control has passed into the hands of Messrs. Chas. Macintosh & Co., Limited, whose works at Cambridge street, Manchester, are little more than half a mile distant from the works of the above tire company at Ardwick Green. The tire company owes its rise and progress to Mr. Challiner, the Earl of Shrewsbury and Talbot, though financially interested, not having taken any very active part in the business. Two years ago the factory was considerably enlarged. The main

SHREWSBURY & CHALLINER TIRE CO.

business is in connection with solid tires for vehicles, especially heavy twin tires for commercial motors. Under the new arrangements the whole of the ordinary share capital is held by Messrs. Macintosh, the holdings of the original shareholders being converted into preference shares carrying a fixed rate of interest. The management is entirely under the control of Messrs. Macintosh, the preference shareholders not having any voting power, except in the case of certain specified eventualities. This absorption by Messrs. Macintosh is not a new departure, as on former occasions I have referred to the taking over of other rubber businesses, including the Eccles Rubber Co. and the Liverpool Rubber Co.

TURNER BROS. LIMITED.

THIS well-known firm of asbestos manufacturers of Rochdale have just completed large branch works at Trafford Park, Manchester, not far from the ship canal. This extension, I may say, does not presage any new departure in the business or any cessation of the present Rochdale activities. It is merely an extension of the present business on a site which offers better business facilities, more especially in regard to freights, than does the Rochdale site, which, being served by one railway company only, is not so advantageously situated as Manchester, which has four or five competing lines. The new works are about 40 minutes motor run from Rochdale, where the business headquarters will remain. Although at present no new departure in manufacture is arranged, it is quite probable that the future will see developments on lines entirely new to Great Britain.

TRADE JOTTINGS.

I UNDERSTAND that the Crude Rubber Washing Co., Limited, whose reduction of capital has already been referred to, is relinquishing the rubber washing business altogether. A move has been made to Wembley, about ten miles from London, where the Aiperton works, started by Mr. Carpenter, of Charing Cross Bank fame, have been taken over. The business to be carried on will be the manufacture of mechanical rubber, tire-treads, etc., the machinery having been obtained at the sale of the Unity Rubber Works, Manchester. The Edmonton works, where the Murac and rubber washing business was carried on, are now in the possession of Mr. Dessau, late manager of the Crude Rubber Washing Co. Golf balls and other articles are being made there.

Mr. Ferguson, son of the late senior partner of the firm of Ferguson, Shiers & Co., waterproofers, of Newton Heath, Manchester, and who has been acting as works manager, has terminated his connection with the firm, and the business will be carried on by Mr. Shiers alone.

The Clyde Rubber Works, Limited, which are situated in a crowded quarter of Glasgow, are building more commodious works at Renfrew.

The recently issued report of the Rubber Tanned Leather Co., Limited, which has its factory at Ross, near Hereford, shows a debit balance of £3,059, and the question of raising further capital is under consideration. The result of the suit brought by the Société Franco-Belge de Tannage et de Cuir was adverse to the English company and the legal expenses amounting to £3,000 odd have been written off. Despite the somewhat unsatisfactory report, it is clear that rubber-tanned leather is making headway, especially for leather belting, repeat orders for which are coming in from various foreign centers as well as home markets. It is on this class of goods that the factory at Ross is mainly engaged at present, and a branch factory has also been opened in this connection in Canada.

INCREASED EXPORTS OF GERMAN RUBBER GOODS.

According to latest published statistics, the German exports of rubber goods increased for the seven months ending with July from 5,591 tons in 1911 to 10,990 tons in 1912, being an increase of nearly 100 per cent. in the aggregate. The proportions of soft and hard rubber were for the seven months:

	1911.	1912.
Soft	4,785 tons.	10,035 tons.
Hard	806 "	955 "
	5,591 tons.	10,990 tons.

It is of interest to note the relative preponderance of soft rubber, both in the actual quantity and in the rate of increase.

NEW GERMAN IMPREGNATION PROCESS.

A company styled "Terovin, G. m. b. H.," has recently been formed at Cologne for the utilization of a patent process for preserving the elasticity of rubber goods. The object is effected by a chemical emulsion, applied to the articles to be treated. This new product has proved specially adapted for the impregnation of pneumatic tires, considerably increasing their durability.

RUBBER BELTING CHEAPEST.

According to German reports, rubber belting is receiving increased attention in that country, consumers recognizing the fact that although higher in price, it is more economical in service than textile belting. Thus, a main driving belt was lately replaced, which had been sixteen years in constant service, and subject to considerable strain during that period.

AUSTRIAN CABLE FACTORY INCREASES CAPITAL.

The Kabelfabrik-und-Drahtindustrie-Aktien-Gesellschaft, of Vienna, has increased its capital from the equivalent of $1,200,000 to $1,520,000.

SWEDISH RUBBER SHOE MANUFACTURERS ADVANCE PRICES.

Owing to continued rain, Swedish rubber shoe manufacturers have been enabled to maintain their recently advanced retail prices.

RUBBER TRADE IN JAPAN.

By Our Regular Correspondent.

THE JAPANESE PACKING TRADE.

ACCORDING to a special report of the Japanese Custom House Bureau, the imports of rubber packing for 1911, showed, as compared with 1910, a decrease of about 10 per cent. in quantity, coupled with an increase of about 3 per cent. in value, as shown by annexed table. The reasons of this are threefold. First, the so-called rubber plate, lined with fabric, was being made by Japanese rubber manufacturers, its import being reduced to one-third of that of 1910. Secondly, the import of cheaper core-packing decreased. Third, the import of higher grade Amazon packing increased; its greater durability than that of core packing being recognized as making up for its higher cost. The imports of asbestos packing remained about the same as before.

The demand for this class of goods is being developed every year, but is being partly supplied by the two companies making rubber plate; Mitatouchi Rubber Manufacturing Co. (Tokio), and the Dunlop Rubber Co. (Far East), (Limited), Kobe.

Prices of goods in the countries of production, as well as in Japan, did not show any marked fluctuations. Market prices are now:

PRICES PER POUND.

	Yen.	Cents.
Rubber packing	.36	18
Core packing	.38	19
Amazon packing	1.30@1.75	65@88
Asbestos packing	.40	20

JAPANESE IMPORTS OF PACKING.

	1910.		1911.	
	Pounds.	Value.	Pounds	Value.
Great Britain	484,991	$91,033	397,156	$75,271
Germany	179,639	25,801	131,260	19,649
Italy	83,096	11,714	88,588	14,324
United States	84,385	41,723	130,043	64,762
Other countries	2,491	337	2,740	591
	834,602	$170,608	749,787	$174,597

INSULATED ELECTRIC WIRE IMPORTS.

The Japanese imports of submarine telegraphic or telephonic cables have diminished under the influence of domestic manufactures in that line. In three years they have represented from January to June—1910, $238,470; 1911, $165,759; 1912, $36,006.

All other classes of insulated wire represented during a similar period:

	Pounds.	Value.
1910	2,724,869	$340,777
1911	14,047,505	1,322,256
1912	7,952,928	666,735

The cause of the large increase shown for 1911 (apart from the impending new tariff) was the number of hydro-electric companies, electric car companies and electric light companies, projected or established in consequence of the development of electricity over the country. As a result of the imports having again fallen off in 1912, domestic manufacturers secured a large accession of business during the first six months of the current year. For instance, it is announced the Fujikura Electric Wire and Rubber Co., Limited, paid for that period a dividend at the rate of a little over 20 per cent. per annum.

Exports of insulated electric wire, January to June (chiefly to China and Japanese China) represented—1910, 336,801 pounds, $56,102; 1911, 164,936 pounds, $34,248; 1912, 134,668 pounds, $27,968.

Statistics of the electric installations in Japan on December 31, 1911, show that there were at that time 2,765,169 electric lamps, averaging about ten candle-power, and 10,419 electric motors, with a total actual horse power of 47,188.

JAPANESE TRADE IN JINRIKISHAS.

According to official reports, Japanese exports of jinrikishas, which had been relatively active in 1910, fell off in 1911. This was specially the case as to the Straits Settlements, which had taken in 1910, about 80 per cent. of the total exported from Japan. Owing to the dullness in Singapore, caused by many Chinese workers leaving for their native land, the demand fell off 22 per cent. in quantity, while the value was only diminished by 5 per cent., the adoption of higher grades being thus indicated. During the first six months of this year, business revived in the Straits market. In Annam, moreover, business was better than in Singapore. Rubber tires are there adorned with red paint, which gives them a characteristic aspect.

JAPANESE JINRIKISHA EXPORTS.

	1910.		1911.	
	Number.	Value.	Number.	Value.
China	1,286	$21,548	1,046	$20,781
British India	1,406	31,172	976	19,987
British Straits Settlements	11,027	148,128	8,616	149,109
Other countries, including Corea	478	8,329	188	4,209
Total	14,197	$209,177	10,826	$185,086

RUBBER PLANTING IN SIAM.

The Japanese Consul at Bangkok, the capital of Siam, has reported that rubber planting in that country is now in a tentative period; the most favorable districts being the two states of Champon and Segora, on the east coast of the Malay Peninsula, facing the Gulf of Siam. At the south of those two states is a state named Pato-ni, where there are already 300 acres planted with 58,000 Pará trees. In Chautaburi State (northeast of Bangkok), rubber planting has also been tried on a large scale.

This state resembles the Malay peninsula in climate and fertility, but owing to the droughts usual in spring, tapping is later by one or two years, than is the case there. Two of the plantations (aggregating 160 acres) are operated by individuals, and one by a stock company, styled Borisab Sowan, Chautaburi, with a capital equaling $22,500, which owns an area of 800 acres. Of this acreage 200 acres are planted with 16,000 Pará trees, the bulk of which were planted in July, 1911, and have now attained a diameter of an inch to an inch and a half; 600 trees having been planted two years ago. One of the representative men of this company is Mr. K. Tanje, a Japanese, who has become a naturalized Siamese.

The total area planted in rubber in Siam is estimated at about 3,000 acres, but the enterprise is of such recent date that it has not yet been possible to determine whether it is suited to the country.

The opinion is expressed in the official Japanese report, that if suitable locations are selected, Siam will in the future become a good rubber planting center, having much uncultivated land, with many of the characteristics of tropical countries. Siam, it will be recalled, is to the northeast of the Malay peninsula.

CYCLE, MOTOR-CAR AND JINRIKISHA SHOW.

This show was held during the early part of the summer of 1912 at the Shiba Exposition Hall, Tokyo, and included some 30 exhibitors. Among them were chiefly English-made cycles and automobiles, exhibited by Japanese traders. The exhibits included those of the Dunlop Rubber Co. (Far East), Limited, Kobe; the Meiji Rubber Works, Tokyo; the Leicester Rubber Co. of England, as well as various British and American makes.

Exhibits of other rubber manufactures included medical goods and carriage mats from the Meiji Rubber Works, Tokyo, as well as rubber gloves for electricians, hose and heavy rubber heels from the Ingram Rubber Manufacturing Co. of Japan, Limited, Kobe.

FURTHER JAPANESE RUBBER COMPANIES.

The Kawaji Rubber Works were established at Higuretori, Fukiai, Kobe, in October, 1907, with a capital of $5,000. The principal manufactures are toy balls, sporting and mechanical goods, jinrikisha tires, etc. Its equipment includes one 15 h. p. engine and one boiler of 20 h. p. Messrs. K. Kawaji and H. Suba are the proprietors.

The Kobe Rubber Manufacturing Co., Ltd., was established at Wakinohama, Kobe, in January, 1912, making tires, tubing, etc. Mr. W. H. Coast is the expert. All the members of the company are English, most of them having been connected with the Dunlop Rubber Co. (Far East), whose success encouraged them to branch out for themselves.

The Rubber Co. was established at Sumiyoshi-mura, in 1887, being the oldest factory in Osaka and Kobe. Its specialty is a water bottle, the annual output of which amounts to 20,000, principally sold to consumers in Tokyo. This bottle is made by a special and original process, which requires less machinery than the foreign method, but takes more hands. This factory has one fifteen h. p. engine. Many of the Osaka water-bottle manufacturing companies have emanated from this concern.

BRAZILIAN GOVERNMENT TENDERS.

On December 30, the Ministry of Agriculture at Rio de Janeiro, will receive tenders from persons who may propose to establish factories for the refining and manufacture of rubber, in accordance with the law of January 5, 1912 and the subsequent regulations. The provisions of the law were reported in THE INDIA RUBBER WORLD of June 1, 1912 (page 426).

Some Rubber Planting Notes.

RUBBER IN ABYSSINIA.

ACCORDING to the communication of Professor Henri Jumelle, of Marseilles, France, to the "Agriculture Tropicale," Abyssinia in 1910 exported 310,500 pounds of rubber. Rubber vines, principally *Landolphia,* are found in almost all the forests at altitudes of 8,000 to 10,000 feet; those which grow near the rivers being of inferior quality. The vines, which are being worked, have a length of 80 to 100 feet; the trunk, with a circumference up to 14 inches, being frequently divided 3 feet above the ground, into the large interlacing branches.

To obtain the latex, the natives draw down the trunks towards the ground, keeping them in a horizontal position by means of cords, attached to stakes fixed in the ground. They then make circular incisions at various points, beneath which the latex is received in curved *orki* leaves. When these are full, they are poured into a calabash. The native effects the coagulation the same evening in his cabin, using for this purpose the concave iron disc in which he usually makes his bread.

This metallic receptacle is placed on the fire, and the rubber thus prepared is delivered to the representatives of the employing company, who wash it and dry it for a month, sheltered from the sun's rays. They finally smoke it several times, burning small branches or leaves.

In Abyssinia there are numerous forests, the working of which has not been commenced, owing to the difficulty of communication. In consequence of the improvements anticipated for 1912, the hope is entertained of an important development of Abyssinian rubber exports.

DEVELOPMENT IN THE FEDERATED MALAY STATES.

In his recent summary of the progress of the British Colonies, the Colonial Secretary, Mr. Harcourt, said that if ever his name were to be honorably remembered as a colonial minister, he hoped it might be in connection with two things—railway building and tropical medicine. He was certainly able to show that both have made excellent progress in the last few years. Perhaps nowhere has the iron horse made greater strides than in the Federated Malay States, so that, as he pointed out, on the completion of the extensions in progress or projected, one may travel direct by rail between Penang or Singapore and the Siamese capital.

As regards the second point, he alluded to the special encouragement promised to the study of tropical medicine and the prevention of tropical disease. While much has already been accomplished, including the theoretical conquest of malaria and yellow fever, and the pending conquest of beri-beri, there is still a big task ahead in this direction.

Department reports arriving in England from Kuala Lumpur point to a continuance of the development of the trade and industries of the Malay Peninsula, which has been so marked during recent years.

AMAZONIAN ANTICIPATIONS OF THE EXPOSITION.

In discussing shortly before the opening of the exposition, its prospects as affecting Brazil and particularly the State of Amazonas, the "Revista da Associacao Commercial do Amazonas" of Manáos, comments upon Asiatic rubber being thus placed in direct opposition to the Brazilian article in leading markets for the consumption of the latter. Attention is also called to the fact that while on previous occasions only state assistance had been available, still a gold medal had been awarded to the Association for the best sample of rubber; referring to the special gold medal of the Rubber Growers' Association, obtained last year in London. With much difficulty the Federal Government was brought to see that it would never do to refuse this challenge on the part of its rivals to a trial of strength.

For the first time, it is added, a combination has been formed, with perfect harmony of purpose for the defense of the chief export product of the Basin of the Amazon; thus dispelling the idea of disunion or lack of confidence on the part of the Brazilian rubber states.

RIVERSIDE (SELANGOR) RUBBER CO., LIMITED, FEDERATED MALAY STATES.

A more than three-fold increase is reported by the Riverside Rubber Co. in the first nine months of 1912, as compared with the same period of 1911; the figures being, respectively, 120,056 and 37,319 pounds.

SCOTTISH MALAY RUBBER CO., LIMITED, FEDERATED MALAY STATES.

The total crop of the Scottish Malay Co. for nine months ended September 30, 1912, was 119,160 pounds, as compared with 53,534 pounds for the corresponding period of 1911. As the September yield was 17,427 pounds a large increase of last year's output of 102,017 is looked for by the end of the twelve months.

GOLDEN HOPE RUBBER ESTATE, LIMITED, FEDERATED MALAY STATES.

As compared with a total output for 1911 of 109,655 pounds, the yield for the first nine months of 1912, amounting to 98,384 pounds, indicates a good prospect for the year's result of the Golden Hope Rubber Estate, Limited. There have been 60,944 pounds sold at an average of 4s. 6.42d., while for 1913, 18 tons of No.1 are contracted for at an average of 4s. 7.33d. per pound.

FEDERATED MALAY STATES EXPORTS.

The returns to end of September show a marked increase over those for corresponding period of 1911 and 1910.

	pounds		
January	768,743	1,329,170	2,730,576
February	728,458	1,490,849	2,715,767
March	899,383	1,916,219	3,089,583
April	1,123,097	1,235,917	2,285,390
May	877,435	1,147,488	2,255,034
June	879,675	1,229,754	2,305,915
July	971,469	1,581,993	2,695,861
August	981,022	1,651,845	3,655,535
September	1,110,476	1,677,062	2,968,121
Total to date	8,339,758	13,260,297	24,701,782

HARD FINE PARA IN CEYLON.

A recent issue of the "Times of Ceylon," contained an interesting paragraph regarding a demonstration given by Mr. H. A. Wickham, the father of plantation rubber, in which he produced hard fine Pará from Ceylon latex. The paper calls the product equal to the Brazilian article.

"To Hanwella estate belongs the distinction of being the first to turn out Ceylon hard fine Pará.

"Mr. Wickham, who contends that the difference between Brazilian hard fine Pará and plantation rubber is only a matter of treatment, has given a demonstration on the estate, and the results, which have turned out quite satisfactory, are to be seen in the premises of the Colombo Commercial Company in Slave Island. The rubber has been turned out in the shape of blocks, and is believed to be equal in every respect to fine hard Pará, consisting as Mr. Wickham says, not of a curd or coagulation latex, but of an amalgam of the whole of the latex with the preservative smoke.

"The opinions of the market on the rubber will be awaited with interest. Mr. Wickham says that he has found plantation latex if anything richer than that produced on the Amazon, and similarly treated ought to form superior not inferior rubber."

JELUTONG AND WHERE IT COMES FROM.

IN the pages devoted in this issue to the description of the various exhibits shown at the Rubber Exposition, there is a paragraph referring to the United Malaysian Co. as that is primarily an American company which has succeeded in building up a very considerable business in one of the lesser rubbers of the Middle East—jelutong—it may be interesting to many people to get a little more extended information regarding the company than could properly be given in a description of its display at the Exposition.

VIEW SHOWING PART OF KARIMON PLANT.

This company was formed in 1908 to gather, prepare and ship jelutong in the Middle East, and began the construction of its plants in the spring of 1909. It acquired large concessions in Borneo and planned and started the town of Goebilt on the northern coast of that island in the British Province of Sarawak. It also made arrangements for gathering jelutong in the Great Karimon Islands, Sumatra and in the Federated Malay States. It built two plants—one on the Karimon Islands, the other at Goebilt—getting them in operation in the fall of 1909. Its first shipment was received in this country in December of that year.

The jelutong tree grows in considerable profusion in the section covered by this company. The tree reaches a height of 150 feet—sometimes more—the branches being confined to the upper third of the trunk. Formerly, the natives tapped these trees in a very wasteful way, abusing them so much that in many instances they were killed. These abuses the company has made great efforts to stop, and the trees are now being tapped in such a way as not to injure them.

One-half the product of this company comes to the United States, the other half going to England and Germany.

This variety of rubber is often referred to as Pontianak, because of the port in Borneo from which it is shipped, but this is an improper name for it, and is not used anywhere except in the United States. Its scientific name is *Dyera Costulata*.

INTERIOR VIEW OF PLANT AT KARIMON.

Mr. J. Warren Bird, manager of the New York office, 2 Rector street, was in charge of the exhibit and he was kept busy answering the many questions that were prompted by the display of handsome sheets of jelutong crepe, and by the large photographs that every visitor stopped to look at. He distributed a small pamphlet, entitled, "Some Facts About Malaysian Rubber," in which is included a number of formulae for compounding this rubber in the manufacture of tires, packing, and other rubber goods.

The four illustrations here shown give a little idea of the work the company is doing. One shows a general view of the plant at Karimon Islands; the second, an interior view of the main factory built at that point. The third shows one of the bungalows occupied by the members of the staff; and the fourth shows a quantity of jelutong at Goebilt ready for shipment.

STAFF BUNGALOW.

CRUDE JELUTONG AT GOEBILT.

NOTES FROM BRITISH GUIANA.

From Our Regular Correspondent.

PROSPECTS OF THE BALATA INDUSTRY—A GLOOMY OUTLOOK.

THE position of the balata industry is not such as to give cause for general satisfaction. Ominous complaints have been received from the interior, where bleeding operations are in progress, that the trees are already refusing to yield. It is a fact that the dry weather, which is due in the ordinary course of events now, has already set in, but owing to the long duration of the drought it was thought possible that the rainy season might have extended beyond the usual period. Such has not been the case, and since I last wrote we have had scarcely any rain. I have it on good authority that most of the gangs are returning to the depots, alleging that it is only possible to get balata by spoiling the trees, which would constitute an offense, and that unless rains fall quickly the season will be a failure. These rains have not fallen and already one gang of men, sent up in May by Messrs. Bugle for six months, has returned, the men asserting that they remained as long as balata was there to bleed, but to remain longer was useless. This statement has been accepted, and the men have been discharged. It is said that unless matters improve very quickly—which they show no sign of doing—only one-third of the usual crop will be realized.

Up to September 26 the exports were only 165,552 pounds, against 524,541 pounds for the same period last year. It was hoped that as shipments came more rapidly to town towards the end of the season, some sensible impression would have been made upon the deficit, although it was not anticipated that it would have been entirely obliterated. It seems as though the influence of the drought is going to be as disastrous as the most pessimistic feared. If that is the case it cannot be doubted that the result will be disastrous both for the industry and the companies concerned. Already the events of 1911 have driven some companies from the field, but it was hoped that the experiences of that year would have been so instructive that 1912 would have been made more profitable. If matters do not mend, as is feared, very little margin of profit will remain to the companies. The advances to laborers have been more than usually heavy on account of the drought, and it is doubtful if they will make sufficient to clear themselves. Absconding has been fairly rife this season, and with an output a third of the normal, companies will not be in a favorable position to pay for expeditions, which have been more costly than usual. The outlook is by no means bright. Happily the industry has not the dead-weight expenditure of export duty on balata to meet this year.

THE REVENUE AND THE INDUSTRY—TOTAL AMOUNT OF ITS CONTRIBUTIONS.

Exactly how large the amount was, and how oppressive to the industry, is disclosed by the report for 1911-12 of the receiver general, R. Clifton Grannum, containing the financial statements of the colony. The colony's exchequer benefited from the export duty on balata to the extent of $22,102.96, an amount of $2,102.96 more than was estimated. It is interesting to record that the surplus of revenue over expenditure for the year was just $23,359.86, so that if this duty had not been imposed the Government would have been about $1,000 to the good as the result of the year's transactions. Other contributions to the revenue by the industry were $23,457.15 in royalties, and $16,400 in licenses. So that altogether in round figures the industry contributed $61,960.11 to the revenue. This does not include, of course, the indirect contributions made by the laborers in the industry to customs revenue. They were not inconsiderable.

MR. STOCKDALE PROMOTED—DIRECTOR OF AGRICULTURE IN MAURITIUS.

The news has been received here with some regret that Mr. F. A. Stockdale, Assistant Director of Science and Agriculture, has accepted the offer by the Secretary of State for the Colonies of the appointment as Director of Agriculture in Mauritius at £800 per annum. Mr. Stockdale just doubles his emoluments, and the promotion he has received is well deserved. Since he came to the colony in 1908 he has taken the greatest interest in the rubber and the balata industries, and has done some useful work at the Government's various experimental stations. He represented the colony most successfully at the Rubber Exhibition in London last year.

SOME TAPPING EXPERIMENTS—MR. STOCKDALE'S REPORT.

Mr. Stockdale has just issued his report on his visit to the experimental station at Issorora in the North Western District, where he commenced tapping experiments with the Pará rubber trees that have reached a tappable size. He says: "These experiments have for the present been laid out in two series, with two groups in each series. The trees are being tapped on alternate days on the half-herring bone system, and the latex is being coagulated with dilute (1 in 10) acetic acid. Notes made at the time the experiments were commenced show that the trees on the station may be divided into at least four groups according to the structure, thickness, etc., of their barks. Records are being kept of the different trees, and it will be possible later to compare the yields of rubber given by different types of plants. The latex in some trees was found to be of a yellowish hue at first, but eventually turned to a whitish color as tapping proceeded. In others the latex is a pure white from the commencement. The first latex obtained was of a thick consistency and coagulated readily in the cuts, but after a few tappings it became thinner and ran readily in the cups. The rubber is for the present being turned into biscuit form and is well washed in cold rain water. It appears to be of good quality, and is of good strength, elasticity and resiliency. A careful record is also being kept of the times that rains or showers fall at the station, in order that after a few years reliable information might be available for the district. The question of the time when rain falls in a district is of importance for rubber planters, and data on this point are required.

Tappings of young plantation *Sapium Jenmani* are also being commenced. The latex of these trees did not run freely. It coagulated readily, and consequently the rubber had to be collected as scrap. This rubber when carefully washed and dried appears to be of good quality. Several systems of tapping will be tried, and the relative yields of the different methods will be obtained. Extension work is being pushed along, and the planting of *Hevea Brasiliensis* is taking place as rapidly as possible. The planting of the third ten acres of the extension over the creek should be completed during this year, and further trials are being made on the hill slopes in conjunction with balata, letter-wood, and bastard letter-wood. Trials with various kinds of coffee are also being undertaken, and it is possible that planting of the creole variety on the hill slopes will be started. A visit was also made to the David Young Rubber Estates on the Aruka River, and the progress of the different kinds of rubber-producing trees was noted. The Pará rubber trees were bearing quite a fair crop of seed pods, and with suitable weather conditions a number of seeds should be obtained from this property this year.

BALATA AND RUBBER IN THE NORTH WESTERN DISTRICT—INTERESTING FIGURES.

That small progress is being made in the rubber and balata industries in the North Western District of the colony is revealed by the report of the commissioner, H. Thompson King. He records an increase in the quantity of balata and rubber shipped for the district during the year 1911-12, but says that the estimated returns have not been realized. He attributes this result to the exceptionally dry weather during the greater part of the year. There is not much hope that 1912-13 will produce an appreciably better result, if as good. The output of balata from the three sub-divisions was as follows: Barima, 5,498

pounds, agianst 116 pounds in 1910-11; Barama, none against 2,318 pounds in 1910-11; Waini, 5,559 pounds, against 5,042 pounds in 1910-11; total 11,057 pounds against 7,476 pounds. Rubber so far has come from Barima only; 1,837 ponds, against 102 pounds. The combined products have contributed $257.88 in royalty, against $157.56 in 1910-11. There has thus been an increase of 3,507 pounds of balata, 1,725 pounds of rubber, and of royalty $106.32. The rubber industry, however, is practically at a standstill in this part of the colony. Mr. King reports: "The Consolidated Rubber and Balata Estates, Limited, have done nothing on the tracts held by them under license from the Government, and with the exception of a little clearing nothing has been done on the estates of other companies owning properties in the district. I understand that this cessation of work on the properties other than those of the Consolidated Rubber and Balata Estates, Limited, has been caused by financial difficulties."

The experinemtal station at Issorora is being extended; the ten acres underbushed in 1910-11 being planted with Pará rubber. The remaining ten acres of the extension have been cleared and prepared for planting. An area of four acres has been cleared on the hill slopes for the purpose of conducting experiments in connection with balata growing.

PHILIPPINE RUBBER PRODUCTION.

IN considering this important question, one of the first points claiming attention is the present situation of Philippine exports of rubber and kindred products.

Philippine statistics, not being so detailed as those of this country, group under one head "Gums and Resins"; for which the latest published returns (those for the year ending June 30, 1910), show a total value of $107,271, thus classified:

Almaciga (mastic)	$71,117
Gutta percha (209,618 lbs.)	31,903
Rubber (1,113 lbs.)	749
All other gums and resins	3,502
Total	$107,271

The distribution of this amount is shown as follows:

PHILIPPINE EXPORTS OF GUMS AND RESINS—1910.

	Almaciga.	Gutta Percha.		Rubber.		All Other.
	Value.	Pounds.	Value.	Pounds.	Value.	Value.
Europe—						
Austria-Hungary	$50	...	...	...	...	...
Germany	195	...	...	143	$200	$2,772
Spain	5	...	...	...	...	...
United Kingdom	...	7,192	$842	750	520	730
America—						
United States	32,080	...	...	99	29	...
Asia—						
China	100	...	...	...	...	...
East Indies—British	38,642	202,228	31,016	...	...	...
Japan	...	198	45	...	...	...
Oceania—						
Australia	45	...	...	...	...	...
Totals ($107,271)	$71,117	209,618	$31,903	992	$749	$3,502

A dissection of the total amount for gums and resins amongst the various countries of distribution shows:

British East Indies	$69,658
United States	32,109
Germany	3,167
United Kingdom	2,092
Other countries	245
Total	$107,271

EARLIER STATISTICS OF RUBBER AND GUTTA PERCHA.

INDIA RUBBER.

While the figures quoted above for 1910 are of the most recent interest, those since 1904 (furnished through the courtesy of the Bureau of Insular Affairs) illustrate the course of the experimental cultivation of rubber during the last eight years. These results must necessarily form the basis of any future action.

PHILIPPINE EXPORTS OF RUBBER, CALENDAR YEARS 1904 TO 1911.

	United States.		British East Indies.		Germany.		England.		Other Countries.		Total.	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
1904.	...	...	...	...	...	...	...	...	...	...	...	...
1905.	...	...	281	$93	...	...	...	...	...	...	281	$93
1906.	...	...	62	5	...	...	...	...	...	...	62	5
1907.	...	...	...	...	...	...	...	...	...	...	...	...
1908.	...	...	375	35	...	...	...	...	...	...	375	35
1909.	...	...	3,757	615	...	...	...	...	33	$9	3,790	624
1910.	99	$29	...	...	143	$200	750	$520	...	...	992	749
1911.	...	...	...	...	...	...	...	...	...	...	...	...

GUTTA PERCHA.

While rubber has thus been passing through an experimental stage, gutta percha has been a more or less steady article of Philippine export, as shown by following statistics:

PHILIPPINE GUTTA PERCHA EXPORTS (CALENDAR YEARS 1904-1911).

Calendar Year.	United States.		British East Indies.		Other Countries.		Total.	
	Lbs.	$	Lbs.	$	Lbs.	$	Lbs.	$
1904...	...	...	6,255	535	...		6,255	535
1905...	...	...	50,899	4,782	...		50,899	4,782
1906...	...	...	228,604	30,905	...		228,604	30,905
1907...	...	...	295,367	26,895	8,543	650	303,910	27,545
1908...	...	...	84,993	6,381	...	...	84,993	6,381
1909...	...	...	155,491	22,470	198	45	155,689	22,515
1910...	...	...	217,182	38,409	7,221	847	224,403	39,256
1911...	750	66	113,704	18,783	22,419	1,260	136,873	20,109

In 1912 the total shipments for the fiscal year amounted to 91,645 pounds, valued at $8,551.

Philippine gutta percha, though already largely exported, was first shipped to the American market in 1911.

As the figures quoted for 1910 separately and as part of the general table, cover respectively fiscal and calendar years, they do not in all points correspond, but they are sufficiently close to illustrate past and present conditions, in their relation to the future of rubber and gutta percha cultivation in the Philippines.

BOOMING BRAZIL.

Everyone who attended the Rubber Exposition was struck by the generous scale on which the Brazilian exhibit was planned. Evidently the government of Brazil was determined to make an impressive showing. This was only one illustration of the fact that Brazil has entered on an aggressive campaign of commercial activity. A recent Consular report calls attention to the fact that "during 1911 about $150,000,000 of foreign capital was raised abroad for Brazilian loans and enterprises. The railway mileage of Brazil was increased by 469 miles; two new foreign banks and several branches of those already established were opened; three new steamship lines started in the South American trade, and the old lines added several large modern steamers of 12,000 tons to their fleets to meet the demands of the rapidly increasing passenger and freight traffic to Brazil from Europe; improved and additional port facilities at all the principal coast cities are being constructed; additional hydroelectric plants are being installed to meet the increasing demands for power and light; two of the most modern and comfortable hotels are in course of construction in Rio de Janeiro, and others are planned in the other cities; and houses, especially in Sao Paulo, are being erected as rapidly as material can be procured."

MAINTENANCE OF BRAZILIAN STANDARD.

Commenting upon the latest developments of artificial rubber, the "Revista do Associacao Commercial do Amazonas" of Manáos urges upon producers to provide a solid foundation to the Brazilian industry by maintaining a uniform type of fine rubber. This is the only type of rubber which, up to the present time, has not lost its ascendency, and successfully opposes foreign types, but Asiatic grades, inferior in quality, are preferred in some cases, on account of the method of their preparation, their transparency and their freedom from impurities.

New Rubber Goods in the Market.

THE APSLEY SUCTION HEEL.

MANUFACTURERS of rubber footwear for men have given a great deal of attention in the past to making a shoe that would go on easily, as the average man is far too impatient to take very much time in putting on a rubber; but one trouble with a shoe that goes on very easily is the fact that it is likely to come off very easily, and the sensations of the man who has crossed the street through the mud and finds when he gains the sidewalk that he has left one of his rubbers behind him in the road is not agreeable. The Apsley Rubber Co. has a new device called "The Apsley Suction Heel" for keeping the rubbers on. The cut gives an illustration of it. It is a piece of rubber with three perforations placed inside of the heel of a self-acting shoe. These perforations create enough suction to counteract the suction of the mud on the outside of the shoe, and thus tend to hold the rubber snugly on the heel. The device has been patented in the United States, Canada and several European countries. [The Apsley Rubber Co., Hudson, Massachusetts.]

RUBBER HEADED NAILS.

There are a thousand and one uses for rubber-headed nails. They are useful where there is any contact and a desire to escape the consequences of it. For instance, they are excellent articles to put in the bottom of chairs to keep them from marking hardwood floors; they do good service as bumpers where doors are likely to fly back and mar the wall. It is hardly necessary to enumerate the places where rubber-headed nails serve a worthy purpose. Here are five varieties put out by one of the German manufacturers.

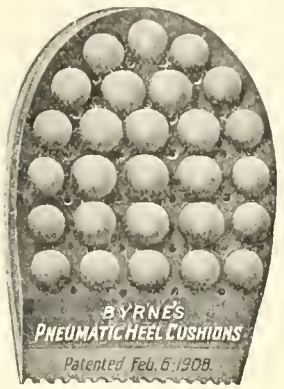
AN EMERGENCY GRIP FOR MOTOR TRUCKS.

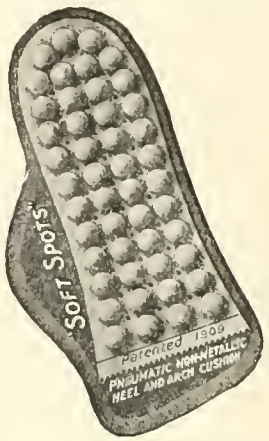
Here is an illustration of a chain grip for motor trucks recently put on the market by a Milwaukee manufacturing concern. It is made in ten different sizes and can be used on tires from 2-inch single up to 10-inch single—or 5-inch double. It will be noted that the chain simply covers the tread of the tire, the sides being protected by a solid piece. This greatly minimizes the wearing of the grip by rubbing against the curbing or car tracks. [The Garage Equipment Mfg. Co., Milwaukee, Wisconsin.]

THE GEMCO MOTOR TIRE GRIP.

STANDING AND WALKING ON AIR.

Everybody can always walk on "Easy Street" if he will always walk on air, and that is not so very difficult to do in these days of pneumatic footwear devices. Here are two illustrations of pneumatic appliances to go inside the shoe. One is called "Soft-Spots Arch Cushion" and the other "Soft-Spots Heel Cushion."

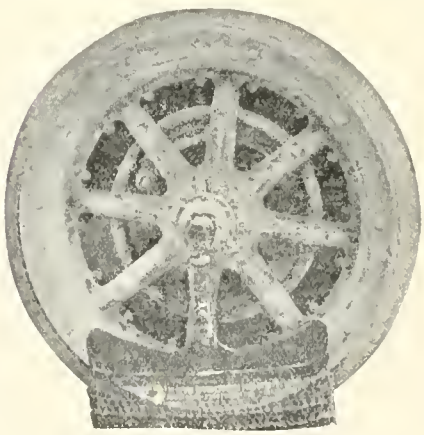




The arch cushion extends from the back of the heel well under the arch of the foot, while the heel cushion is intended simply for the heel. Both of these devices are finished with a leather surface on the top next to the foot, while the bottom surface consists of a group of rubber cushions full of air. Obviously these "Soft-Spots" appliances make the step resilient and walking easy, and they are quite inexpensive, especially the heel cushion, which retails at 25 cents a pair. (Essex Rubber Co., Trenton, N. J.)

SPLASH GUARDS IN PARIS.

The question of splash guards in most of our American cities is not a very urgent one, as our streets are as a rule in a condition where muddy pools are impossible; but evidently there are sections of London and Paris where splash guards are a *desideratum*, as both of those cities are more or less exercised over some device for preventing the vehicles in the street from throwing mud on the pedestrian on the sidewalk. The municipality of Paris, in conjunction with the Paris omnibus companies, has offered prizes for the best splash guards, the points to be taken into consideration being ease and simplicity of attachment, economy in construction and in use, weight and appearance. The test consists of an initial trial on a bus traveling twelve miles an hour, to be followed by a test of 100 consecutive hours, and a third trial to test the durability of the guard when brought in constant contact with the curbstones.



The accompanying cut shows one of the guards already in use in Paris. This cut cannot be commended as a work of art, but it was the best available, and it shows the splash guard and thus serves its purpose.

News of the American Rubber Trade.

FORTUNATE STOCKHOLDERS OF THE BOSTON WOVEN HOSE & RUBBER CO.

ON October 10, 1912, Henry B. Sprague, treasurer of the Boston Woven Hose & Rubber Co., sent out a circular to all the holders of common stock in that company, in which the following are the salient paragraphs, by which it will be noticed that the common stockholders are not only given the privilege of subscribing for an additional 25 per cent. of their present holdings at $100 a share (the last previous sale having been $231 per share), but are also given a cash dividend sufficient to cover this purchase.

"Pursuant to a vote lately passed by its Board of Directors, the Boston Woven Hose & Rubber Co. hereby offers to (1) those who shall be record holders of its common stock at the close of business October 21, 1912, other than the trustees of Boston Woven Hose Securities Co., and (2) those who shall then be record holders of certificates issued by said trustees representing common stock, two thousand (2,000) shares of additional common stock of Boston Woven Hose & Rubber Co. for subscription proportionately at one hundred dollars ($100) per share, payable in cash on or before November 1, 1912.

"Under this offering there will acrue to you at the close of business October 21, 1912, the right to subscribe for one-fourth (¼) as many additional shares of common capital stock of Boston Woven Hose & Rubber Co. as there shall then be shares of its already issued common stock or of common shares in Boston Woven Hose Securities Co. represented by trustees' certificates, as the case may be, standing in your name on the books of the company or of the trustees; but subscriptions in every case must be for whole shares.

"The privilege of subscribing will expire October 25, 1912. Subscriptions must be filed with the Beacon Trust Co., 20 Milk street, Boston, Massachusetts, not later than that day. They will be payable at the Beacon Trust Co.'s office in Boston, on or before November 1, 1912.

"The directors have also declared an extra dividend of twenty-five per cent. (25%) on the outstanding common stock, payable November 1, 1912, to stockholders of record at the close of business October 21, 1912. The amount of this dividend which may accrue to you as the record holder of common stock, or of trustees' certificates representing common stock, will be the same as the sum payable under your subscription, if you elect to take the stock to which you may be entitled; and the dividend may be used in payment of your subscription."

The treasurer is quoted as having made the following statement regarding the condition of the company: "The company has enjoyed the most profitable year in its history and the surplus, amounting to $1,310,000 on September 30, 1912, has reached the point where it is almost 50 per cent. larger than the common stock outstanding, and it was felt by the directors that some of the surplus should be distributed among the stockholders. Capital outstanding consists of $779,500 common and $750,000 preferred. The preferred does not participate in the stock dividend or right to subscribe to new common shares, as it receives a fixed dividend of 6 per cent. annually. The stock dividend will make a very valuable right to stockholders.

"It is probable that the regular quarterly dividend on the common stock at the next declaration, December 15, will be 3 per cent. instead of 2½ per cent., thereby increasing the rate to 12 per cent. annually."

THE COLORADO RUBBER CO., DENVER, COLORADO.

The Colorado Rubber Co., Denver, Colorado, has recently moved into its new building, situated at 1825-1831 Lawrence street, where its facilities for handling business and making shipments are much increased over its previous quarters.

THE FEDERAL COMPANY DOUBLES ITS CAPITAL.

The Federal Rubber Manufacturing Co., of Milwaukee, on October 12, filed in the office of the secretary of state amendments to its articles of association, increasing its capital stock from $1,000,000 to $2,000,000—the increase consisting of 7 per cent. preferred stock, redeemable at 120. The increased capitalization has been made necessary by the growth of the company's business in the past year, and to provide for future expansion. In May, 1911, the Federal Rubber Manufacturing Co. purchased the plant of the Federal Rubber Co., at Cudahy, since which time the present company has made extensive additions to the plant, practically trebling the floor space. A modern office building has been erected. The mechanical equipment for the manufacture of automobile, motorcycle and bicycle tires, carriage and truck tires, and a full line of mechanical rubber goods is very complete.

Additional buildings and other improvements are under way, including a new power plant aggregating 3,500 boiler h. p., and a further addition to the office building. The total expenditures for improvements will represent approximately $500,000, giving the company about 250,000 square feet of floor space, providing employment for a force of between 1,000 and 2,000 men and representing an approximate annual output capacity of $5,000,000.

AN INCREASE OF CAPITAL STOCK.

At the regular monthly meeting of the board of directors of the McGraw Tire & Rubber Co., held at East Palestine, Ohio, October 9, it was unanimously voted to increase the capital stock of this company from $100,000 to $250,000. Acting upon the very favorable report of the year's business made by President E. C. McGraw, the directors voted a stock dividend of 50 per cent. plus a cash dividend of 10 per cent. The McGraw Tire & Rubber Co. have made several important additions to their plant this year, including the building of a very fine laboratory.

This company has also catered to the long felt want of its Eastern patrons, and has opened a selling branch at 1706 Broadway, New York City. The popularity of the Imperial tires and tubes has already guaranteed the McGraw Tire & Rubber Co. several large contracts for the season of 1913.

DAY AND NIGHT FOR TIRE PLANTS.

The United States Tire Co.'s factories will be operated during the coming winter on full summer schedule, which means night and day, with three shifts of workmen. The decision to continue this plan, begun last year, was reached at a recent conference between General Manager J. M. Gilbert and the company's factory managers. Last winter was the first time in the history of the tire industry that it was considered necessary to maintain a full summer working schedule throughout the so-called off season. The plan worked so satisfactorily that its continuation was decided upon. The company's four factories produced more than 1,250,000 tires during the year, and their 1913 output will be in excess of this number, the equipment of all of the factories having been increased. Mr. Gilbert estimates that there will be somewhere near 750,000 automobiles in use in the United States by the middle of next summer, and adds that his company aims to keep its production up to a figure equal to one-fourth of the tire demands of the country.

THEY SOLD THEIR EXHIBIT.

Everybody who attended the Rubber Exposition will remember the experimental outfit shown by the Turner, Vaughn & Taylor Co. The entire outfit was sold to the Rubber Regenerating Co., of Mishawaka, Indiana.

FISK TIRES ON A RACING CAR.

Erwin Bergdoll, who finished second in the Elgin free-for-all with his Benz car, reports remarkable service from the Fisk bolted-on tires, with which the car was equipped. The original front tires were not changed during the entire distance of 300 miles. The Fisk equipment was purchased at regular prices, replacing another make of tire put on the car at a 50 per cent. discount. Since the Elgin meet other well-known drivers have approached the Fisk Rubber Co. for a racing arrangement on Fisk tires. The Fisk company, however, offer drivers no special racing inducement, believing the real test of tire equipment is on the road in every-day use.

THE GOODYEAR CO. OFFERS PRIZES.

The Goodyear Tire and Rubber Co., of Akron, Ohio, has hit upon an excellent idea and one that should bring it a great deal of valuable information at an inconsiderable expense. It has offered prizes to the dealers handling its tires for the best true short story regarding their advertising experiences. The best story will be awarded a prize of $10, and other contributions considered interesting and valuable will be awarded $5 each and these contributions will be printed by the Dealers' Service Bureau of the Goodyear company, for the general benefit of its customers. The best advertising ideas do not, as a rule, come from theorists, but from practical experience, and the Goodyear company ought to get very good returns for its offer.

A CANADIAN TIRE PLANT IN THE UNITED STATES.

According to very good authorities, the Canadian Rubber Co. contemplates erecting a large factory for the manufacture of tires on the American side of the river, with the intention of making a special line of automobile tires for the American trade. This factory will be in addition to its present factory in Montreal.

TO MAKE TIRES IN ST. LOUIS.

Articles of incorporation were filed on October 14, 1912, by the St. Louis Tire and Rubber Co., with a capital of $150,000, all paid. This company is composed of the following business men of St. Louis: Harry C. Barker, C. M. Skinner, Webster Groves, Alfred C. Einstein, William H. Glasgow, Roy F. Britton, C. C. Collins, and J. A. Swinehart, who has recently moved to that city from Akron, Ohio. They expect to use one of the buildings erected by the E. G. Lewis Publishing Co., in University City. The building is three stories high and covers a lot 177 x 40 feet, with a wing extension. It is the intention of the company to make a large addition to this building in the immediate future.

Mr. Swinehart, who has been for 15 years identified with the manufacture of tires, is active in the formation of the new company. He was associated with the Swinehart Tire Co., of Akron, and also the Firestone company.

He says that St. Louis is an ideal city for the location of a rubber tire manufacturing concern. "Its geographic situation could not be better," he told a St. Louis reporter, "for a plant of this nature. It is the gateway to the South and West. St. Louis has many advantages. Cheaper fuel and favorable shipping facilities make the city very attractive for a tire company. Labor, too, can be obtained readily in St. Louis. While at the start we probably will turn out but about 30 or 40 tires a day, within six months we expect to have a daily capacity of at least 300 tires."

Tires will be made for all classes of automobiles and trucks. Solid tires, block tires for trucks, and special tires for the electric coupé, operated largely by women, will be among those manufactured.

Mr. Morris Loeb, president of the Chemists' Club, died October 8, 1912, in his 50th year.

Mr. Wesley Wright, who for three years was Eastern sales manager of the International Specialty Co., is now acting in the capacity of sales manager of the shoe findings department of the Essex Rubber Co., Inc., of Trenton, with an office at 250 Broadway, New York. Among the articles he is pushing are "Soft-Spots" heel and arch cushions.

Mr. N. Lincoln Greene, known to the rubber clothing trade of the whole United States, was married on September 16, 1912, to Miss Adelaide Deming, daughter of Mrs. Edmund Orr Deming, of New York City.

Theodore W. Bassett, of the United States Rubber Reclaiming Co., ran part of his celebrated string of race horses at the Trenton fair on October 3, 4 and 5, and in the parlance of the turf, "cleaned up everything in sight."

MR. PAGE MAKES A CHANGE.

Wallace G. Page, who is well known in the rubber-tire industry, having had charge of the tire department of the Shawmut Tire Co., Boston, has recently associated himself with George P. Van Voorhis, in the American Motor Equipment Co., of 27 Haverhill street, Boston, jobbers and dealers in automobile tires and supplies. It will surprise none of his acquaintances to know that Mr. Page is doing very well in his new association, as he has always had the gift of making friends wherever he has been. He comes by his rubber proclivities naturally enough, as his father is a rubber man, having been connected for some time with the Chicago-Bolivian Rubber Co.

THE MARRIAGE OF C. G. ROEBLING'S DAUGHTER.

Miss Helen Roebling, daughter of Charles G. Roebling, of John A. Roebling Sons Co., Trenton, New Jersey, was married October 16 to Carroll Sargent Tyson, Jr., a well-known artist of Philadelphia. The ceremony was performed in the home of the bride, Trenton, by the Rev. Hamilton Schuyler, rector of Trinity Episcopal Church. Owing to the death of the bride's brother, Washington A. Roebling 2nd, on the ill-fated *Titanic*, the wedding guests were restricted to members of the two families.

THE MARRIAGE OF MR. FRED R. SAYEN.

Mr. Fred Richardson Sayen, secretary of the Mercer Rubber Company, of Hamilton Square, New Jersey, was married on September 25, 1912, to Miss Anne Jane Mellon, daughter of Mr. and Mrs. William A. Mellon, of Sea Girt, New Jersey, and Pine street, Philadelphia. The ceremony took place at St. Uriel's Episcopal Church, Sea Girt, New Jersey. Mr. and Mrs. Sayen visited the Rubber Exposition at New York on their honeymoon. They expect to reside at Hamilton Square, where Mr. Sayen has built a very handsome bungalow. Mr. Sayen is not only well known in rubber circles, but is a member of the Union League and the Art Club of Philadelphia, and the Merion Cricket Club of Haverford. He has traveled extensively and is widely known as a collector of pictures and objects of art.

REPRESENTS HIMSELF AS SON OF MR. PAUL.

The Davidson Rubber Co., of Boston, have sent out a warning to the trade against a young man who has been representing himself as the son of the company's president, Mr. Alexander M. Paul, and under the cloak of that representation has been trying to secure money from members of the trade. Mr. Paul has no son and this man is an impostor. He is described as about 30 years of age, 5 feet 8 inches tall, weighing about 150 pounds, with dark complexion, black hair, brown eyes; smooth shaven, dressed in dark clothes and wearing a black derby and black silk-lined overcoat, gray gloves and patent leather shoes.

THE FISK FOLK HAVE A CLAM-BAKE.

About the middle of September seventy-five or eighty of the branch managers and salesmen of the Fisk Rubber Co. of New York gathered at the factory in Chicopee Falls, Massachusetts, for a week's conference. For five days they attended strictly to the business of the company, laying their plans for the greatest output of tires in the history of the company; but on the sixth day they cast off all business burdens, relaxed their minds and proceeded to a nearby resort for a clam-bake. The accompanying illustration shows them with business burdens laid aside, with relaxed minds, and with no other thought except the impending onslaught on the appetizing and nutritious clam.

Clam Bake of Fisk Rubber Co.

Unfortunately, this small reproduction does not bring out very distinctly that look of supreme satisfaction that in the original photograph is so conspicuous on every face.

NEW INCORPORATIONS.

Atlas Tire Co., Inc., October 15, 1912; under the laws of New York; authorized capital, $10,000. Incorporators: Ralph W. Morrison, 181 West 73rd street; R. D. Placak, 318 West 52nd street, and F. F. Nichols, 135 Broadway—all of New York. Location of principal office, New York. To deal in automobile tires, etc.

Buffalo Resilio Co., September 16, 1912; under the laws of New York; authorized capital, $25,000. Incorporators: Stafford D. Noble, Alexander D. Falck and Philip E. Lonergan—all of Buffalo, New York. Location of principal office, Buffalo, New York. To manufacture and deal in tire fillers.

Co-operative Rubber Co., September 12, 1912; under the laws of Maine; authorized capital, $500,000. Incorporators: Horace Mitchell, H. A. Paul, M. G. Mitchell and Benjamin F. Bunker, all of Kittery, Maine. To manufacture, vend and deal in rubber boots, shoes and goods, and especially to buy, sell and deal in Dr. Edwards' "Cone Cushion Rubber Heels, soles, and half soles."

Cushionet Shoe Co., Inc., October 16, 1912; under the laws of New York; authorized capital, $1,200. Incorporators: Louis M. Emerick, Fulton, New York; William R. Johnson and Harry S. Lee, both of Syracuse, New York. Location of principal office, Syracuse, New York. To deal in boots, shoes, rubber, etc.

The Dutch Rubber Co., August 14, 1912; under the laws of Ohio; authorized capital, $1,250,000. Incorporators: E. L. Schnee, C. R. and I. A. Grant. Location of principal office, Akron, Ohio. To produce, reclaim, manufacture, etc., in rubber and rubber goods and other goods in which rubber may be a component part.

Economy Tire & Rubber Co., September 9, 1912; under the laws of Pennsylvania; authorized capital, $5,000. Incorporators: Edward L. Craft, Harrisburg, Pennsylvania; Edward M. and Benjamin F. Knupp—both of Penbrook, Pennsylvania. To manufacture and deal in rubber goods and products.

F. & M. Raincoat Co., August 24, 1912; under the laws of New York; authorized capital, $10,000. Incorporators: Julius, Charles and Rosie Fried—all of 1696 Madison avenue, New York. Location of principal office, New York. To manufacture rubber coats and other garments.

The Fearless Tire Co., Ltd., September 14, 1912; under the laws of Canada; authorized capital, $185,000. Incorporators: Jean Abel Michaud, Yvon Lamontagne, and Edmond Bouchard, all of Montreal, Canada. To manufacture tires.

Fibre Products Company, September 12, 1912; under the laws of Maine; authorized capital, $1,000,000. Incorporators: Everett B. Cook, Danvers, Massachusetts; Edwin C. Fisher, Winchester, Massachusetts; Stephen C. Perry, Portland, Maine; William A. Studley, Rockland, Massachusetts. To manufacture, buy, sell and deal in fiberized rubber and fiber and compounds thereof.

General Rim Company, September 30, 1912; under the laws of New York; authorized capital, $150,000. Incorporators: Robert W. Ashley and Frank Oberkirch—both of 47 West 34th street, New York, and William Kaul, St. Mary's, Elk County, Pennsylvania. Location of principal office, White Plains, New York. To manufacture auto parts, rims, tires, etc.

The Gerhart Spring Tire Co., September 13, 1912; under the laws of Ohio; authorized capital, $15,000. Incorporators: J. A. Gerhart, G. O. Balzman, and Casper Hopp. To manufacture vehicle wheel tires.

Hygrade Raincoat Company, September 16, 1912; under the laws of New York; authorized capital, $3,000. Incorporators: Herman Greenberg, 5 Willett street; Harry Futterman, 570 East 143d street, and Meyer Goldstein, 600 West 146th street—all of New York.

The Koblitz-Kohn Company, October 1, 1912; under the laws of Ohio; authorized capital, $50,000. Incorporators: Rudolph C. Koblitz, Adolph and Jacob B. Kohn. Location of principal office, Cleveland, Ohio. To buy and sell woolen rags, paper, rubber, etc.

Lavelle Rubber Co., August 27, 1912; under the laws of Illinois; authorized capital, $25,000. Incorporators: John E. and Clara M. Lavelle and Otto Scheible. To manufacture, buy and sell rubber wearing apparel, bands, belting, hose packing, auto tires, etc.

Never Skid Manufacturing Co., Inc., October 7, 1912; under the laws of New York; authorized capital, $50,000. Incorporators: Daniel E. Wing, George L. Lewis and Charles H. Stanton—all of 42 Broadway. Location of principal office, New York. To manufacture non-skid devices for automobile tires, etc.

Regal Raincoat Co., Inc., October 10, 1912; under the laws of New York; authorized capital, $10,000. Incorporators: Harry L. Goldbaum, 67 Fifth avenue; Herman Hertz, 115 East 96th street, and J. Goldbaum, 67 Fifth avenue—all of New York. Location of principal office, New York. To deal in rubber clothing, etc.

Strohbeck & Briggs, Inc., September 23, 1912; under the laws of New York; authorized capital, $100,000. Incorporators: Charles W. and Sophia Strohbeck, 234 Decatur street, and A. Lee Briggs, 655 East 18th street—all of Brooklyn, New York.

THE COMBINATION RUBBER MFG. CO.

The Combination Rubber Manufacturing Co., of Bloomfield, New Jersey, at its recent annual meeting of stockholders re-elected the same officers that served last year, with the exception of W. S. Hancock, who was made vice-president. F. L. Conover was made general manager. George B. Dickerson, formerly with the New Jersey Car Spring and Rubber Co., has charge of the company's offices in Bloomfield. The superintendent is W. A. Robbins, formerly with the Goodyear Tire and Rubber Co.

NEW AVERY CO. PREFERRED STOCK.

The Avery Co., of Peoria, Illinois, the oldest American manufacturer of agricultural implements, is offering $1,000,000 of 7 per cent. cumulative preferred stock at $100 per share and accrued dividend. The capitalization of the Avery Co., in addition to this issue of $1,000,000 preferred, is made up of $2,245,000 common stock and, according to a financial summary which accompanies the offer to the public, the total net assets of the Avery Co., above all debts, amount to $3,420,269.49; liquid net assets, above all debts, $1,816,956.31; average annual net earnings for four years, $171,820.27, and net earnings, January 1, 1912, to June 10, 1912, $256,860.47.

$10,000,000 OF FISK CO. STOCK.

The Fisk Rubber Co., of Chicopee, Massachusetts, which was incorporated under the laws of Delaware, has been reincorporated under the laws of Massachusetts with a capitalization of $10,000,000, consisting of 50,000 shares of preferred and 50,000 shares of common stock at a par value of $100. The preferred stock is 7 per cent. cumulative to be given $100 in case of liquidation and $115 is redeemed. The incorporators are Harry T. Dunn, Harry G. Fisk and John C. Cole.

NO INTERRUPTION OF THE LOEWENTHAL CO.'S BUSINESS.

The fire which occurred recently at the New York office and warehouse of the Loewenthal Co., 481 Washington street, though it did some damage to materials, caused no interruption whatever in the regular course of the company's business.

A GROUP OF FIRESTONE SALESMEN.

Here is a group of one hundred or more of the salesmen of the Firestone Tire and Rubber Co., Akron, Ohio. They were photographed during a three days' conference held at the factory from October 16 to 19. It was a busy conference for, while the report of the company showed recent business considerably in excess of anything in the past, these salesmen are determined that next year shall break the record of 1912.

Several important announcements were made, chief among them being the announcement of the perfection of a tire for electric cars, which it is asserted will reduce battery consumption by at least 12 per cent. This is done by a scientific adjustment of resiliency and bearing surface. This new tire will be interchangeable on pneumatic rims whether standard clincher or quick detachable clincher. It belongs to the dual tread type.

TRADE NOTES.

The Canadian Consolidated Rubber Co., Berlin, Ontario, will soon ask bids for machinery to be installed in its new factory now being erected. T. H. Rieder is manager.

The Koblitz-Kohn Co., of Cleveland, Ohio, are successors to Koblitz, Kohn & Co., dealers in rubber scrap and other materials.

The Gould Commercial Co. removed their offices and crude rubber sample rooms on October 9, 1912, from 227 Fulton street to 12 Bridge street, corner Whitehall street, New York City.

Messrs. G. C. Krelinger, of Antwerp, have taken over the business of the well-known firm of G. Schmid & Co.

Philo F. Barnum, cashier of the New York Rubber Co., died Thursday, October 24, of heart disease. He was seventy-one years old, and lived in New York. He was a nephew of the late P. T. Barnum, and had been associated with the rubber company for forty-seven years.

On October 7 the United States Rubber Co. declared the regular quarterly dividends of 2 per cent. on the first preferred stock (including all outstanding preferred stock), 1½ per cent. on the second preferred, and 1 per cent. on the common, payable October 31, to stock of record October 11.

Early in October the Thomas Motor Car Co. filed a voluntary petition in bankruptcy in the United States District Court, in Chicago, scheduling liabilities of more than $185,000. No statement of assets was filed beyond office fixtures. The principal creditor is the E. R. Thomas Motor Car Co., of Buffalo, N. Y., whose claim is nearly the amount of the entire indebtedness.

The Brazilian rubber crop for the gathering year just ended is officially stated at 28,206 tons, as against 27,064 tons last year and 30,064 tons in the year before.

A FIRE CAUSED BY NAPHTHA FUMES.

The fire which damaged materials and unfinished goods to the value of several thousand dollars at the factory of the Gordon Rubber Co., Canton, Ohio, is believed to have been started by a flash of lightning coming in over a wire and igniting naphtha fumes. The firemen were greatly hindered in their work by inhaling these fumes, but the damage to the building was not large, and the work of the company was in no way interfered with.

FIRESTONE TIRE SALESMEN.

THE INTERCONTINENTAL RUBBER CO.

THE annual report of the Intercontinental Rubber Co., issued under date of October 7, and covering the year ending July 31, 1912, shows the effect of the unsettled condition of affairs in Mexico—which is the chief field of this company's operation. There was a decrease of over one and a half million dollars—both in the gross and net profits of the company from the previous year, but owing to the smaller amount needed for dividends—no dividends on the common having been paid during the year covered by the report—the surplus account stands nearly $400,000 higher than a year ago. A comparison of the chief items in the report for the two years 1911 and 1912 is here given:

	1912.	1911.	Increase.
Gross profits	$1,190,095	2,714,255	*1,524,160
Expenses	81,136	73,737	7,399
Net profit	1,108,859	2,640,418	*1,531,559
Dividends	87,500	1,299,490	*1,211,990
Pr. and loss surplus	2,110,940	1,734,249	376,691

*Decrease.

The complete report of the company is as follows:

INTERCONTINENTAL RUBBER CO.

15 Exchange Place, Jersey City, New Jersey.

The directors submit herewith the balance sheet and statement of profits for the fiscal year ending July 31, 1912. These statements have been prepared and certified to by Messrs. Suffern & Son, certified public accountants of New York City. The year has been marked by a series of interruptions to operations caused by revolutionary disturbances, which conditions, we regret to state, still exist, offering serious difficulty to the free transaction of business in Mexico. The net operating profits for the year amounted to $1,108,959.34. Sundry accounts representing investments in certain subsidiary companies, as well as expenses of guayule culture and world-wide explorations to the amount of $644,768.51, have been charged off, as same are not considered of tangible value at the present time. Notwithstanding these charges and regular dividends on the preferred stock, the surplus account has been increased over the previous year by the amount of $376,690.83.

The competition for guayule shrub has been unusually active and prices have ruled correspondingly high. This has been due in part to revolutions, but to greater extent to the decreased supply. It has been definitely determined that this shrub reproduces itself naturally, but not as rapidly as it has been harvested since the inception of the guayule rubber industry. It will therefore be necessary to regulate the consumption to the rate of regrowth in order to maintain the business on a permanent basis. Experiments are being conducted looking toward the artificial cultivation of guayule, but these have not progressed far enough to warrant a definite prediction as to the ultimate outcome.

While the company's earnings show a considerable decrease over last year, they were still largely in excess of requirements for interest on the preferred stock. The directors feel, however, that consideration of dividends on the common stock should be deferred until the situation in Mexico and the future supply of raw material become more assured. Meanwhile the company remains in a strong financial condition, having cash and quick assets in excess of quick liabilities, of nearly double the amount of outstanding preferred stock.

BY ORDER OF THE BOARD OF DIRECTORS,

WALTER DUTTON, *Secretary.*

October 7, 1912.

BALANCE SHEET JULY 31, 1912.

ASSETS.

Investments in Stock of Merged and Subsidiary Companies:		
By cash	$ 2,090,321.59	
By stock Issues	28,198,575.30	
		$30,288,896.89
Patents (Exclusive of Subsidiary Companies)		15,141.77
Treasury Stock (Fractional shares resulting from retirement of Preferred Stock)		2,500.00
Accounts and Notes Receivable, etc.:		
Advances to Subsidiary Companies	1,310,215.32	
Sundry Accounts	13,469.16	
		1,323,684.48
Cash		2,198,054.30
		$33,828,277.44

LIABILITIES.

Capital Stock:		
Common	$29,031,000.00	
Preferred	1,250,000.00	
		$30,281,000.00
Accounts Payable, Taxes Accrued, etc.:		
Due Subsidiary Companies	220,015.56	
Sundry Accounts	4,231.14	
		224,246.70
Reserve Accounts		1,212,090.62
Surplus (as below)		2,110,940.12
		$33,828,277.44

SURPLUS ACCOUNT.

Surplus August 1, 1911		$1,734,249.29
Gross Profits for year	1,190,095.41	
Less:		
Administration and General Expenses	81,136.07	
Net Profit for Year		1,108,959.34
Total		$2,843,208.63
Charges against Surplus:		
*Accounts charged off	$644,768.51	
Dividends paid on Preferred Stock	87,500.00	
		732,268.51
Surplus July 31, 1912		$2,110,940.12

*Deferred Accounts Charged Off:	
Balance of cost of Capital Stock of the Cia. Explotadora de Hule, S. A.	$220,400.00
Payments and Expenses re. Purchase of the Cia. Ganadera y Textil de Cedros, S. A.	138,561.09
Explorations in Mexico	1,105.37
Guayule Culture Expense 1907-1908	39,649.24
Reduction in Capital Stock on the Rubber Exploration Company, representing expenses of exploration	145,000.00
Capital Stock of the Cia. Guayulera Mexicana de America	100,000.00
Note and Open Account of the above Company	52.81
	$644,768.51

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED SEPTEMBER 3, 1912.

1,037,187. Vulcanizing-mold. A. Adamson, Akron, Ohio.

1,037,250. Process for making cores for manufacturing tire-shoes. R. M. Hinman, Akron, Ohio.

1,037,311. Elastic tire. P. W. Pratt, Boston, Mass.

1,037,406. Sealing device for foot-ball bladders and the like. J. W. Albers, Hamburg, Germany.

1,037,412. Tire. H. O. Bartlett, Caldwell, Ohio.

1,037,414. Tire fastening device. W. L. Bauer, Covington, Ky.

1,037,448. Rubber boot. J. T. Crowley, assignor to The Beacon Falls Rubber Shoe Co., both of Beacon Falls, Conn.

1,037,482. Tire-case. C. F. Hopewell, Newton, Mass.

1,037,677. Tire armor. J. R. Smith, Flagstaff, Ariz.

1,037,686. Tire. T. Toomey, Scranton, Pa.

ISSUED SEPTEMBER 10, 1912.

1,037,943. Non-skid safety device. W. H. Lowry, Jacksonville, Fla.

1,037,954. Tire-puncture finder. F. Miller, Bellevue, Ky.

1,037,955. Tire-puncture finder. F. Miller, Bellevue, Ky.

1,037,959. Parachute Device. L. Miller, Chicago, Ill.

1,038,023. Closure and protecting device for bottles. M. Switzer, New York.

1,038,042. Hat-protector. L. Wener, New York.

1,038,143. Cleucher tire and securing lug therefor. M. R. Hutchinson, Summit, N. J.

1,038,144. Rim and tire for vehicle-wheels. M. R. Hutchinson, Summit, N. J.

1,038,235. Tire. M. Toso, San Bruno, Cal.

1,038,252. Reinforced grid resistance. H. J. Wiegand, assignor to The Cutler Hammer Mfg. Co., both of Milwaukee, Wis.

1,038,314. Pneumatic tire. F. Doherty and W. J. Robbins, Wellington, New Zealand.

1,038,351. Waterproof bag. W. J. Graham, Brooklyn, N. Y.

1,038,360. Tire-protector. R. C. Harris, Pittsburgh, Pa.

1,038,372. Detachable rim for vehicle wheels. M. R. Hutchinson, Summit, N. J.

1,038,441. Tire or vehicle-wheels. F. Rose, Liverpool, England.

1,038,507. Elastically-connected surfaces for insuring the stability of air-ships, aeroplanes, and submarine boats. G. A. Grocco, and O. Ricaldoni, Rome, Italy.

Trade Marks.

58,697. Jackson Etc Rubber Co., Los Angeles, Cal. The company's name encircled by a star. For rubber tires.

63,083. Vorhees Rubber Mfg. Co., Jersey City, N. J. The word *Hurricane*. For vacuum hose.

63,084. Vorhees Rubber Mfg. Co., Jersey City, N. J. Diamond trade mark. For vacuum hose.

63,086. Vorhees Rubber Mfg. Co., Jersey City, N. J. The word *Typhoon*. For vacuum hose.

ISSUED SEPTEMBER 17, 1912.

1,038,558. Tea and coffee pot and the like. A. F. Gardner, Leicester, England.

1,038,600. Apparatus for delivering and receiving mail. W. Kraenner, Ripley, Ohio.

1,038,642. Washer for glass gages, etc. Edward L. Perry, Jr., Paterson, N. J.

1,038,777. Device for threading shuttles. C. Miller, assignor to M. Lenahan—both of Providence, R. I.

1,038,801. Means for indicating the deflation of pneumatic tires. F. H. Treat, Cleveland, Ohio.

1,038,891. Tire-filler. W. D. Howser and A. M. Woltz, Greensboro, N.

1,038,950. Process of manufacturing hot vulcanized froth from india rubber, gutta-percha and balata. F. Pfleumer, Dresden, Germany.

1,038,960. Syringe. G. M. Rhone, Brownwood, Tex.

ISSUED SEPTEMBER 24, 1912.

1,039,305. Shock absorber. G. C. Martin, Los Angeles, Cal.

1,039,306. Detachable rubber heel. A. McDonald, Central City, S. D.

1,039,316. Method of rendering the joints of the casemated port-holes of war ships water-tight. M. Noack, Friedenau, near Berlin, Germany.

1,039,323. Apparatus for vulcanizing tires. P. Roussillon, Argenteuil, France, assignor to Societe A. Olier & Cie, Clermont-Ferrand, France.

1,039,334. Bath-cushion. W. C. Trick, Mount Vernon, Ohio.

1,039,409. Resilient heel for shoes. A. Jenczyk, Chicago, Ill.

1,039,427. Vehicle-tire. E. J. McCarty, assignor to W. R. Dame—both of Clinton, Mass.

1,039,437. Shoe. G. I. Pierce, Brooklyn, N. Y.

1,039,538. Elastic wheel. L. A. Hubert, Troyes, France.

1,039,591. Hypodermic or other syringe. W. de Courcy Prideaux, Weymouth, England.

1,039,665. Tire-protector. A. G. Edlund and A. Leafgren, Axtell, Neb.

1,039,671. Tire-shield. R. Ragsdale, St. Louis, Mo.

Designs.

43,033. Automobile-tire. T. P. Clark, Akron, Ohio.

43,047. Elastic tire for vehicles. F. H. Jones, Andover, Mass.

Trade Marks.

56,175. Continental Rubber Works, Erie, Pa. Picture of single tube rubber tire. For single tube rubber tires.

58,491. Page Belting Co., Concord, N. H. Picture of a crown. For rubber hose, etc.

63,504. Hood Rubber Co., Boston, Mass. The word *Arrow*. For rubber tires.

64,941. Tower Mfg. Co., New York. The word *Temco*. For rubber bands, etc.

[NOTE. Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 4, 1912.]

11,530. Wheel tires. S. T. B. Saunderson, Harristown, Brannockstown, Co. Kildare, and T. D. Kelly, 9 Avenue Road, Southend, Essex.

11,544. Extracting resins from rubber. Soc. Internationale Asia-Caoutchouc (Soc. Anon.) 10, Place de Louvain, Brussels.

11,610. Telephones. G. A. Nussbaum, 29 Ludgate Hill, London.

11,624. India-rubber vulcanizing, etc. F. Pfleummer, 48 Marienstrasse, Dresden, Germany.

11,667. Molding india-rubber. T. Gare, 230 Bristol Road, Birmingham.

11,673. Vehicle wheels. T. H. Rushton, 158 Grimsby Road, New Cleethorpes, Lincolnshire.

11,746. Vehicle wheels. Atlas Non-Puncture Inner Case Syndicate, 134 High street, Kensington, London.

11,793. Boots, heels, etc. R. S. Slatkowsky, 45 Bazarnaia, Odessa, Russia.

11,801. Vehicle wheels. W. J. Hawthorn, 2 Brogden Grove, Sale, near Manchester, and T. Hartley, 5 Regent street, Chorlton-on-Medlock.

11,809. L. L. Fuller, Strathcona, Alberta, Canada.

11,817. Raising and forcing liquids; compressing gases. H. H. Humphrey, 38 Victoria street, Westminster.

11,856. Soothing teats. S. M. Taylor, 10 Crooked Lane, Birmingham.

11,863. Flower holders. J. A. Medland, 26 North View, Westbury Park, Bristol.

11,927. Whips, umbrellas, sticks, etc. L. G. Roberts, 29 Egerton Terrace, Kensington, London.

12,085. Inflating tires, etc. F. J. Beorchia, 15 Rue de Rome, Paris.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 11, 1912.]

12,135. Telephones. S. A. Phisey, 11 Prebend Mansions, High Road, Chiswick, London.

12,231. Wheel tires. W. E. Carmont, 55 Queen's Road, Richmond, Surrey.

12,247. Puncture-repair outfits. C. H. Harris, Great College street, Camden Town, and W. F. Freeman, 8 Bath street, City Road—both in London.

12,338. Tapping rubber trees, etc. F. Esser & Co., 16 Bergstrasse, Hamburg, Germany.

12,375. Deadening shocks in aeronautics. J. F. Benton, Ford Cottage, Pinkneys Green, Maidenhead.

*12,452. Wheel tires. N. J. Busby, 50 Nichols street, Chelsea, Mass., U. S. A.

*12,454. Tire valves. W. W. Potter, Pawtucket, Rhode Island, U. S. A.

*12,459. Wheel tires. J. Anthony, Attleboro, Massachusetts, U. S. A.

*12,466. Wheel tires. F. T. Roberts, 210 N. 78th street, New York, U. S. A.

12,469. Wheel tires. M. Bovy, 244 Avenue de la Couronne, Ixelles, Brussels.

*12,477 De-vulcanizing india-rubber. W. W. Wildman and J. Christy, Akron, Ohio, U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 18, 1912.]

12,727. Violins, etc. L. F. Rampal, 41 Elgin avenue, Maida Vale, London.

12,729. Sole protectors for boots, etc. F. Wette, 3 Kornpfortstrasse, Coblenz-on-Rhine, Germany.

12,806. Filling casks, etc. P. Robinson (trading as Morton & Co.), Trent Works, Burton-on-Trent.

12,810. Compressed-air engine and compressors. R. Sutcliffe, Harbury, near Wakefield, Yorkshire.

12,827. Rubber type for printing, etc. G. S. Wride, 95 Ashley Road, Bristol.

12,837. Moulding rubber, etc. H. Berry & Co., Croydon Works, Hunslet, Leeds, and J. W. Thornley, Ivorglen, Slattocks, Castleton, Manchester.

12,844. Stocking-suspenders. P. Pugniet, 12 Rue des Rigoles, Paris.

*12,879. Wheel tires. C. E. Eckrode, 9 Sixth avenue, Highland Park, New Brunswick, N. J., U. S. A.
12,893. Printing. L. A. Brila, 89 Brook street, Kennington, and W. Andrews, 5 Belsize Park—both in London.
12,899. Toe clips for cycles. G. Grund, 4 Bruce Grove, Tottenham, London.
12,902. Removing dust from coal mines, etc. C. Rollin, Bylton Hall, East Jarrow-on-Tyne.
12,917. Book markers. W. Barney, 15 Watling street, London.
12,943. Wheel tires. W. G. Nelson, 92 Stratford street, Maryhill, Glasgow.
13,009. Testing india-rubber, etc. L. Schopper, 27 Arndtstrasse, Leipzig, Germany.
13,170. Sweatbands for bats. M. Thiry, 43 Rue de Liverpool, Brussels.
13,204. Inflating pumps. H. Feilchenfeld, 37a Alexandrinenstrasse, and F. Kindermann, 71 Sebastianstrasse—both in Berlin.
13,233. Wheel tires. J. Marx, Konigstein, Taunus, Germany.
13,239. Rubber soles for boots. A. Millet, 98 Rue Leyteire, Bordeaux, France.
[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 25, 1912.]
13,421. Marine governors. J. McIlvenna, North Bay, Ontario, Canada.
13,422. Milking cows. C. E. Potter, 268 Poplar Plains Road, Toronto, Canada.
13,457. Tread bands. D. Marshall, 30 Winchcombe street, Cheltenham, Gloucestershire.
*13,566. Impregnated yarns and fabrics. W. H. Underwood, corner Fifth avenue and 41st street, New York, U. S. A.
*13,572. Stocking-suspenders. E. L. Scott, 57 Exchange street, Portland, Maine, U. S. A.
13,676. Electric insulators. F. Clouth, Rheinische Gummiwarenfabrik, Nippes, near Cologne, Germany.
*13,698. Fire-extinguishing apparatus. E. M. Lawrence, 7 Water street, New York, U. S. A.
13,715. Thermo-electric batteries. H. Suchting, 18 Humboldt-Strasse, and F. Oloff, 47 Parkallee—both in Bremen, Germany.
13,742. Looms. B. Elmendorf, and J. Gabler, Isselhurst, Westfalia, Germany.
13,807. Vehicle wheels. E. J. Clark, "Cla-Jen" Whipps Cross Road, Leytonstone, London.
13,823. Coagulating latex. S. Ingrams, Walton-on-the-Naze, Essex, and F. E. S. Lindley, Godstone Place, Godstone, Surrey.
13,824. Coagulating latex. S. Ingrams, Walton-on-the-Naze, Essex, and F. E. S. Lindley, Godstone Place, Godstone, Surrey.
13,826. Vehicle wheels. Count L. de Choiseul-Gouffier, Plotele, Kawno, Russia.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

440,305 (January 27, 1912). D. L. A. Grosclaude. System of compartments for pneumatic automobile tires.
441,410 (February 20). Weed Chain Tire Grip Co. Repairing of pneumatic tires.
440,418 (February 20). A. Sorsi. Elastic tire for automobiles, motorcycles, bicycles and other vehicles.
440,428 (February 21). L. Michel. Tires for vehicles.
440,480 (February 22). W. G. Skew. Improvements in anti-skid treads for pneumatic tires.
440,584 (February 26). A. Robertshaw. Improvements in covers for pneumatic tires.
440,704 (May 9, 1911). A. E. Thichault. Elastic tires.
440,717 (February 28, 1912). Bourne Rubber Co., Ltd. Process for treating rubber, vulcanite, or analogous substances and for making certain articles out of them.
440,833 (March 2). A. E. Wale. Improvements in manufacture of vehicle tires.
440,888 (February 28). A. Charvieux. Demountable tire for cycles and other vehicles.
440,940 (February 10). F. A. Nolan. Improvements in rubber heels.
440,941 (February 12). C. M. Metsch. Improvements in repair of pneumatic tires.
440,967 (February 24). L. G. Queval. Anti-skid appliance for pneumatic automobile and other tires.
441,013 (March 6). J. Savoie. Tire protectors.
441,075 (March 7). G. W. Bedam. Improvements in elastic tires.
441,122 (March 8). Dunlop Rubber Co., Ltd. Improvement in manufacture of pneumatic tires and covers.
441,134 (March 9). Maubon & Cané. Tire protecting appliance.
441,204 (March 11). Badische Anilin und Soda Fabrik. Production of substances resembling vulcanized rubber.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Robet, Ingénieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

251,216 (May 13, 1911). Process for production of isoprene. Badische Anilin-und Soda-Fabrik, Ludwigshafen.
251,217 (January 11, 1911). Process for production of erythrene. Farbenfabriken, vorm. Fried. Bayer & Co., Elberfeld.
250,690 (September 12, 1909). Process for production of artificial rubber, Farbenfabriken, vorm. Fried. Bayer & Co., Elberfeld.
250,920 (August 8, 1911). Process for manufacture of a product suitable as a substitute for rubber. Farbenfabriken, vorm. Fried. Bayer & Co., Elberfeld.
250,961 (June 7, 1910). Balloon material of woven fabric, paper and rubber. Julius Rund, Goethe Str. 10, and Max Samson, Westend Str. 3, Frankfurt-a. M.
251,260 (June 1, 1910). Centrifugal separator of rubber from fluids containing same. Empire Cream Separator Co., Bloomfield, New Jersey, U. S. A.
251,613 (October 25, 1911). Manufacture of marbled artificial rubber. Dr. Alexander & Posnansky, Kopenick, near Berlin.
251,728 (March 30, 1911). Process for smoking latex. Robert Derry, Singapore.
251,370 (March 3, 1911). Production of substances resembling rubber. Badische Anilin und Soda Fabrik, Ludwigshafen, Germany.
251,371 (August 7, 1910). Production of rubber substitutes. Chemische Fabrik Florsheim, Dr. H. Noerdlinger, Florsheim a. M.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

246,696 (1912). F. Frank and E. Marckwald, Berlin. Extraction of rubber from latex.
246,826 (1912). Rauhgummi Verwertungs Gesellschaft m. b. H., Hamburg. Process for manufacturing wrinkled rubber.
247,139 (1912). A. Pinel, Le Houlme, France. Manufacture of gum or mucilage from seeds of carob tree.

UNITED STATES RUBBER CO.'S ISSUES.

TRANSACTIONS on the New York Stock Exchange for five weeks, ending October 26:

COMMON STOCK, $25,000,000.

[The treasury of a subsidiary company holds $1,334,000.]
Last Dividend, October 31, 1912—1%.

Week September 28	Sales	21,200 shares	High	55½	Low	54
Week October 5	Sales	8,100 shares	High	55¼	Low	54
Week October 12	Sales	7,220 shares	High	55	Low	52¼
Week October 19	Sales	2,600 shares	High	53⅛	Low	52½
Week October 26	Sales	4,425 shares	High	53	Low	50½

For the year—High, 67¾, May 21; Low, 45¼, February 1.
Last year—High, 48½; Low, 30½.

FIRST PREFERRED STOCK, $39,824,400.

Last Dividend, October 31, 1912—2%.

Week September 28	Sales	2,000 shares	High	111	Low	109½
Week October 5	Sales	1,100 shares	High	112	Low	111
Week October 12	Sales	1,100 shares	High	112	Low	109⅝
Week October 19	Sales	1,300 shares	High	109⅞	Low	109
Week October 26	Sales	1,230 shares	High	109	Low	107

For the year—High, 116, May 20; Low, 105⅝, July 25.
Last year—High, 115½; Low, 104.

SECOND PREFERRED STOCK, $9,965,000.

Last Dividend, October 31, 1912—1½%.

Week September 28	Sales	400 shares	High	81¼	Low	79½
Week October 5	Sales	600 shares	High	81⅝	Low	81¼
Week October 12	Sales	300 shares	High	81⅞	Low	81¼
Week October 19	Sales	... shares	High	....	Low	....
Week October 26	Sales	100 shares	High	78¾	Low	78¾

For the year—High, 85½, May 21; Low, 75, January 23.
Last year—High, 79; Low, 66.

SIX PER CENT. TRUST GOLD BONDS, $18,000,000.

Outstanding of the 1908 issue of $20,000,000.

Week September 28	Sales	30 bonds	High	103⅞	Low	103⅝
Week October 5	Sales	11 bonds	High	103¾	Low	103⅝
Week October 12	Sales	11 bonds	High	103⅞	Low	103¾
Week October 19	Sales	73 bonds	High	103⅝	Low	103
Week October 26	Sales	17 bonds	High	103½	Low	103⅜

For the year—High, 105, February 24; Low, 103, October 19.
Last year—High, 105; Low, 101¾.

CANADIAN IMPORTS OF CYCLES AND MOTORS.

THE following statistics, for the three months April-June, for three years, are supplied by the Canadian department of trades and commerce.

BICYCLES.

	1910.	1911.	1912.
From Great Britain	$38,927	$59,639	$66,442
From United States	19,480	27,817	20,504
From Other Countries	43	....	15
Total	$58,450	$87,456	$86,961

AUTOMOBILES.

	1910.	1911.	1912.
From Great Britain	$65,406	$111,032	$172,570
From United States	1,273,057	2,080,592	3,637,715
From France	35,473	13,280	27,861
From Other Countries	5,451	.....	.....
Total	$1,379,387	$2,204,904	$3,838,146

Review of the Crude Rubber Market.

AFTER the fall in London price of Pará, in the first half of September, the level reached has since been more or less maintained. During the latter half of September the price fluctuated between 4*s.* 7*d.* and 4*s.* 8*d.* In the first half of October it varied between 4*s.* 6½*d.* and 4*s.* 7½*d.*; reaching on 26th (at time of writing) 4*s.* 6*d.*

While Pará rubber thus fell 1½*d.* in the last five weeks, plantation rubber showed a decline for pale crepe within the same period of 4*d.* per pound, from 4*s.* 6½*d.* to 4*s.* 2½*d.* On August 1 Pará and plantation had both stood at 4*s.* 10½*d.*, while at time of writing (October 26) they were respectively at 4*s.* 6*d.* and 4*s.* 2½*d.*

Since last report there have been three plantation auctions in London. The sale of September 24 to 26 comprised 920 tons. Prices in general showed a falling off to the extent of 2*d.* per pound, while smoked sheet commanded full rates. Nearly the entire quantity was sold. At the auctions of October 8 to 10 800 tons were offered and almost all sold at a further decline of 2*d.* A firmer tone prevailed towards the close.

The sale commencing October 22 (of which cable reports to hand), included 900 tons. While prices opened at a new reduction of 2*d.* per pound, a recovery to the extent of ½*d.* subsequently took place.

General opinion is to the effect that the fall in prices of plantation rubber has operated its own remedy by inducing buyers to act freely. Higher prices are being paid for later delivery than are current for spot rubber of the same grades.

At Antwerp on September 25 the offerings included 344 tons of Congo, of which 141 were sold at an average fall of 10 per cent., in addition to 158 tons plantation, of which 131 were placed at an average reduction of 8 per cent. On September 24, 95 tons (principally Congo) were offered at Havre, of which 20 tons were sold.

On September 30 at Amsterdam, out of 65 tons offered, 51 were sold at 5 to 7 per cent. reduction. For the sale of October 18, about 74 tons had been declared, chiefly *Hevea* and *Ficus*, three fourths of which changed hands at a fall of 5 to 6 per cent.

On October 11, 55 tons were offered at Rotterdam. The 12 tons of *Hevea* included were nearly all sold at an average of 5 per cent. below valuations, while a large proportion of the 37 tons of Congo was bought in.

NEW YORK QUOTATIONS.

FOLLOWING are the quotations at New York for Pará grades, one year ago, one month ago, October 30—the current date:

PARA.	Nov. 1, '11.	Oct. 1, '12.	Oct. 30, '12.
Islands, fine, new	97@ 98	106@107	99@100
Islands, fine, old	100@101	109@110	.....
Upriver, fine, new	104@105	109@110	105@106
Upriver, fine, old	106@107	118@119	.....
Islands, coarse, new	57@ 58	55@ 56	54@ 55
Islands, coarse, old	none here	.....	.....
Upriver, coarse, new	90@ 91	84@ 85	83@ 84
Upriver, coarse, old	none here	.....	.....
Cametá	59@ 60	59@ 60	55@ 56
Caucho (Peruvian) ball	89@ 90	84@ 85	82@ 83
Caucho (Peruvian) sheet	none here	.....	.....
PLANTATION PARA.			
Fine smoked sheet	114@115	114@115	108@109
Fine pale crepe	115@116	107@108	102@103
Fine sheets and biscuits	112@113	108@109	100@101
CENTRALS.			
Esmeralda, sausage	82@ 83	82@ 83	77@ 78
Guayaquil, strip	none here	.....	.....
Nicaragua, scrap	81@ 82	81@ 82	77@ 78
Panama	none here	.....	.....
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	82@ 83	80@ 81	76@ 77
Mexican, slab	none here	.....	.....
Mangabeira, sheet	58@ 63	.....	.....
Guayule	45@...	58@ 59	57@ 58
Balata, sheet	85@ 86	85@ 86	.....
Balata, block	53@ 54	56@ 57	.....
AFRICAN.			
Lopori, ball, prime	98@ 99	107@108	96@ 97
Lopori, strip, prime	none here	.....	.....
Aruwimi	94@ 95	100@101	87@ 88
Upper Congo, ball, red	90@ 91	104@105	.....
Ikelemba	none here	.....	.....
Sierra Leone, 1st quality	86@ 87	93@ 94	.....
Massai, red	89@ 90	95@ 96	95@ 96
Soudan, Niggers	none here	.....	.....
Cameroon, ball	65@ 66	70@ 71	.....
Benguela	65@ 66	74@ 75	.....
Madagascar, pinky	76@ 77	.....	.....
Accra, flake	28@ 29	26@ 27	25@ 26
EAST INDIAN.			
Assam	none here	.....	.....
Pontianak	57⅛@...	6½@6⅝	6⅝@...
Borneo	none here	.....	.....

Late Pará cables quote:

	Per Kilo.		Per Kilo.
		Upriver, fine	5$300
Islands, fine	4$200	Upriver, coarse	3$800
Islands, coarse	2$200	Exchange	16 5/16d.

Latest Manáos advices:

Upriver, fine	5$400		
Upriver, coarse	3$600	Exchange	16 5/16d.

Statistics of Para Rubber (Excluding Caucho).

	NEW YORK. Fine and Medium.	Coarse.	Total, 1912.	Total, 1911.	Total, 1910.
Stocks, August 31..*tons*	159	24 =	183	370	171
Arrivals, September	852	448 =	1,300	1,340	930
Aggregating	1,011	472 =	1,483	1,710	1,101
Deliveries, September	864	438 =	1,302	1,388	926
Stocks, September 30	147	34 =	181	322	175

	Pará. 1912.	1911.	1910.	England. 1912.	1911.	1910.
Stocks, August 31..*tons*	1,355	3,010	585	395	1,310	1,275
Arrivals, September	2,370	2,515	1,870	725	425	1,000
Aggregating	3,725	5,525	2,455	1,120	1,735	2,275
Deliveries, September	2,305	2,835	1,595	740	880	697
Stocks, September	1,420	2,690	860	380	855	1,578

	1912.	1911.	1910.
World's visible supply, September 30..*tons*	2,956	5,305	3,350
Pará receipts, July 1 to September 30	5,155	4,960	4,830
Pará receipts of caucho, same dates	1,000	910	1,430
Afloat from Pará to United States, Sept. 30	390	978	347
Afloat from Pará to Europe, September 30	585	460	390

Rubber Stock at Para.

On May 31 the stock had increased, but had receded by June 30; and had again fallen off on July 31. Large sales by the syndicate materially reduced the stock by the end of August, from which point it had slightly increased by September 30.

February 28, 1911...*tons*	3,787	December 31 ...*tons*	2,675
March 31	4,214	January 31, 1912	3,370
April 30	5,104	February 29	3,240
May 31	5,350	March 31	2,730
June 30	4,545	April 30	2,770
July 31	3,884	May 31	2,995
August 31	3,450	June 30	2,685
September 30	3,102	July 31	2,300
October 31	3,320	August 31	1,355
November 30	3,050	September 30	1,420

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

SEPTEMBER 21.—By the steamer *Napo*, from Pará:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Henderson & Korn	41,900	3,200	17,200	63,300=	126,600
Arnold & Zeiss	10,000	4,300	27,700	..... =	42,000
New York Commercial Co.	.....	2,500	11,900	8,400=	22,800
H. A. Astlett	13,200	.....	4,500	1,000=	18,700
Total	65,100	10,900	61,300	72,700=	210,100

SEPTEMBER 24.—By the steamer *Christopher*, from Manáos and Pará:

Arnold & Zeiss	323,300	39,400	113,100	21,400	497,200
Henderson & Korn	45,500	4,300	38,900	21,600=	110,500
New York Commercial Co.	67,800	56,600	26,200	700=	151,300
General Rubber Co.	30,000	1,800	.....	..... =	31,800
Meyer & Brown	.....	.....	7,300	17,400=	24,700
G. Amsinck & Co.	6,800	400	3,300	1,100=	11,600
Total	473,400	102,700	188,800	62,200=	827,100

OCTOBER 4.—By the steamer *Denis*, from Manáos and Pará:

New York Commercial Co.	181,700	26,100	30,500	200=	238,500
Arnold & Zeiss	87,900	19,600	63,400	41,800=	212,700
Henderson & Korn	84,300	10,200	67,300	..... =	161,800
Meyer & Brown	44,000	9,900	18,900	7,300=	80,100
De Lagotellerie Co.	.....	.....	15,200	..... =	15,200
Ed. Maurer	12,100	1,100	1,300	..... =	14,500
Robinson & Co.	.....	.....	10,300	..... =	10,300
Hagemeyer & Brunn	.....	600	.....	9,400=	10,000
Total	410,000	67,500	206,900	58,700=	743,100

OCTOBER 5.—By the steamer *Tobajo*, from Pará:

Meyer & Brown	30,600	3,400	11,900	..... =	45,900
Arnold & Zeiss	.....	1,800	40,900	..... =	42,700
L. Johnson & Co.	13,300	.....	2,700	5,800=	21,800
De Lagotellerie & Co.	11,100	1,100	2,000	..... =	14,200
Henderson & Korn	5,400	1,800	5,900	..... =	13,100
Total	60,400	8,100	63,400	5,800=	137,700

OCTOBER 15.—By the steamer *Dunstan*, from Manáos and Pará:

Arnold & Zeiss	68,500	28,100	107,600	97,400=	301,600
New York Commercial Co.	144,500	45,600	31,200	14,700=	236,000
General Rubber Co.	70,200	10,800	63,000	700=	144,700
Henderson & Korn	51,300	26,300	8,600	25,900=	112,100
Meyer & Brown	5,000	300	44,200	9,600=	59,100
Robinson & Co.	36,000	600	3,600	..... =	40,200
H. A. Astlett Co.	21,800	2,500	6,600	..... =	30,900
De Lagotellerie & Co.	22,400	2,100	1,800	300=	26,600
G. Amsinck & Co.	6,800	.....	2,600	3,400=	12,800
Edward Maurer	9,300	700	2,600	..... =	12,600
Total	435,800	117,000	271,800	152,000=	976,600

PARA RUBBER VIA EUROPE.

POUNDS.

SEPTEMBER 16.—By the *Allianca*=Mollendo:
W. R. Grace Co. (Fine) 4,500

SEPTEMBER 18.—By the *Caronia*=Liverpool:
Arnold & Zeiss (Fine) 85,000
Arnold & Zeiss (Caucho) 95,000
General Rubber Co. (Fine) 11,500
Raw Products Co. (Fine) 11,000 202,500

SEPTEMBER 21.—By the *Baltic*=Liverpool:
New York Commercial Co. (Fine) 75,000

SEPTEMBER 21.—By the *Colon*=Mollendo:
W. R. Grace & Co. (Fine) 2,000
W. R. Grace & Co. (Caucho) .. 5,000 7,000

SEPTEMBER 21.—By the *Kaiserin Auguste Victoria*=Hamburg:
Ed. Maurer (Fine) 13,500
W. L. Gough Co. (Fine) 5,500
Arnold & Zeiss (Coarse) 2,000 21,000

OCTOBER 1.—By the *Carmania*=Liverpool:
New York Commercial Co. (Fine) 77,000
Arnold & Zeiss (Fine) 45,000
Wallace L. Gough Co. (Fine).. 4,500 126,500

OCTOBER 9.—by the *Allianca*=Mollendo:
New York Commercial Co. (Fine) 5,000

OCTOBER 11.—By the *Patricia*=Hamburg:
Ed. Maurer (Fine) 30,000

OCTOBER 14.—By the *Adriatic*=Liverpool:
Raw Products Co. (Fine) 5,500
Rubber Trading Co. (Fine) 4,500 10,000

OCTOBER 14.—By the *Caronia*=Liverpool:
Arnold & Zeiss (Fine) 22,500
New York Commercial Co. (Fine) 5,500 28,000

OCTOBER 15.—By the *Chicago*=Havre:
Arnold & Zeiss (Fine) 8,000

OCTOBER 19.—By the *Baltic*=Liverpool:
General Rubber Co. (Coarse)... 11,000
Meyer & Brown (Caucho) 18,000 29,000

OTHER NEW YORK ARRIVALS.

CENTRALS.

[* This sign, in connection with imports of Centrals, denotes Guayule rubber.]

POUNDS.

SEPTEMBER 16.—By the *Allianca*=Colon:
J. Sambrada & Co. 11,500
G. Amsinck & Co. 8,000
Laurence Johnson & Co. 8,000
Dumarest Bros. & Co. 3,000
Hirzel, Feltman & Co. 2,000 32,500

SEPTEMBER 16.—By the *Matanzas*=Tampico:
Ed. Maurer *150,000
New York Commercial Co. *75,000
Arnold & Zeiss *40,000
Continental-Mexican Rubber Co. *35,000
For Europe *45,000 *345,000

SEPTEMBER 18.—By the *Caronia*=Liverpool:
Arnold & Zeiss 18,000

SEPTEMBER 18.—By the *Prinz Joachim*=Colon:
G. Amsinck & Co. 13,500
New York Commercial Co. 5,000
Brandon & Bros. 5,000
Pablo Calvet & Co. 1,500
Suzarte & Whitney 1,000 26,000

SEPTEMBER 18.—By the *Potsdam*=Rotterdam:
A. Hirsch & Co. 13,500

SEPTEMBER 20.—By the *Mexico*=Frontera:
Harburger & Stack 5,000
E. Steiger & Co. 3,500
Chas. T. Wilson 3,000
American Trading Co. 2,000
New York Commercial Co. 1,500 15,000

SEPTEMBER 21.—By the *Baltic*=Liverpool:
Rubber Trading Co. 4,500

SEPTEMBER 21.—By the *Colon*=Colon:
Piza, Nephews & Co. 5,000
George A. Alden Co. 4,000
Pablo Calvet & Co. 2,000
Roldau & Van Sickle 1,500 12,500

SEPTEMBER 24.—By the *Touraine*=Havre:
Meyer & Brown 10,000

SEPTEMBER 25.—By the *Pennsylvania*=Hamburg:
Ed. Maurer *10,000

SEPTEMBER 25.—By the *Magdalena*=Colon:
Andean Trading Co. 6,000
A. M. Capen's Sons 5,000
J. Sambrada & Co. 4,000
Mecke & Co. 3,500
G. Amsinck & Co. 3,000
Caballero & Blanco 1,500
Roldau & Van Sickle 1,500
Lanman & Kemp 1,000 25,500

SEPTEMBER 25.—By the *Momus*=New Orleans:
Manhattan Rubber Mfg. Co. 2,500
Eggers & Heinlein 2,000
G. Amsinck & Co. 2,000
Wessels, Kulenkampff & Co. 2,000
W. L. Wadleigh 1,500
Order 3,500 13,500

SEPTEMBER 26.—By the *Chinese Prince*=Bahia:
J. H. Rossbach & Bros. 50,000
A. Hirsch & Co. 15,000
For Exposition 7,000 72,000

SEPTEMBER 28.—By the *Monterey*=Vera Cruz:
Graham, Hinkley & Co. 5,000
Laurence Johnson & Co. 3,000
Maitland, Coppell & Co. 2,500
Chas. T. Wilson 2,000
H. Marquardt Co. 2,000
J. W. Wilson & Co. 1,500
G. Amsinck & Co. 1,500 17,500

SEPTEMBER 28.—By the *Advance*=Colon:
J. Sambrada & Co. 10,000
Laurence Johnson & Co. 8,000
Dumarest Bros. & Co. 1,000
G. Amsinck & Co. 1,000 20,000

OCTOBER 3.—By the *Prinz August Wilhelm*=Colon:
G. Amsinck & Co. 18,000
A. Rosenthal & Sons 3,000
Wessels, Kulenkampff & Co. 1,500
S. Elias Abdad 1,000 23,500

OCTOBER 5.—By the *Celtic*=Liverpool:
Henderson & Korn 9,000

OCTOBER 3.—By *El Dorado*=Galveston:
Continental-Mexican Co. *37,000

OCTOBER 5.—By the *Panama*=Colon:
Pottsberg Eberling Co. 13,000
G. Amsinck & Co. 4,000
R. Castillo & Co. 2,000
Hirzel, Feltman & Co. 1,500
Pablo Calvet & Co. 1,000 21,500

OCTOBER 5.—By the *Seguranca*=Frontera:
E. Steiger & Co. 5,000
Harburger & Stack 4,500
Isaac Kubie & Co. 2,500
G. Amsinck & Co. 1,500
Mecke & Co. 1,000
For Hamburg 2,000 16,500

OCTOBER 7.—By the *Rochambeau*=Havre:
Arnold & Zeiss 13,500

OCTOBER 8.—By *El Norte*=Galveston:
Continental-Mexican Rubber Co. *65,000

OCTOBER 8.—By the *Guantanamo*=Tampico:
Ed. Maurer *155,000
Continental-Mexican Rubber Co. *55,000
For Europe *100,000 *310,000

OCTOBER 10.—By the *Clyde*=Colon:
Isaac Brandon & Bros. 12,000
G. Amsinck & Co. 6,000
New York Commercial Co. 4,000
Charles E. Griffin 3,000
J. Sambrada & Co. 2,000
F. Lapiedra 2,000
A. M. Capen's Sons 2,000
Gillespie Bros. & Co. 1,000
Roldau & Van Sickle 1,000 33,000

OCTOBER 10.—By the *Momus*=New Orleans:
G. Amsinck & Co. 2,500
A. N. Rotholz 2,500
To Order 7,000 12,000

OCTOBER 10.—By *El Cid*=Galveston:
Charles T. Wilson *20,000

OCTOBER 10.—By the *Allianca*=Colon:
F. Rosenstern & Co. 4,000
G. Amsinck & Co. 2,000
Pablo Calvet & Co. 1,000 7,000

OCTOBER 14.—By the *Adriatic*=Liverpool:
Henderson & Korn 11,500
J. T. Johnstone 9,000
Cowdry & Co. 4,000 24,500

OCTOBER 14.—By the *Esperanza*=Vera Cruz:
Charles T. Wilson 4,500
Laguna Import Co. 2,000
G. Amsinck & Co. 1,000
George A. Alden & Co. 1,000 8,500

OCTOBER 14.—By the *Santiago*=Tampico:
Ed. Maurer *95,000
New York Commercial Co. *45,000
Arnold & Zeiss *25,000 *165,000

OCTOBER 14.—By the *Portuguese Prince*=Babia:
J. H. Rossbach & Bros. 20,000

OCTOBER 15.—By the *Colon*=Colon:
Laurence Johnson & Co. 11,000
G. Amsinck & Co. 9,000
J. Sambrada & Co. 9,000
Isaac Brandon & Bros. 6,500
Dumarest Bros. Co. 4,000
Hirzel, Feltman Co. 2,500 42,000

OCTOBER 17.—By the *Prinz Joachem*=Colon:
Manhattan Rubber Mfg. Co. 3,000
Andean Trading Co. 2,500
Wessels, Kulenkampff & Co. 1,000 6,500

OCTOBER 17.—By the *President Grant*=Hamburg:
A. Hirsch & Co. 25,000
Ed. Maurer *20,000 45,000

OCTOBER 18.—By the *Matanzas*=Tampico:
Continental-Mexican Rubber Co.*270,000
For Europe *45,000 *315,000

OCTOBER 19.—By the *Baltic*=Liverpool:
Arnold & Zeiss 34,000

OCTOBER 22.—By the *Albungia*=Columbia:
B. Williamson & Co. 5,000
Winter & Smillie 1,500
A. Helde 1,000
R. Castillo & Co. 1,000
Kunhardt & Co. 1,000
G. Amsinck & Co. 1,000
A. Angel & Co. 1,000 11,500

OCTOBER 22.—By the *Advance*=Colon:

G. Amsinck & Co.	5,000	
Piza, Nephews & Co.	4,000	
Pottsberg Ebeling Co.	3,000	
J. Sambrada & Co.	2,000	
Pablo Calvet & Co.	2,000	
Lanman & Kemp	1,500	
United Export Co.	1,500	
Wessels, Kulenkampff & Co.	1,000	
Dumarest Bros. & Co.	1,000	
Silva Bussenius Co.	1,000	
J. W. Wilson & Co.	1,000	23,000

OCTOBER 22.—By the *Minnehaha*=London:

General Rubber Co.		45,000

OCTOBER 23.—By the *Prinz Eitel Friedrich*=Colon:

G. Amsinck & Co.	5,000	
J. Sambrada & Co.	2,500	
Meeke & Co.	2,500	
Roldau & Van Sickle	1,000	
New York Commercial Co.	1,000	12,000

AFRICAN.

	POUNDS.	
SEPTEMBER 16.—By the *St. Paul*=Liverpool:		
George A. Alden & Co.	75,000	
General Rubber Co.	30,000	
Ed. Maurer	13,500	118,500
SEPTEMBER 16.—By the *Amerika*=Hamburg:		
Meyer & Brown	28,000	
George A. Alden & Co.	4,500	
Henderson & Korn	3,000	35,500
SEPTEMBER 17.—By the *Vaderland*=Antwerp:		
George A. Alden & Co.	53,000	
Meyer & Brown	40,000	
Robert Badenhop	8,000	101,000
SEPTEMBER 17.—By the *Chicago*=Havre:		
Meyer & Brown	60,000	
Ed. Maurer	7,000	67,000
SEPTEMBER 17.—By the *Minneapolis*=London:		
General Rubber Co.		22,500
SEPTEMBER 17.—By the *Cincinnati*=Hamburg:		
Meyer & Brown	20,000	
Ed. Maurer	34,000	
General Rubber Co.	13,500	
George A. Alden & Co.	5,000	72,500
SEPTEMBER 18.—By the *Caronia*=Liverpool:		
Arnold & Zeiss	78,000	
Ed. Maurer	11,500	
W. H. Stiles	3,500	93,000
SEPTEMBER 21.—By the *Campania*=Liverpool:		
Raw Products Co.	11,000	
George A. Alden & Co.	6 000	
Ed. Maurer	5,000	22,000
SEPTEMBER 21.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Ed. Maurer	18,000	
Henderson & Korn	11,500	
Charles T. Wilson	8,000	
George A. Alden & Co.	5,000	
Meyer & Brown	4,500	47,000
SEPTEMBER 26.—By the *Pennsylvania*=Hamburg:		
General Rubber Co.	15,000	
George A. Alden & Co.	4,500	
Wallace L. Gough Co.	5,000	
Raw Products Co.	3,500	28,000
SEPTEMBER 28.—By the *Cedric*=Liverpool:		
George A. Alden & Co.	5,500	
James T. Johnstone	5,500	11,000
SEPTEMBER 30.—By the *St. Louis*=London:		
General Rubber Co.	15,000	
Charles T. Wilson	7,000	22,000
OCTOBER 1.—By the *Carmania*=Liverpool:		
Meyer & Brown	11,000	
Ed. Maurer	5,000	16,000
OCTOBER 1.—By the *Niagara*=Havre:		
Meyer & Brown		20,000
OCTOBER 1.—By the *Cleveland*=Hamburg:		
Ed. Maurer	56,000	
Arnold & Zeiss	34,000	
Rubber Trading Co.	13,500	
Robert Badenhop	11,000	114,500
OCTOBER 2.—By the *President Lincoln*=Hamburg:		
Meyer & Brown	70,000	
Charles T. Wilson	8,000	
Ed. Maurer	5,000	
Raw Products Co.	3,500	
James T. Johnstone	3,000	89,500
OCTOBER 2.—By the *Lapland*=Antwerp:		
Meyer & Brown	45,000	
Rubber Trading Co.	15,000	
Henderson & Korn	5,500	
L. Blitz	3,000	68,500
OCTOBER 7.—By the *New York*=London:		
General Rubber Co.		11,000
OCTOBER 11.—By the *Patricia*=Hamburg:		
Arnold & Zeiss	45,000	
Meyer & Brown	34,000	
General Rubber Co.	13,500	
Wallace L. Gough Co.	15,000	
George A. Alden & Co.	13,500	
Robert Badenhop	7,000	
Rubber Trading Co.	5,000	
Ed. Maurer	5,000	138,000
OCTOBER 14.—By the *Adriatic*=Liverpool:		
Ed. Maurer		11,500
OCTOBER 14.—By the *Caronia*=Liverpool:		
Arnold & Zeiss	11,500	
Ed. Maurer	11,000	
Rubber Trading Co.	9,000	31,500
OCTOBER 15.—By the *Chicago*=Havre:		
Meyer & Brown		40,000
OCTOBER 15.—By the *Vaderland*=Antwerp:		
Meyer & Brown	22,500	
General Rubber Co.	22,500	
Robinson & Co.	15,000	
Wallace L. Gough Co.	22,500	
Rubber Trading Co.	11,000	
George A. Alden & Co.	7,000	
William H. Stiles	7,000	
Arnold & Zeiss	7,000	114,500
OCTOBER 17.—By the *President Grant*=Hamburg:		
Ed. Maurer	25,000	
George A. Alden & Co.	25,000	
Meyer & Brown	22,500	
Rubber Trading Co.	9,000	
Wallace L. Gough Co.	4,500	
Arnold & Zeiss	4,500	
Robert Badenhop	4,500	95,000
OCTOBER 19.—By the *Baltic*=Liverpool:		
Henderson & Korn	7,000	
Arnold & Zeiss	3,500	
George A. Alden & Co.	2,500	13,000
OCTOBER 21.—By the *Philadelphia*=London:		
General Rubber Co.	9,000	
George A. Alden & Co.	5,500	
Meyer & Brown	2,000	16,500
OCTOBER 22.—By the *Travesta*=Lisbon:		
General Rubber Co.		18,000
OCTOBER 23.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Arnold & Zeiss	34,000	
Ed. Maurer	22,500	
Meyer & Brown	30,000	
Wallace L. Gough Co.	11,500	
General Rubber Co.	9,000	
Rubber Trading Co.	9,000	
Robert Badenhop	7,000	123,000

EAST INDIAN.

[*Denotes plantation rubber.]

	POUNDS.	
SEPTEMBER 16.—By the *St. Paul*=London:		
New York Commercial Co.	*145,000	
Arnold & Zeiss	*90,000	
Ed. Maurer	*60,000	
Arnold & Zeiss	9,000	304,000
SEPTEMBER 17.—By the *Vaderland*=Antwerp:		
Meyer & Brown		*56,000
SEPTEMBER 17.—By the *Minneapolis*=London:		
General Rubber Co.	*90,000	
J. T. Johnstone	*20,000	
Henderson & Korn	*13,500	
Raw Products Co.	15,000	
General Rubber Co.	22,500	161,000
SEPTEMBER 17.—By the *Cincinnati*=Hamburg:		
Meyer & Brown	*6,000	
Ed. Maurer	*4,500	
Haebler & Co.	7,000	17,500
SEPTEMBER 19.—By the *Oceanic*=London:		
Arnold & Zeiss	*110,000	
New York Commercial Co.	*30,000	
Henderson & Korn	*22,500	
Charles T. Wilson	*11,500	
In Transit	*15,000	189,000
SEPTEMBER 20.—By the *Rheinfels*=Colombo:		
Meyer & Brown	*100,000	
New York Commercial Co.	*16,000	
L. Blitz	*3,500	119,500
SEPTEMBER 23.—By the *Kroonland*=Antwerp:		
Meyer & Brown		*15,000
SEPTEMBER 23.—By the *Philadelphia*=London:		
New York Commercial Co.	*90,000	
Ed. Maurer	*30,000	
Arnold & Zeiss	*20,000	
Meyer & Brown	*13,500	
Robinson & Co.	*15,000	
Charles T. Wilson	*15,000	
In Transit	*9,000	*192,500
SEPTEMBER 23.—By the *Oceana*=Singapore:		
Ed. Maurer	*68,000	
Wallace L. Gough Co.	*11,500	
Arnold & Zeiss	7,000	
Haebler & Co.	5,500	92,000
SEPTEMBER 23.—By the *Koranna*=Colombo:		
General Rubber Co.	*34,000	
Meyer & Brown	*33,000	
New York Commercial Co.	*30,000	
For Exposition	*13,500	*110,500
SEPTEMBER 24.—By the *Minnehaha*=London:		
J. T. Johnstone	*22,500	
Raw Products Co.	*22,500	
Charles T. Wilson	*11,000	*56,000
SEPTEMBER 26.—By the *Pennsylvania*=Hamburg:		
Meyer & Brown	*7,000	
Robert Badenhop	*3,500	
Rubber Trading Co.	*10,000	20,500
SEPTEMBER 27.—By the *Olympic*=London:		
Ed. Maurer	*35,000	
New York Commercial Co.	*34,000	
Arnold & Zeiss	*15,500	
Robinson & Co.	*15,000	
Charles T. Wilson	*7,000	
In transit	*155,000	*261,500
SEPTEMBER 27.—By the *Tanafels*=Colombo:		
New York Commercial Co.	*40,000	
W. H. Stiles	*11,500	
L. Blitz	*4,500	*56,000
SEPTEMBER 30.—By the *St. Louis*=London:		
New York Commercial Co.	*55,000	
Ed. Maurer	*30,000	
Arnold & Zeiss	*22,500	
Charles T. Wilson	*9,000	
Robinson & Co.	*10,000	
Robinson & Co.	5,000	
In transit	*45,000	176,500
OCTOBER 1.—By the *Lapland*=Antwerp:		
Meyer & Brown	*50,000	
Malaedi Rubber Co.	*7,000	*57,000
OCTOBER 1.—By the *Minnewaska*=London:		
J. T. Johnstone	*22,500	
Ed. Maurer	*22,500	
Meyer & Brown	*11,000	
Raw Products Co.	*7,000	
Henderson & Korn	*7,000	
Rubber Trading Co.	*7,000	
L. Littlejohn & Co.	*15,000	*92,000
OCTOBER 3.—By the *Majestic*=London:		
Ed. Maurer	*22,000	
Meyer & Brown	*11,500	
New York Commercial Co.	*17,000	
Robinson & Co.	*5,000	
In transit	*34,000	*90,000
OCTOBER 5.—By the *Indramayo*=Singapore:		
L. Littlejohn & Co.	*5,000	
For Exposition	*4,500	
Malaysian Rubber Co.	25,000	34,500
OCTOBER 5.—By the *Bloemfontein*=Colombo:		
Meyer & Brown	*143,000	
General Rubber Co.	*7,000	
Ed. Maurer	*7,000	
Raw Products Co.	*5,000	
New York Commercial Co.	*4,500	*166,500
OCTOBER 7.—By the *New York*=London:		
New York Commercial Co.	*70,000	
Arnold & Zeiss	*22,000	
Robinson & Co.	*7,000	*99,000
OCTOBER 7.—By the *Ryndam*=Rotterdam:		
Ed. Maurer	*13,500	
Rubber Trading Co.	*5,500	*19,000
OCTOBER 7.—By the *Minnetonka*=London:		
General Rubber Co.	*110,000	
Charles T. Wilson	*35,000	
Ed. Maurer	*20,000	
Raw Products Co.	*11,500	
J. T. Johnstone	*5,500	
Wallace L. Gough Co.	*5,000	
In transit	*22,500	*209,500
OCTOBER 10.—By the *Oceanic*=London:		
Ed. Maurer	*75,000	
New York Commercial Co.	*56,000	
Arnold & Zeiss	*34,000	
Charles T. Wilson	*15,000	*180,000
OCTOBER 11.—By the *Potricia*=Hamburg:		
Rubber Trading Co.	*18,000	
Meyer & Brown	*5,000	*23,000
OCTOBER 14.—By the *Indrawadi*=Singapore:		
Ed. Maurer	*100,000	
L. Littlejohn & Co.	*70,000	
New York Commercial Co.	*22,500	
Wallace L. Gough Co.	*22,500	
General Rubber Co.	*5,500	
Ed. Maurer	25,000	
Haebler & Co.	11,500	
Arnold & Zeiss	4,500	261,500
OCTOBER 14.—By the *Ockenfels*=Colombo:		
Meyer & Brown	*80,000	
New York Commercial Co.	*50,000	
Ed. Maurer	*20,000	
Arnold & Zeiss	*11,500	
Henderson & Korn	*11,500	
L. Blitz	*3,000	*176,000
OCTOBER 14.—By the *Indraghiri*=Singapore:		
L. Littlejohn & Co.	*45,000	
Ed. Maurer	*33,500	*78,500

OCTOBER 15.—By the *Vaderland*=Antwerp:

Meyer & Brown	*85,000	

OCTOBER 15.—By the *Minneapolis*=London:

New York Commercial Co.	*175,000	
Raw Products Co.	*45,000	
Charles T. Wilson	*35,000	
L. LittleJohn & Co.	*7,000	*262,000

OCTOBER 17.—By the *St. Paul*=London:

New York Commercial Co.	*35,000	
Ed. Maurer	*30,000	
Robinson & Co.	*11,500	
Meyer & Brown	*4,500	*81,000

OCTOBER 18.—By the *Kansas*=Singapore:

Ed. Maurer	*70,000	
General Rubber Co.	*22,500	
L. Littlejohn & Co.	*22,500	
Wallace L. Gough Co.	*2,000	
J. Warren Bird	*7,000	*124,000

OCTOBER 21.—By the *Philadelphia*=London:

Arnold & Zeiss	*135,000	
New York Commercial Co.	*22,500	
Robinson & Co.	*18,000	
Meyer & Brown	*11,500	
Henderson & Korn	*11,000	
Robinson & Co.	11,000	209,000

OCTOBER 21.—By the *Kabinga*=Colombo:

New York Commercial Co.	*90,000	
Meyer & Brown	*70,000	
Ed. Maurer	*11,000	
L. Blitz	*9,000	
R. Badenhop	*7,000	*187,000

OCTOBER 23.—By the *Kroonland*=London:

Meyer & Brown	*45,000	

OCTOBER 23.—By the *Minnehaha*=London:

General Rubber Co.	*450,000	
New York Commercial Co.	*100,000	
Ed. Maurer	*50,000	
Charles T. Wilson	*50,000	
Raw Products Co.	*11,500	
J. T. Johnstone	*11,000	
L. Littlejohn & Co.	*7,000	
R. Badenhop	*7,000	
General Rubber Co.	*45,000	*731,500

BALATA.

	Pounds.	
SEPTEMBER 17.—By the *Coppername*=Demerara:		
Middleton & Co.	13,500	
J. P. Watson	9,000	
Gillespie Bros. & Co.	4,500	
Ed. Maurer	7,000	
George A. Alden & Co.	3,500	37,500
SEPTEMBER 23.—By the *Moyaro*=Trinidad:		
Schutte Buuemann & Co.	11,500	
Suzarte & Whitney	1,500	13,000
SEPTEMBER 28.—By the *Advonce*=Colon:		
M. A. DeLeon Co.		10,000
SEPTEMBER 30.—By the *St. Louis*=London:		
Wallace L. Gough Co.		11,000
OCTOBER 1.—By the *Saramoca*=Demerara:		
G. Amsinck & Co.	25,000	
Middleton & Co.	15,000	
American Trading Co.	7,000	
Ed. Maurer	7,000	54,000
OCTOBER 8.—By the *Maroccyne*=Demerara:		
George A. Alden & Co.	7,000	
Gillespie Bros. & Co.	5,500	12,500
OCTOBER 15.—By the *Colon*=Colon:		
M. A. DeLeon Co.		5,000
OCTOBER 15.—By the *Coppername*=Demerara:		
George A. Alden & Co.	27,000	
Ed. Maurer	15,000	
Middleton & Co.	13,500	
J. P. Watson	11,500	
Gillespie Bros. & Co.	2,000	
Suzarte & Whitney	2,000	71,000

GUTTA-JETULONG.

	Pounds.	
SEPTEMBER 23.—By the *Oceonic*=Singapore:		
L. Littlejohn & Co.	750,000	
Arnold & Zeiss	155,000	
Haebler & Co.	300,000	
Wallace L. Gough Co.	125,000	1,330,000
OCTOBER 5.—By the *Indramayo*=Singapore:		
L. Littlejohn & Co.	450,000	
Haebler & Co.	250,000	700,000
OCTOBER 14.—By the *Indrawadi*=Singapore:		
L. Littlejohn & Co.	1,100,000	
Wallace L. Gough Co.	350,000	
George A. Alden & Co.	55,000	
Haebler & Co.	300,000	1,805,000
OCTOBER 15.—By the *Indradiana*=Singapore:		
L. Littlejohn & Co.		200,000
OCTOBER 16.—By the *Atholl*=Singapore:		
L. Littlejohn & Co.	400,000	
Haebler & Co.	350,000	750,000

GUTTA-PERCHA.

	Pounds.	
SEPTEMBER 17.—By the *Cincinnati*=Hamburg:		
Robert Soltau & Co.		9,000
SEPTEMBER 23.—By the *Oceanic*=Singapore:		
Haebler & Co.		50,000
SEPTEMBER 26.—By the *Pennsylvania*=Hamburg:		
Robert Soltau & Co.		9,000
OCTOBER 15.—By the *Intradiana*=Singapore:		
L. Littlejohn & Co.		34,000
OCTOBER 17.—By the *President Grant*=Hamburg:		
Robert Soltau & Co.		9,000

BOSTON ARRIVALS.

	Pounds.	
AUGUST 12.—By the *Walton Hall*=Singapore:		
State Rubber Co. (Ceylon)	32,000	
State Rubber Co. (Jelutong)	100,000	
L. Littlejohn & Co. (Jelutong)	1,300,000	
Geo. A. Alden & Co. (Jelutong)	110,000	1,542,000
AUGUST 15.—By the *Egremont*=Singapore:		
L. Littlejohn & Co. (Jelutong)	900,000	
Geo. A. Alden & Co. (Jelutong)	168,000	
State Rubber Co. (Jelutong)	67,000	
L. Littlejohn & Co. (Gutta-Percha)	22,500	1,157,500
SEPTEMBER 18.—By the *Oceana*=Singapore:		
State Rubber Co. (Jelutong)	177,000	
Geo. A. Alden & Co. (Jelutong)	140,000	
L. Littlejohn & Co. (Jelutong)	55,000	372,000

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK.—AUGUST, 1912.

Imports:	Pounds.	Value.
India-rubber	7,767,798	$6,474,953
Balata	57,513	35,795
Guayule	913,334	341,123
Gutta-percha	60,422	13,718
Gutta-jelutong (Pontianak)	3,851,123	214,448
Total	12,650,190	$7,080,037
Exports:		
India-rubber	75,553	$56,445
Balata	29,158	22,740
Reclaimed rubber	55,578	9,360
Rubber scrap, imported	2,726,236	$233,209
Rubber scrap, exported	370,687	54,150

PORT OF NEW YORK—SEPTEMBER, 1912.

Imports:	Pounds.	Value.
India-rubber	9,005,170	$7,804,430
Balata	196,444	126,488
Guayule	375,761	152,107
Gutta-percha	30,307	14,223
Gutta-jelutong (Pontianak)	1,690,539	81,598
Total	11,298,221	$8,178,846
Exports:		
India-rubber	14,300	12,812
Balata	9,642	4,800
Guayule	23,942	17,612
Gutta-percha	.....	.....
Reclaimed rubber	70,839	11,258
Gutta-jelutong (Pontianak)	.....	.....
Rubber scrap, imported	1,656,387	138,755
Rubber scrap, exported	331,862	55,303

EXPORTS OF INDIA-RUBBER FROM PARA FOR AUGUST, 1912 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					GRAND
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	TOTAL.
Zarges, Berringer & Co.	85,915	20,056	149,877	57,233	313,081	70,673	1,166	51,649	27,071	150,559	463,640
Ad. H. Alden, Ltd.	58,088	12,382	38,746	52,433	161,649	34,850	3,060	11,190	.....	49,100	210,749
General Rubber Co. of Brazil	24,872	2,753	37,216	30,753	95,594	3,450	650	160	.....	4,260	99,854
Suarez Hermanos & Co., Ltd.	284	.....	.....	.....	284	47,277	873	5,561	5,461	59,172	59,456
R. O. Ahlers & Co.	15,940	2,479	15,205	.....	33,624	42,217	1,390	21,842	9,847	75,296	108,920
De Lagotellerie & Co.	36,890	4,590	29,040	280	70,800	.....	.....	.....	.....	.....	70,800
Pires Teixeira & Co.	7,310	680	8,910	.....	16,900	.....	.....	.....	.....	.....	16,900
Syndicate J. Marques	238,158	58,390	190,350	300	487,198	146,240	27,520	12,000	27,850	213,610	700,808
J. Marques	37,097	5,345	15,501	.....	57,943	24,468	2,519	13,128	4,533	44,648	102,591
Sundry exporters	1,190	.....	3,630	.....	4,820	.....	.....	1,650	280	1,930	6,750
Itacoatiara, direct	.....	.....	.....	.....	.....	8,400	900	5,300	.....	14,600	14,600
	505,744	106,675	488,475	140,999	1,241,893	377,575	38,078	122,480	75,042	613,175	1,855,068
Manáos, direct	200,371	34,534	44,558	29,295	308,758	350,578	32,609	57,685	72,990	513,862	822,620
Iquitos, direct	.....	.....	.....	.....	.....	43,518	11,182	6,818	19,338	80,856	80,856
Total, August, 1912	706,115	141,209	533,033	170,294	1,550,651	771,671	81,869	186,983	167,370	1,207,893	2,758,544
Total, July, 1912	579,011	117,387	324,108	160,593	1,181,099	589,286	58,728	185,106	479,399	1,312,519	2,493,618
Total, January-June, 1912	4,409,232	1,064,132	3,562,570	2,071,223	11,107,157	6,251,126	744,600	1,479,253	3,316,123	11,791,102	22,898,259

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR AUGUST, 1912 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					GRAND
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	TOTAL.
Zarges, Ohliger & Ca.	41,055	12,480	9,079	114	62,728	163,677	15,157	22,662	43,610	245,106	307,834
Adelbert H. Alden, Ltd.	57,207	18,303	16,294	6,316	98,120	.....	.....	.....	6,961	6,961	105,081
General Rubber Co. of Brazil	.....	.....	.....	.....	.....	61,301	7,267	5,956	7,406	82,430	82,430
Ahlers & Ca.	13,473	2,708	4,566	3,030	23,777	65,479	5,562	9,885	4,069	84,995	108,772
De Lagotellerie & Co.	.....	.....	.....	.....	.....	25,574	3,755	6,063	3,422	38,814	38,814
Mesquita & Co.	.....	.....	.....	.....	.....	125	.....	270	82	477	477
W. Peters & Co.	.....	.....	.....	.....	.....	160	.....	1,330	5,260	6,750	6,750
Associação Comm. do Amaz. Co.	26,434	.....	.....	3,471	29,905	.....	.....	.....	.....	.....	29,905
H. Balding	.....	.....	.....	.....	.....	17,800	.....	7,000	550	25,350	25,350
Carlos Montenegro & Co.	.....	.....	.....	.....	.....	.....	.....	670	.....	670	670
	138,169	33,491	29,939	12,931	214,530	334,616	31,741	53,836	71,360	491,553	706,083
De Iquitos, direct	56,570	1,163	14,752	25,737	98,222	53,582	1,118	6,818	19,338	80,856	179,078
Total, August, 1912	194,739	34,654	44,691	38,668	312,752	388,198	32,359	60,654	90,698	572,409	885,161
Total, July, 1912	177,787	47,976	46,874	36,951	309,588	131,295	13,120	59,558	216,591	420,564	730,152
Total, January-June, 1912	2,523,525	633,319	1,019,142	860,626	5,036,612	2,791,987	465,094	665,339	2,108,191	6,030,611	11,067,223

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Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound—are practically unchanged.

	October 30.
Old rubber boots and shoes—domestic	9⅝@ 9¾
Old rubber boots and shoes—foreign	9⅛@ 9¼
Pneumatic bicycle tires	4¾@ 5
Automobile tires	9½@ 9¾
Solid rubber wagon and carriage tires	9¼@ 9½
White trimmed rubber	11 @11½
Heavy black rubber	4¾@ 5
Air brake hose	5¾@ 6
Garden hose	1⅝@ 1½
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾

Liverpool.

William Wright & Co. report [October 1]:

Fine Pará.—Prices have been gradually declining throughout the month. There is no doubt that the large plantation supplies are making themselves felt; in addition to which, we have in the near future heavy arrivals in prospect. With liberal supplies of plantation—which manufacturers can use as an alternatvie grade—we fail to see how prices of fine can command a premium, especially when the extra washing loss has to be taken into account. Receipts for the month are 2,620 tons, including 290 tons Caucho, against 1,900 tons last month, and 2,640 tons last year; totaling 6,460 tons, against 5,650 tons last year.

Antwerp.

RUBBER STATISTICS FOR SEPTEMBER.

DETAILS.	1912.	1911.	1910.	1909.	1908.
Stocks, August 31, *kilos*	475,572	522,401	536,560	244,851	874,514
Arrivals in September:					
Congo sorts	472,624	209,265	211,578	334,265	142,743
Other sorts	21,610	24,370	17,333	58,815	31,658
Plantation sorts	144,736	72,778	42,131	15,389	15,023
Aggregating	1,114,542	828,814	807,602	653,320	1,063,938
Sales in September	406,415	393,269	226,694	255,866	409,777
Stocks, September 30	708,127	435,545	580,908	397,454	654,161
Arrivals since January 1:					
Congo sorts	2,449,414	2,350,081	2,350,698	2,659,293	3,095,954
Other sorts	117,338	343,019	262,114	718,936	480,102
Plantation sorts	982,078	493,527	416,583	192,924	87,107
Aggregating	3,548,830	3,186,627	3,029,395	3,571,153	3,663,163
Sales since January 1	3,515,241	3,339,394	2,989,997	3,769,434	4,015,896

RUBBER ARRIVALS FROM THE CONGO.

SEPTEMBER 24.—By the steamer *Bruxellesville:*

Bunge & Co	(Société Générale Africaine) *kilos*	26,000	
do	(Chemins de fer Grande Lacs)	6,800	
do	(Comptoir Commercial Congolais)	12,900	
do	(Belgika)	600	
do	(Alberta)	500	
do	(Comfina)	300	
Société Coloniale Anversoise	(Aliment. du Bas Congo)	100	
do	(Lomami)	2,500	
do	(Cie du Kasai)	87,500	
do	(Haut Congo)	8,800	
L. & W. Van de Velde	(Comfina)	23,600	
do		4,200	
Charles Dethier	(American Congo Co.)	3,900	
do		2,200	
Willaert Freres		5,000	184,900

Plantation Rubber from the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

[From January 1 to September 21, 1911 and 1912. Compiled by the Ceylon Chamber of Commerce.]

	1911.	1912.
To Great Britain *pounds*	2,098,634	4,797,015
To United States	1,270,529	2,677,659
To Belgium	444,151	759,068
To Australia	27,614	138,874
To Germany	24,516	125,942
To Austria	1,375	45,693
To Japan	39,767	21,139
To Canada	12,067	16,065
To Italy	3,597	5,909
To Russia	....	2,288
To Holland	3,448	2,282
To France	117	2,017
To India	85	100
To Norway and Sweden	....	39
To Africa	35	....
	3,925,935	8,594,090

[Same period 1910—2,001,719 pounds; same 1909—869,018.]

Rotterdam.

HAVELAAR & DE VRIES report [October 11:]

In today's sales about 55 tons were offered, including 37 tons Congo and 12 tons *Hevea*. Competition was very good, but prices, owing to the lower state of the market, did not reach those of the valuations. Congos averaged 3 per cent. below valuations and plantation rubber 5 per cent. below. Congos were to a large extent bought in, while the plantation grades were nearly all sold.

Amsterdam.

JOOSTEN & JANSSEN, AMSTERDAM, September 20, 1912.

Notwithstanding the brisk demand at today's inscription sale, prices were in general a good deal below valuations. The downward movement was, however, not as marked as had been expected, in view of the fall which had occurred in London since valuations were made up. Out of the 65 tons offered, about 51 were sold at 5 to 7 per cent. below valuations. The results showed 5 per cent. reduction on *Hevea* and 7 per cent. on *Ficus* and *Castilloa*.

WEEKLY MOVEMENT OF LONDON PRICES.

[IN SHILLINGS AND PENCE PER POUND.]

May 3, 1912	4/7½	August 2, 1912	4/11
May 10	4/7½	August 9	5/0½
May 17	4/7½	August 16	5/0½
May 24	4/7½	August 23	5/2
May 31	4/7½	August 30	5/1¾
June 7	4/8½	September 6	4/11½
June 14	4/10	September 13	4/9½
June 21	4/9½	September 20	4/8
June 28	4/7½	September 27	4/7
July 5	4/9	October 4	4/7
July 12	4/10	October 11	4/7
July 19	4/10	October 18	4/6½
July 26	4/11¾	October 25	4/6

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GUTTA-PERCH

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A BRIEF HISTORY OF FIRE HOSE SPECIFICATIONS.

IT is the opinion of many that if there is any monopoly or combination of capital now existing in restraint of trade it is the so-called fire insurance trust, as exemplified by its attitude towards the manufacturers of fire department hose.

That which more directly concerns our readers, however, is the attitude of the insurance laboratory theorists towards fire departments and manufacturers of fire department equipment. The manufacturers of fire hose, for instance, some thirty-two in number, have been protesting against the threatened complete domination of these insurance autocrats for the past three years. Their demands being unreasonable and their methods arbitrary, the great majority of the fire hose manufacturers declare that they will continue to stand out against the exactions of these self-appointed censors.

For the sake of argument let us admit that a few, say 10 per cent., of the fire departments of the United States have in the past, for economical reasons, purchased hose of a weight, quality or character not adequate or good enough for their needs, and let us also admit that the large interests of the insurance companies entitle them to respectful consideration. The agitation against poor hose was started by fire department officials in some of our largest cities, which, through false economy and in deference to public clamor, had bought cheap hose in the past. The insurance companies through their laboratories, without consulting reliable authorities on rubber compounding, plunged headlong into the controversy by formulating a set of specifications covering the construction of fire hose which they sent to leading fire chiefs, asking their opinion of them. Those familiar with the elementary principles of hose construction did not take these specifications seriously, others condemned them, but some were led to believe that these had been already established as standard. These specifications contained many incongruities and their circulation created a temporary condition of demoralization in the minds of the manufacturers and fire engineers alike.

A committee representing every fire hose manufacturer in the United States called upon the insurance interest, protesting and seeking some friendly co-operation. They yielded in a way by appointing a meeting with their hose committee. The manufacturers' committee sought to show the insurance committee that it would be impossible to draw specifications covering the construction of fire hose which would obtain for the fire service the best products of the American factories, as now represented by the highest quality brands of the various makers. But it was agreed that minimum specifications for laboratory guidance and standardizing, as a basis of agreement, were possible and desirable and the manufacturers would welcome an alliance with the insurance interest. It was soon manifest to the rubber manufacturers at the first meeting of this joint committee that the insurance members expected by virtue of the power behind them to ride down all opposition to their plan of domination. What appeared then as sane judgment, but later proved to be fox craft, prevailed, and the manufacturers' committee proposed to continue the conference with the distinct understanding that whatever specifications should be compiled would be for use in the laboratories only, and not published or circulated for advertising purposes. It was so agreed. (The laboratory specifications which were the outcome of this agreement were afterwards promulgated—notwithstanding the agreement—by the insurance laboratories.) The manufacturers' committee continued this conference with the insurance committee for the purpose of formulating minimum specifications for fire hose, not to be published but to be used only

as a laboratory standard. The so-called "National Standard Specifications" were the outcome of these conferences.

With this theoretically good fire hose quality established by these specifications, ways and means of preventing the manufacture and sale of hose inferior to the established minimum were next considered. The insurance committee demanded that their laboratory should furnish and attach to each section of hose a label at a cost of 25 cents per label to show that the hose was approved and in accordance with the specifications. The manufacturers argued that to do this they would bring down to one minimum level all brands of the better class of fire hose, as the label would not show that the hose to which it was attached was in any respect better than the specification requirements, and would eliminate all incentive to improve quality in the future. For these reasons, which must be apparent to any unprejudiced mind, the manufacturers could not agree to this proposition, and such was the unanimous opinion, and it was so unanimously voted.

The manufacturers in order to show their integrity of purpose submitted the following plan:

Each and every manufacturer of fire hose was to send to the Chicago laboratories of the insurance companies a section of each and every brand of fire hose manufactured by him or his company, guaranteed to be at least within the specifications proposed as a standard. The laboratory would upon testing, and finding said sections of hose to be at least within the specifications, at once register and approve each brand. By this means it was hoped to establish a long list of brands of fire hose, not one of which would be theoretically poor from the laboratory standpoint, and leaving the field open for competition in quality, which would otherwise be prevented by the use of one standard specification quality.

As part of the proposed plan of registering brands, the manufacturers even went so far as to agree to furnish the insurance laboratories with a list of their sales of fire department hose each month, with the understanding that they might send representatives to any city or town to which hose had been shipped, and there test it; and should any be found inferior to the specification standard, and not strictly in accordance with the sample on which the brand was approved and registered, that the approval should be withdrawn, the name of this particular brand and manufacturer stricken from the list, after a trial by a committee consisting of one expert chemist appointed by the manufacturers' association, one by the insurance laboratories, and the third by a joint selection.

All these overtures on the part of the manufacturers were finally turned down by the insurance companies, the specifications which were compiled by the manufacturers confiscated and promulgated; and they are now endeavoring to force their adoption by the manufacturers and fire departments as the one standard for fire department hose.

The manufacturers resent the accusation made by the insurance companies that their standard brands of fire hose had deteriorated in quality. They maintain, and stand ready to prove, that the quality of their best products has been improved from year to year, as experience and facilities for manufacturing have advanced.

The rubber manufacturers were the creators of the present type of fire hose. It took them years to supplant the cumbersome leather article. They have kept pace with fire needs wonderfully. That the last word has been said in fire hose improvement they deny. Nor do they propose to allow any interests to handicap them in further progress.

A LITTLE LIGHT ON TIRE ADVERTISING.

AN advertising agency, which has special facilities for informing itself regarding the advertising being done and being planned by the tire manufacturers, has furnished us with a list of ten of the leading tire makers, together with the amount of their advertising appropriation for the current year. These appropriations range from $20,000 to $450,000. One company is spending this large sum; one other appropriated for the year $350,000; two others $250,000 each, and two others $100,000 each. The aggregate advertising appropriations for these ten companies amount to $1,666,000—a very substantial sum certainly. And yet this represents the advertising outlay of only ten companies; and this list, while to be sure it includes most of the large companies, does not include them all. It would undoubtedly be safe to say that American tire manufacturers all together are spending this year at least $2,500,000 in advertising. This is about 2 per cent. of their gross receipts from tires, so that while the amount seems large, considered on the basis of percentage of the business done, it is not at all extravagant.

SHIPPING RUBBER DIRECT TO NEW YORK.

IN the exceedingly interesting addresses made by Mr. Crosbie-Roles and Mr. C. E. S. Baxendale, at the banquet held at the Hotel Plaza at the conclusion of

the recent rubber show—which were reported in our November issue—a good deal of stress was laid upon the desirability of having rubber shipments from the Middle East come direct to New York rather than having them go, as now, to London, Liverpool, or some continental point, to be re-shipped in new packages. This matter was given quite an extended mention in Mr. Baxendale's report to the Planters' Association of Malaya, written at the conclusion of the rubber show—an abstract of which appears in this issue.

Special emphasis was laid upon the two great disadvantages in the present system of shipment to Europe and re-shipment to New York; namely, that the identity of the rubber was largely lost, as it came to New York in mixed packages; and further that the repacking was often carelessly done, resulting in the receipt of the rubber at this port in very much poorer condition than would have been the case if it had been shipped direct. In Mr. Baxendale's report he speaks of a New York importer who showed him a small parcel of plantation rubber containing a most heterogeneous mixture of crêpe of every conceivable shade.

There is no sound reason whatever for this unnecessary handling of plantation rubber on its way to New York. It is attributable simply to the fact that until within the last three or four years plantation rubber had not assumed very considerable proportions, so that New York importers had not given it serious consideration. But that situation is now changed. In 1911 New York imported 6,590 tons of plantation rubber, and in the first eight months of the present year these imports had increased to over 8,000 tons; and with the very rapid increase in plantation production —which in 1912 will easily double the output of 1911—this question assumes a condition of such importance, that it is hardly credible that the present system will be much longer continued.

Considering the fact that America is using three and a half times as much rubber as England, three times as much as Germany, and five times as much as France, there hardly seems any reason why crude rubber should be shipped to any port in any of those countries to be re-shipped from that point to this great center of consumption. Moreover, the present outlook is that America's proportionate consumption of rubber will still further increase. The automobile manufacturers are planning a production of 600,000 cars for 1913, which, with the cars which will be in use from the product of earlier years, will make a total number certainly in excess of 1,000,000, and it is a conservative estimate to place the necessary tire production for 1913 at 5,000,000 tires. There seems to be no good reason, therefore, why the present indirect and wasteful shipment of plantation rubber to New York should be continued. Direct shipments mean expedition and economy, and they would enable American manufacturers to get what the plantation ships them, and not some indiscriminate mixture concocted in Europe.

ENGLISH MANUFACTURERS ALARMED.

NEWS comes across the water that the English manufacturers of automobiles are greatly alarmed over the large and constantly increasing number of low and medium-priced American cars which are being sold to the people living on that island. It is stated that at a recent conference, 15 or 20 of these manufacturers met and agreed to organize a company with a capital of $25,000,000, to manufacture inexpensive cars to meet this American competition.

It is quite likely that their fears are not groundless, because the low-priced car has proved exceedingly attractive in this country, and would naturally make the same appeal to people on the other side. The Ford company, whose product is of the less expensive sort, are said to be manufacturing at a rate that will bring their production for the present year up to 75,000 cars, and it is further stated that they are making plans to increase this voluminous output to something like 200,000 for the coming year. And other makers of low and medium-priced cars are rapidly increasing their production facilities; so that the number of cars of this class likely to invade England during the coming year will greatly exceed those of any previous invasion.

Two methods are suggested by the English for meeting these inroads on their trade—first, as stated above, the formation of a large corporation in which many of them are to be jointly interested for manufacturing cars of low cost; and, second, an appeal to the government to put a prohibitive tariff on American automobiles. Neither move is likely to be very effective. Obviously, if English manufacturers could compete in this department of automobile production profitably, they would naturally embark upon it without waiting for the organization of any combination; and if they cannot compete profitably by in-

dividual effort, they hardly will be able to by any concerted effort; as agreements of this character, entered into by competitors in any line of work, are never likely to be permanently satisfactory or efficient.

The second contingency—the levying of prohibitive duties on low-priced American cars is hardly likely to appeal to the Government, in a country like England, that has so long prided itself on its freedom of trade.

COMPELLING THE PRESS TO SHOW ITS HAND.

THERE seems to be some opposition to the Federal regulations that recently became operative, requiring publicity in regard to the ownership of newspapers and other periodicals. The act went into effect last August and specifies that a sworn statement shall be made twice a year, filed with the Post-Office Department, and also printed in the publication itself, giving the names and addresses of all the officers, the name or names of the owners, and—where the publishing company is a corporation—a list of all stockholders holding over one per cent. of the stock; together with the names of all those who hold mortgages or other liens upon the publication.

At a convention of the Illinois Daily Newspaper Association, held late in November, in Chicago, the following resolution was unanimously adopted:

"Resolved, That this association views with disapproval the growing tendency of the United States Government toward paternalism in matters pertaining to the press, and condemns the new law requiring publicity in matters in no wise concerning the general public."

But, is the association right about this matter? Is it a fact that the general public is in no wise concerned with the ownership and control of the daily press and other publications? The daily press in particular exerts an incalculable influence in this country. Is it not eminently proper that the public should know who is back of this influence? The press constitutes the greatest power existing in this country today. Is it not wise and salutary that the public should know who is exercising this power?

If a man owns an automobile he is compelled to register that ownership and mark the car in such a way that this ownership can be easily identified. That is because the automobile, while a very useful device, is recognized as possessing a certain capacity for doing harm. Should the press, which possesses a power for doing evil (it is conceded, of course, that this great power is usually exercised for good) which is immeasurably greater, be allowed to hide under the cloak of anonymity?

There should be no diminution of the power of the press. Its freedom of expression is one of the safeguards of a republic; but freedom of expression should not mean freedom from responsibility. Those who control the press and direct its activities should stand in the open. The Illinois Association is wrong when it says that these matters in no wise concern the general public. There is nothing that concerns the general public more.

RESTRICTING GENERAL EXPOSITIONS.

AT the Exposition Congress recently held in Berlin, an international agreement was signed restricting in future general expositions—usually referred to as "World's Fairs"—to intervals of three years, and establishing an interval of ten years between two general expositions in the same country.

These regulations seem sane and reasonable, for too great frequency in the holding of world's fairs must, almost inevitably, mean improper preparation for these events, with disappointing results; and even where the results are not disappointing, too many expositions are likely to pall upon public appreciation. The great world's fair to be held in San Francisco in celebration of the opening of the Panama Canal has substantial warrant. In the first place, more than ten years will have elapsed since the fair at St. Louis, and in addition to that fact this will be the first great international exposition ever held in the western half of the United States, and the occasion which it will celebrate is one of the epochal events in the world's history.

The strictures that properly are brought against frequent general expositions do not apply to trade expositions, where in some industries it is found, not only interesting, but highly profitable to have an exhibition every year; in fact, to hold several of them each season in different parts of the country, as in the automobile trade. In England it has been found conducive to the welfare of the trade to have rubber expositions once in three years. It is quite possible that such a plan would prove beneficial to the trade in this country also. In any event, not a few of the exhibitors who took part in the recent New York show expressed a desire to try it over again.

IT IS AN ANCIENT SAYING IN THE rubber footwear trade that "one early snow-storm is worth two late ones"; and experience has shown this to be quite true. When snow appears in noticeable volume in November, people say "We are in for a hard winter," and they start for the shoe store to get rubber boots and arctics. When snow holds off until February, these same people remark "Winter is about over, we will make our old rubbers do." Therefore the rubber footwear men were particularly fervent this year on Thanksgiving Day—with much of the country under a foot of snow.

India Rubber and Wireless Telegraphy.

A FEW years ago when the steamship "Republic" was run into and sunk off our coast, we got our first idea on a large scale of the usefulness of wireless telegraphy. Most of us can recall the manner in which Jack Binns stuck to his post on the sinking liner and sent his aerial calls for aid which fortunately brought succor in ample time. Then we realized something of the human benefits of Marconi's splendid work. That accident led to a broader adoption of wireless installations for sea-going passenger craft, and it also served to emphasize some of the limitations of the apparatus then in commercial service. It was well that such was the case, because there was another and still more disastrous accident yet to come, before the full significance and the need of the universal adoption of this means of communication at sea could be made plain. Even now, the mere mention of the ill-fated "Titanic" fills us with a sense of awe. But out of that dreadful catastrophe survives the story of Phillips' splendid heroism as he stuck to his wireless instrument until the moment of her final plunge—calling incessantly to his fellow operators far spread upon the darkened sea and asking that they hasten their captains with aid. But for those Hertzian waves that bore to the remote ships this message of need, the loss of life would probably have been still greater.

To the dealer in and the manufacturer of rubber it must be a source of interest, if not pride, that caoutchouc plays no inconspicuous part in the setting and the contributive equipment of the best of these wireless apparatus. Thanks to the courtesy of the Marconi company, we have been able to visit one of their local stations. Of course, we do not want to convey the idea that India rubber is an integral part of the dispatching or the receiving instruments so far as the wireless functions are concerned. India rubber merely serves to safeguard these operations, and in doing this to contribute to their efficiency. Insulation of the best is an absolute necessity in this department of electrical science: a necessity in carrying the dispatching impulses to the towering aerials without loss of energy through leakage, and still more necessary in preventing the

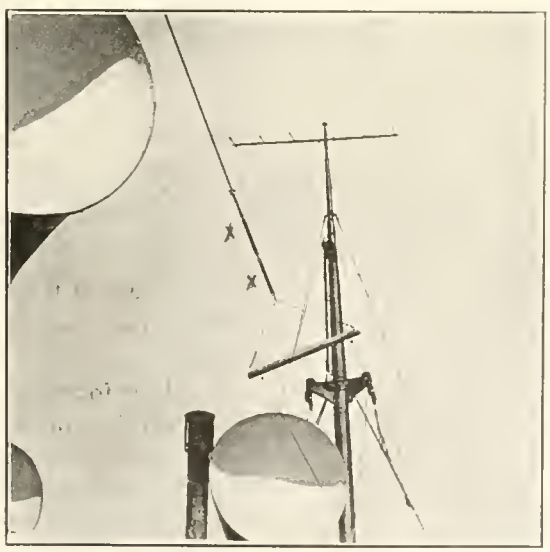


FIG. 1. SHOWING HARD RUBBER INSULATORS.

diminishing wave-force of a sending station far away from being further impaired as it travels down the waiting wires to the delicate receiver. Leakage in the first case means a restricted zone for the dispatched message; leakage in the second case might render a call for help futile.

Only the best of insulation will answer, and so far nothing

FIG. 2. SHOWING HARD RUBBER INSULATORS.

has been found equal to either hard or soft rubber for the various applications to which they are put. From the time the Hertzian waves reach the antennae 'way up in the air with their arriving message until they transmit their feeble impulses in faint ticks to the sensitive receiver, and thence to the operator by means of microphonic ear-pieces of a telephone, hard and soft rubber play a frequent part in the get-up of the apparatus and its installation. It would only confuse the average person to have these several parts designated by their technical names, and to the rubber man it will probably suffice to know that his commodity is so essential to this development of modern wizardry. What will also be a source of satisfaction to the trade and the manufacturer is that every advance in wireless and every broadening of its application, but serves to increase the demand for rubber.

Substantially every United States naval vessel, including most of the submarines, now carry wireless equipments, and this means of long-range communication has become an indispensable factor in the management of our fleets and squadrons upon the sea. It will undoubtedly prove of vital importance in the massing of our forces and the skilful interception of our enemies in the next great naval battle—if we have one. It was used by the Japanese and Russians during their recent struggle, but unfortunately for the Czar's fleet, the Japanese knew their enemy's code, and were able to intercept those confidential messages. Since then, however, the wireless expert has developed a system of "tuning"—really regulating the length of the Hertzian wave, and by this means the receiving instruments are made receptive only to the proper or prescribed impulses. This is getting somewhat into the technicalities of the science, but it only shows how one achievement leads to another.

Perhaps the most astonishing advances in wireless have been in the direction of securing greater range. Where it used to be a matter of less than fifty miles a few years ago, it is now possible to send Hertzian waves over a zone of several thousand miles in diameter, and to make these impulses so definite that the signals can be picked up and read distinctly at those

ranges. A splendid proof of this was given shortly after the loss of the "Titanic," when we sent to the mid-Atlantic two of our naval scout cruisers for the purpose of patroling the area near the steamship lanes upon which dangerous icebergs wandered south. These ships, the "Birmingham" and "Chester" alternated in this duty, and by means of their powerful apparatus, were able to send daily warnings to the far northern coast of this continent whence the news was relayed to our hydrographic office for distribution among our Atlantic ports. There is no telling how many lives and tons of shipping were thus saved from needless peril.

As an outcome of the "Titanic" catastrophe, Congress has recently passed a rigid law prescribing the more general installing of wireless equipments upon all sea-going passenger vessels. It will be necessary for every ship to carry at least two operators and to have an auxiliary apparatus which will be available for service in case of failure of the regular outfit. This will mean still more rubber. But Congress went further than this: while the foregoing provision went into effect upon the first of October of this year, another requirement of the same law is that even freight vessels, after the first of next July, shall also be provided with wireless. The reason for this is plain, quite apart from the immediate protection of the vessels concerned: freighters are quite able to render assistance and to be of material aid to a damaged ocean greyhound, and by substantially compelling all ocean-going craft to carry this means of communication, the chance of detecting danger and giving prompt warning to others is thus correspondingly bettered.

Figures 1 and 2 illustrate the application of hard rubber insulators (marked X in the cuts) in the aerials of wireless telegraphy. In order to keep these insulators in a more efficient condition, they have to be coated at least once a month with vaseline. This makes them shed water better and keeps the surface of the rubber from becoming coated with carbon from smoke. Either water or carbon would constitute electrical conductors and, to that extent, neutralize the insulation.

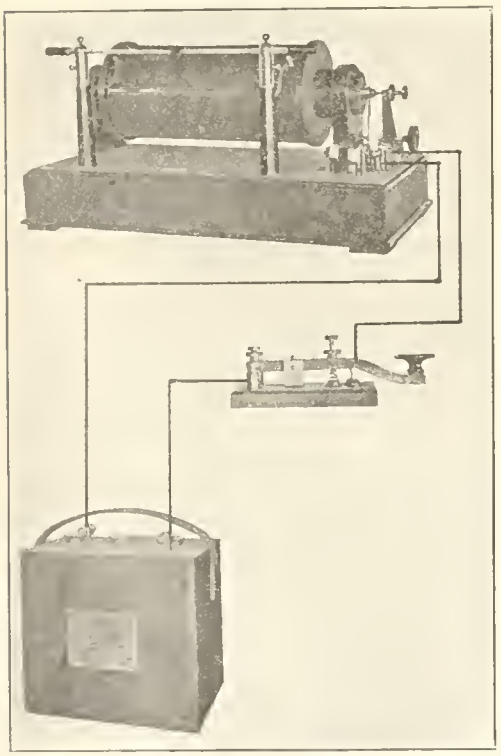


FIG. 3. THE AUXILIARY WIRELESS OUTFIT.

FIG. 4. WEATHER PROTECTED INSULATOR WITH RAIN CONE.

On the 23rd of July the President of the United States signed a bill making it mandatory that all vessels carrying fifty passengers and upward should be equipped with an auxiliary wireless outfit to do duty in case the prime installation should fail. Sixty days were allowed to accomplish this innovation, which involved the making of quite 250 auxiliary sets and their delivery to the various vessels. The Marconi Company accomplished this by working its manufacturing plant night and day and calling into service two other establishments. This involved an expenditure of substantially a quarter of a million of dollars, and many of the instruments were delivered by express rather than by freight in order that they could reach their destination and be ready for service inside of the time limit set by Congress. The law was for the better protection of the public in transit upon the sea, and the Marconi Company made every effort to facilitate subscribing to this law.

The auxiliary set, shown in Figure 3, draws generously upon the rubber trade for its get-up—the cylinder, the two prominent upright posts, and much of the apparatus on the right above the box being made of hard rubber. The storage battery is also held within a hard-rubber box.

Figure 4 shows a form of weather-protected insulator showing the hard-rubber tube passing from the rain cone through the top of the operating house or station.

A RUBBER PIPE MAKES DIVING EASY.

ANYONE who has a *penchant* for diving can now follow his inclination without cumbering himself with a helmet to go over his head and a heavy suit to cover the body, for an inventive genius connected with the French navy has recently given a demonstration of a simple diving device which he has invented. It consists of a mouth-piece kept in place by a teeth-grip and by a rubber band going around the head. This mouth-piece, which is not more than 10 or 12 inches long, and small in its other dimensions, is connected with a rubber pipe of any length that the diving operations may necessitate, at the other end of which is an air pump, such as is used to inflate auto tires. The sailor who gave the original demonstration walked into the Seine and disappeared into its depths; an operator kept the air pump in motion so as to supply the diver with the necessary amount of air, and air bubbles along the surface of the river showed what progress the subaqueous perambulator was making. This mouth-piece is so constructed that the diver's exhalations are not interfered with, while his inhalations are amply provided for by the pipe and the air pump.

A RUBBER LIFEBOAT.

SINCE the horrible *Titanic* disaster hundreds of inventive minds—we might say, with just as much accuracy, thousands of inventive minds—have been busy on the lifeboat question, which is natural enough, considering the impressive way in which the lesson of the need of life boats was taught—not only to the steamship companies, but to the traveling public. Among the results of all this inventive application there is one device invented by a Jerseyman which is particularly interesting to rubber men, as it is an all-rubber boat. The frame is made of hard rubber and over this frame, both outside and inside, are laid sheets of tough rubber cloth. The frame is fairly thick, leaving air chambers in the open places which are inflated. This gives the boat buoyancy and at the same time makes practically the whole boat a pneumatic buffer in case it comes in contact with any other object. The boat can be made of any size.

On first thought it would appear that a wooden frame would be quite as serviceable as the hard rubber frame. The efficacy of the boat lies in its double rubber covering with the intervening air chambers.

A MODEL CALENDER ROOM.

By Morris A. Pearson.

IN preparing this article on this important subject, the writer has dealt solely with the mechanical side of the question. During the past ten years, he has had an excellent opportunity to study the mechanical details of a great majority of the important installations in this country, and has incorporated in this article the most desirable features, as well as a few new ideas.

The general layout of the room, as shown, is practically the same as one recently installed by a large rubber factory in the Middle West, though it differs materially in many details. The various mechanical features, however, are applicable to almost any sized installation.

The room is 75 feet wide by 150 feet long, with a 1½-inch maple floor laid on concrete. On either side of the room is located a line of six mills with rolls 20-inch diameter by 60-inch face. Each line is driven by a 300 horsepower motor, with reducing gear, located midway between the mills, there being three on each side of the drive. Located between the mill lines, are twelve 3-roll calenders, with rolls 24-inch diameter by 66-inch face, and equipped with individual motor drives. A central passageway, 8 feet wide, extends the whole length of the room.

MILL LINE DETAILS.

The original drive for the mill line consisted of a motor, directly connected with the line shaft, running at about 100 r. p. m. The size of the motor, to give the power required at this slow motor speed, necessitated a pit in the floor about 17 feet by 14 feet by 3½ feet deep.

The drive shown here is one of recent design and has the motor located directly over the line shaft, where it is easily accessible. The power is transmitted from the motor to the line shaft by cut double helical gears enclosed in oil-tight casings. Automatic lubrication is provided by means of an oil pump, connected with the lower part of the casing, which delivers the oil to the gears directly at the point where needed. Gearing of the cut double helical type is far superior to spur gearing, in that it allows a more compact design and reduces vibration, wear and noise to a minimum. The only part of the drive to extend below the floor is the lower part of the gear casing.

The motor is connected with the reducing gear by a magnetic coupling, providing for a safety stop, which is absolutely instantaneous and which can be operated by hand or foot trips from any mill on the line. A magnetic brake, used in connection with this coupling, is automatically applied when the coupling is cut off. The power required for energizing a 300 horsepower magnetic coupling is only 2 amperes at 120 volts, and for the brake 1.75 amperes at 120 volts—both continuously. It will thus be seen that the operating cost is comparatively nothing.

All line shafting is 6⅛-inch diameter, providing for duplicate pinions and bearings throughout. It is located high enough to allow everything connected with the mill line to clear the floor.

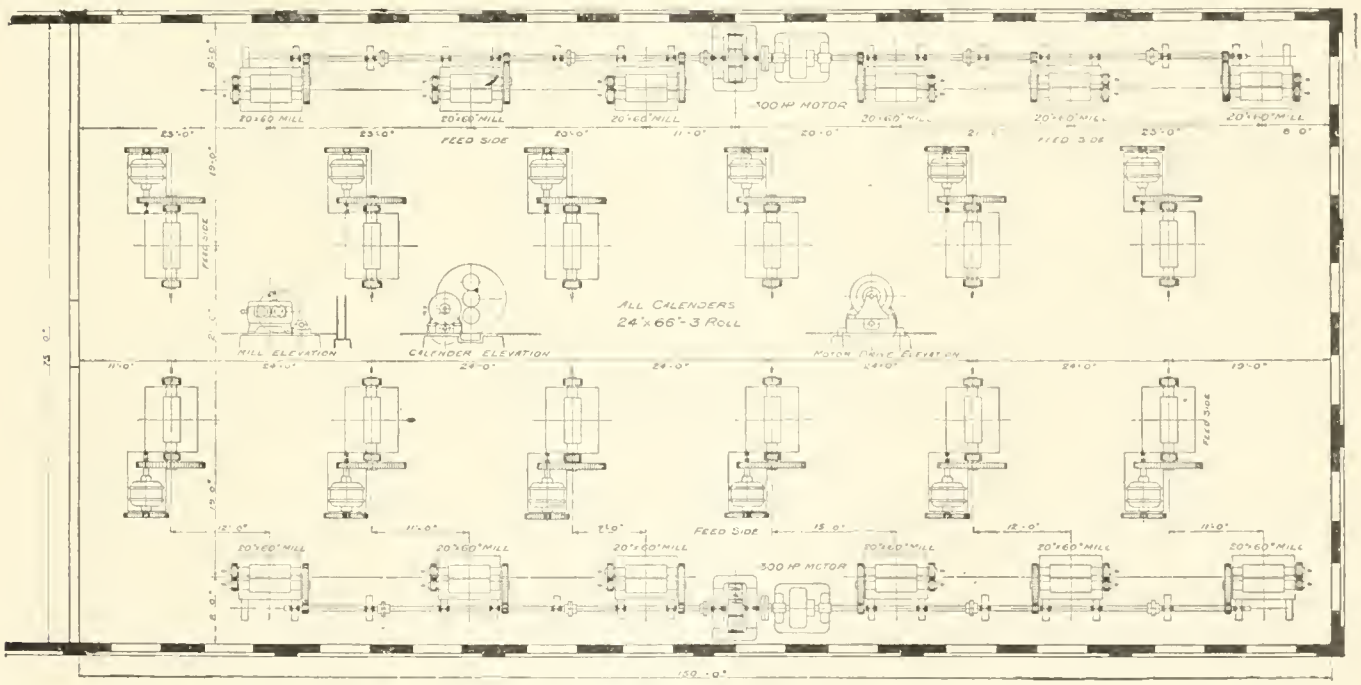
MILL DETAILS.

The mill housings are of cast iron, with caps of O. H. cast steel, giving the greatest strength possible to both frame and cap at the joint where they are fitted. This style of construction appears to be preferable mechanically to the present method, where the cap is made of cast iron and separate bars of steel are fitted between the frame and cap to secure the same results. The adjusting screw nut is so held in the housing that both the nut and screw can be removed from the frame at a moment's notice, without disturbing any other part of the mill. The rolls are of chilled iron, turned smooth and fitted with steam connections of the improved type, where the inlet pipe is located exactly on the center of the roll.

The roll bearings are full brass-lined and are interchangeable throughout. They are designed to carry automatic guides, which allow for the greatest possible working space on the rolls.

Special attention has been given to the gearing, the involute shape of tooth being used throughout. The drive pinion is split and flanged on the outer side only, so that it may be drawn out of mesh from the drive gear when it is desired to "cut a mill out." The connecting gears are of ample pitch, with no flanges, both being of O. H. cast steel. The large pitch and involute shape of tooth result in satisfactory service on a large range of centers, which fact will be found to be a distinct advantage as the rolls wear down. Both connecting and drive gears are fitted with slush-pans and gear-guards of convenient design.

The speed of the back roll is 24 r. p. m. and the front roll 16 r. p. m., giving a friction of 1½ to 1.



PLAN OF A MODEL CALENDER ROOM.

CALENDERS.

The calenders, which are 24 inches by 66 inches 3-roll machines, have individual drives, each machine being driven by a 75 horsepower variable speed direct current motor. The speed reducing gears have cut double helical teeth to reduce the vibration and wear to a minimum. The motor speed has a variation of 1 to 3 and permits a delivery on the calender of from 5⅓ to 16 yards per minute when running friction and from 8 to 24 yards per minute when running even. The motor controller is connected with a rod trip, located in front of the rolls, for emergency use.

Compact and easily operated clutches are used on the even and friction connecting gears, doing away with the antiquated method, requiring the operator to draw and drive keys in the gears when it was desired to change from even to friction, or *vice versa*. Both top and bottom rolls are adjustable from one handwheel, where are also located levers controlling the jaw clutches on the adjusting worm shafts. Change from quick to slow adjustment of the top roll may be made by shifting one clutch.

On either side of the calender are located the let-offs and wind-ups, the former having the hand type of brake and the latter driven by reversible gearing and adjustable by a stationary handwheel. An extended bracket placed on either side of the rolls provides for readily adjusted locations for tension rolls, knives, pressure rolls, etc.

The whole machine, with the exception of the adjusting mechanism of the lower, and a part of the speed gear, stands clear of the floor and all gearing is provided with guards and slush pans.

DEPARTMENT STORES GETTING THE RUBBER TRADE.

ONE of the best arranged displays of india-rubber wares for family trade is shown in a variety store in a small city within the metropolitan zone of New York. The space for the displays of staple and novel wares of rubber and gutta-percha goods is ample on shelves and counters, and the salespeople are well instructed by the salesmen of the makers of the wares, so as to make the buyers appreciate the merits of what is proffered to them. This small city is the home of more than one hundred manufacturers and distributors of rubber goods whose main offices are in New York. A number of these business men pass this particular variety store every day; they know the proprietor, and keep him informed about whatsoever is new in manufactures for household trade.

In an interview with a representative of THE INDIA RUBBER WORLD, the keeper of this variety store spoke as follows: "My frequent window displays and well advertised sales of rubber goods for family trade, are results from what might be called a campaign of education carried on for my benefit by friends in town who make or distribute such wares. I started out here to carry on a department store. But I found out that my ideas were, in that respect, years ahead of the times. I found that I must use my space for goods in a few fast selling lines. I gave no thought to rubber goods. I supposed that the local hardware and apothecary stores carried good lines in rubber products, such as families wanted. We have no factories hereabouts, so there is no market for belting or other rubber articles for industrial plants. On a venture, I laid in a small stock of rubber clothing and boots and shoes. There I stopped for a while. Then we began to have inquiries for rubber hot-water bottles, syringes and other wares of descriptions in which druggists specialize. I instructed my clerks to inform customers asking for goods that are commonly kept by drug stores, to go thereto to supply their wants. You see, in our city a great many families come every year from other places, and it takes them some time to find out where to go to buy for their household in a place like this, which is large in area but small in population.

"Sometimes the customers, whom we advised to go to the drug stores or the hardware stores for certain articles of rubber, would come back and say that those merchants did not have the goods in stock, or had none but inferior products that were unsuitable for well-to-do families. Then I decided to increase my lines of rubber goods, and as I had ample window and shelf-room for displaying such goods, I soon found out by my books that I was doing a profitable trade in rubber goods, which my friends in the local hardware and drug store trade told me were to them not worth keeping in stock. The reason those men gave me they believed to be correct. But I am satisfied that the explanation of their small sales was because they never made window, counter or shelf displays of such wares, and never advertised anything in the rubber line. They kept such goods where customers could not see them. Two drug stores in town used to keep fair lines of rubber goods for the household trade. But both stores now give almost one-sixth of their space to cold and hot beverages, and almost one-eighth to confectionery, ice cream, ices and light luncheon, and almost one-half the space is given to proprietary medicines and tobacco, cigars and cigarettes. In such stores, and the number thereof comes to above 40,000, taking the nation throughout, india-rubber wares, which years ago made quite a department in a retail drug store, are now what might be called sidetracked. That is to say, only a few articles are kept, as compared with the variety shown before most of the drug stores became confectionery, ice cream, luncheon and cigar shops.

"In our city, and in a number of adjacent cities, the hardware stores do not keep as large a variety of rubber goods as they did years ago. This is because in all cities, towns and villages in which a good deal of building, and the repairing and improvement of buildings by mechanics goes on for nine months in the year, the hardware stores have become mainly distributing agencies for building trades material, in heavy hardware and allied lines. In such stores to-day one sees little in rubber goods, except garden hose, and small stocks of packing and belting for farmers and small mechanical plants. Of course these druggists and hardware retailers, who keep but a few kinds of rubber goods are always ready to tell customers that they will order from the makers or distributors of rubber products, what is not in these retail shops. But the consumers want what they want in rubber, as in other wares, delivered on the spot."

This story, told by the proprietor of a department store in one of the suburban cities outside of New York, could be duplicated by many more, in similar positions, all over the country, and it is not only in the large cities and the suburbs that this marked change has taken place. It has occurred in practically all the smaller towns. The drug stores in the last ten years have devoted more and more of their space and attention to soda water, cigars, cigarettes and confectionery, and in some places to a light lunch as an adjunct to the soda-water fountain. The rubber department in the ordinary drug store, while not actually crowded out, has been much curtailed. But people must have rubber goods, so the enterprising department and general stores have not been slow to seize upon this line of trade.

CANADA USING OUR AUTOS.

A large number of the auto cars used in Canada are of American make. Exports to that country from the United States increased from 1,230 in 1909 to 4,687 in 1911, and this does not take into consideration the separate parts which were exported to that country and assembled on the other side of the line; nor does it take into consideration the cars made in Canada by the Canadian branches of American factories.

Mr. Baxendale's Report on the Rubber Show.

MR. CYRIL BAXENDALE, representative of the Planters' Association of Malaya, has written a report to that association covering the recent Rubber Exposition held in New York, which is exceedingly valuable as giving the viewpoint of the Eastern planter. This interesting paragraph is found at the very beginning of his report: "Owing to the extraordinary development in the manufacturing business (both in the U. S. A. and Canada) and the keen desire of Americans to learn more about plantation rubber, I am of the opinion that this exhibition will prove of greater value to our community than either of its predecessors, considerable as their value no doubt was."

He states that the exhibit of rubber made by the Federated

CYRIL E. S. BAXENDALE.

Malay States was visited by representatives of nearly all, if not quite all, of the rubber factories on the American continent, and he shows the appreciation in which they hold plantation rubber by citing the increase of plantation imports in the port of New York, the year 1911 showing imports of 6,590 tons, while the first eight months of 1912 show imports of 8,067 tons.

He lays a great deal of emphasis on two great disadvantages under which plantation rubber is now placed; one is the lack of uniformity in tensile strength, and the other, which is attributable in no way to the Eastern planter, is the very poor method in which this rubber is packed for the New York market, coming in rough wooden boxes with chips of wood mixed in with the rubber. This bad packing is due to the carelessness of the European shippers, who do not forward the rubber in the original packages, but repack it themselves in an exceedingly slovenly way. He speaks of an American importer who showed him a parcel of rubber about 5 pounds in weight which contained a mixture of about thirty scraps of Crepe of every conceivable shade. This parcel, according to the importer's statement, is a fair sample of the condition in which plantation rubber is received at this port. This importer strongly favored direct shipments from Malaya and also spoke of the need of stamping all plantation rubber with the name of the estate or with some other mark of identification.

Mr. Baxendale visited quite a number of the leading factories in the United States and Canada, and gives a great deal of information regarding American manufacturing processes that cannot but be of interest and value to the Eastern rubber growers.

One manufacturer recommended, in order to bring about a uniformity of importations, that a plant, or plants, be established on the estates for testing the rubber before it is shipped out; these plants to consist of the following apparatus: First, an acetone extracting apparatus to ascertain the percentage of resin; second, a machine for testing tensile strength; third, a mixing machine; fourth, a vulcanizing plant, and fifth, a miniature washing plant—the expense of such a testing laboratory, where it is too much for one estate, to be borne by a group of estates, all of them utilizing its facilities. This same manufacturer said that he was prepared to pay from 5 per cent. to 10 per cent. over the current prices if he were assured of the rubber's uniformity up to the following standard:

Tensile strength.....not less than 1,750 lbs. per square inch.
Stretch.....not less than 6½ times.
Resin.....not more than 2 per cent.

Mr. Baxendale quotes another large manufacturer as saying that he had placed his first order for plantation rubber since visiting the New York Exhibition, adding that no information that he had ever received before through correspondence or conversation had aroused anything like the interest in his mind in the product of the Middle East that had been inspired by his personal inspection of the fine exhibits in the Malaysian and Ceylon courts. Mr. Baxendale speaks of the great care that should be taken in the using of artificial coagulants and the necessity of keeping them at the lowest possible limit. He says the general opinion among manufacturers seems to be that acetic acid if used in very small quantities is harmless, but that no other coagulant should be used in the bulk until there is absolute proof that it can be used without injury.

He states his conviction that Mr. Manders and those associated with him in organizing the exhibition held in New York have done a very genuine service to the plantation industry, as it enabled the planters to bring their product before the personal attention of their best customers, and he concludes his report as follows: "I must express my appreciation of the kindness I received in the United States and Canada, from all the leading representatives of the trade. The freedom with which manufacturers discussed every detail of their business and accorded their permission to use any information they gave me for this report, is the best evidence that their experience with plantation rubber has been sufficiently satisfactory to encourage their desire to improve the acquaintance."

IMPROVED APPLIANCE FOR CUTTING RUBBER.

THE "Ceylon Observer" quotes the following description of a patent application which has been accepted by the Registrar of Patents:

"Improved appliances for cutting rubber whether in sheet or crepe or otherwise and other substances.

"The appliance consists: (1) Of a long knife hinged at one end to a table and capable of moving about that hinge in a vertical plane, being guided in that plane by providing large vertical surfaces of contact at the hinge as well as, when necessary, by providing a vertical spring guide or guard at the end of the knife farther away from the hinge and against which the knife bears in its descent; (2) of a blade fixed in a vertical plane to the table and against which the side of the movable knife bears and so provides the shearing action required.

PRINCIPLES OF PLANTATION RUBBER CULTIVATION.

THE history of plantation rubber is one of the most prominent features of modern commercial progress. Beginning with the despatch of Pará seedlings to Ceylon in 1876 by H. A. Wickham, the pioneer in this work, it has assumed enormous proportions and is still growing. As the German Colonies have been among the last to take up the question, interest attaches to a paper read by Dr. E. Marckwald at the recent Congress of Applied Chemistry, entitled "The Treatment of Rubber on Plantations, with Particular Reference to Personal Experiences."

Dr. Marckwald last year visited German East Africa and published his experiences in a booklet reviewed in THE INDIA RUBBER WORLD of March 1, 1912 (p. 269). This paper deals with the general question of plantation rubber, and thus brings out various new points, following up and supplementing his previous remarks.

SCIENTIFIC PLANTING.

It might have been expected that the mistakes committed in the German colonies, caused by insufficient experience, would have been avoided elsewhere, but such has not been the case. Even in the English colonies, it is remarked, scientific and practical tests have not been carried out to the anticipated extent. It is added that today the best wild rubber, Brazilian Pará Hard Cure, is so far superior to plantation rubber that the latter, notwithstanding its attractive appearance, cannot be used in articles of high quality.

HISTORY.

The history of plantation rubber is dealt with, its well-known features being brought out. Its first beginning is said to have been in 1861, when the Dutch forest authorities established *Ficus* plantations in Java, which by 1864 had attained a certain degree of importance. Being, however, neglected, they fell off, so that the despatch of seedlings to Ceylon by Mr. Wickham in 1876 was really the start of the industry, the aggregate production of which in 1911 was about 14,000 tons. This quantity, it has been estimated, will be doubled in 1913. The favorable regulations made by the government of the Malay States contributed to the growth of plantations in that quarter. Lands are there leased for the duration of one life, at the rate of one dollar per acre per year, until the trees are in bearing, when the rent is advanced to three or four dollars a year.

GERMAN POSSESSIONS.

The German plantation industry dates from the year 1892, when cuttings of *Hevea* were first sent from Ceylon to Kamerun. It would seem that the German authorities, in their justifiable attempt to remedy abuses, have shown themselves disposed to place obstacles in the way of planters acquiring concessions of lands.

PRINCIPLES OF RUBBER PLANTING.

In covering this subject, Dr. Marckwald touched on its detailed features:

SEEDS.—The selection of seeds is a point which, in his opinion, does not receive sufficient attention in any country. Sowing takes place without any discrimination, and to the planter's astonishment, trees planted on the same soil, with the same girth and tapped at the same time, give yields differing as much as tenfold. This fact indicated the mixed planting of high and inferior grades of seed.

PLANTING.—After dealing with the question of the best time for planting, Dr. Marckwald controverts the assumption that trees with a large number of branches give more profitable yields. On the contrary, the cost of tapping in such cases is 30 per cent. more than the normal rate, which reduces the profit.

DISTANCE.—Plantations being usually valued in accordance to the number of trees, efforts are made to plant as closely as possible. The Malaya plantations were some years ago planted on the scale of 12 x 12 feet, but the average scale is now 17 x 17 feet. Doubts were expressed whether the latter distance ensures the best results, while narrow intervals hinder the tree from developing its fullest dimensions. The yield of *Castilloa* per tree in German New Guinea was increased by widening the distance for planting, from 1 ounce to 9 ounces per tree within a few years. *Manihot* plantations in German East Africa, Dr. Marckwald found, planted 7 x 10 feet, 10 x 10 ft. or 10 x 17 feet, while he considered 17 x 17 would have been right.

TAPPING.—The various methods of tapping in different countries were discussed. With regard to tapping knives, of which new models are constantly appearing, it is recommended to have a different construction for the different varieties of tree. The fundamental conditions are that they should be cheap and simple, easily and quickly handled by the tapper, and that their use will not injure the tree.

COAGULATION.—Dr. Marckwald expressed the opinion that the proper methods of coagulation cannot be determined in a general way, but require to be decided according to local circumstances. After dealing with the various methods hitherto used, he referred to the success which had attended his efforts in conjunction with Dr. Fritz Frank, to introduce into the rubber in the process of coagulation certain salts from the soil which gave exceptional nerve. Another process of a German expert was intended to prevent the giving off of any injurious substances from the milk during the coagulation. The combination of these two processes seemed to him destined to operate a complete revolution in the matter of coagulation, and to allow of the production of rubbers, on the one hand superior in nerve to all those already known, and, moreover, possessing remarkable durability.

The question of the right choice and preparation of the ground for planting and that of manuring were likewise dealt with in this interesting paper.

In conclusion Dr. Marckwald remarked:

"The future belongs to plantation rubber, but only to the rubber of those plantations which are rationally planned and conducted; on which favorable labor conditions prevail; which have sufficient capital at their disposal and which send into the world's markets first-class standard qualities, as part of the production of their respective countries."

A FAMOUS SOUTH AMERICAN EXPLORER.

THERE are very few American explorers who have done as much genuine exploring and who have had as many moving experiences as Edgar Beecher Bronson, and still fewer who have written about their experiences in such an interesting way. Everybody who follows the literature of exploration and discovery will remember the absorbing book, "In Closed Territory," which appeared two years ago, which gave a description of Mr. Bronson's quest after big game and general information in British East Africa, where he covered much of the same territory traversed by Mr. Roosevelt a year or so later.

Mr. Bronson has recently returned from a two years' tour of discovery through the rubber countries of South America. He entered Colombia from the Pacific Coast in the spring of 1910, and in the course of his extensive travels traversed Ecuador, Peru, Bolivia and a considerable part of Brazil. In December of 1911 he started down the course of the Madre de Dios River, which ultimately finds its way into the Mamoré River. He then went over the length of the Madeira-Mamoré Railroad, just opened, and landed in Pará in May, 1912. He had with him a considerable body of men for field work, and devoted himself especially to a careful study of the sources of crude rubber supply in the great rubber basin of the upper Amazon. Just when Mr. Bronson will give the result of his two years' sojourn in the heart of the rubber country to the world is uncertain, but when he does it will be something worth reading.

The Philippine Rubber Planting Industry.

PHILIPPINE rubber has for some time been discussed, first as a possibility, then as a probability, and later as a certainty. It has, however, been reserved for the International Rubber Exposition to show the actual product.

Rubber planting has made its chief progress in two of the Philippine provinces—that of Moro, which includes the large

EIGHTEEN-MONTHS-OLD PARA RUBBER.
[BASILAN PLANTATION CO.]

island of Mindanao, in the southern portion of the group, and its tributary island of Basilan at the southwestern extremity, and the Province of Mindoro, comprising the island of that name, in the western part between the islands of Mindanao and Luzon (Manila). It has been estimated that the total area under rubber in the Philippines is about 6,000 acres, of which, roughly speaking, about 3,000 are in the province of Moro, 2,500 in Mindoro and 500 in other provinces.

In Moro province is situated the plantation of the Rio Grande Rubber Co. of Cottabato, of about 2,000 acres, planted in 1910, and that of the Basilan Rubber Co., with about 700 acres, as well as some other companies. The province of Mindoro has about 2,500 acres planted, of which approximately 1,000 are estimated to belong to the Baco Rubber Co., and about the same to the Sellner Rubber Co., while the remainder is represented by the plantings of smaller companies. The bulk of the Mindoro as well as the Moro planting has been done since 1909.

That company having been the first to place Philippine rubber on the market, it was appropriate for the government of Moro Province to appoint Dr. J. W. Strong, general manager of the Basilan Co., Island of Basilan, Province of Moro, to the post of Commissioner to the International Exposition. Interest therefore attaches to his estimate of the total Philippine plantings in various years.

Acreages planted in various years.

Year.	Approximate acreage.
1905	360
1906	360
1907	1,200
1908	1,200
1909-11	2,880
Total	6,000

Of these, 90 per cent. are in *Hevea* and 10 per cent in *Castilloa*. It is anticipated to increase the area planted next year, particularly if certain proposed arrangements are carried out by American capitalists.

The Basilan Co. has 660 acres planted in the following years:

	Acres.
1906	40
1907	10
1908	30
1909	..
1910	70
1911	250
1912	260
Total	660

These quantities are practically all in *Hevea*, and it is expected to add 500 acres more next year.

It is of interest to note that the bulk of the companies now cultivating rubber are understood to be working with American capital.

PLANTING PHILIPPINE RUBBER.

It took eight years from the time of the American occupation for the first planting of Basilan rubber of 40 acres to be ef-

FIVE-YEAR-OLD PARA RUBBER.
[BASILAN PLANTATION CO.]

fected, in 1906. It is the result of the early plantings which is now reaching maturity in the form of the rubber being shipped and exhibited, shown at the recent New York Exposition, by the Province of Moro, on behalf of the Basilan Plantation Co. This

company claims to have been so far the only one to show the finished product and to ship Philippine rubber. Although its rubber has up to the present only entered the American market on a very limited scale, it has within the last few years been favorably received in Europe, particularly in London and Hamburg. One of the first shipments made realized in May, 1910, at auction in London, the equivalent of $2.63 per pound, and has ever since commanded about the top price.

VARIETIES PLANTED.

Although at first *Hevea* Ceara, and *Castilloa* were tried, the first-named became the most important, it being estimated that 90 per cent. of the acreage at present planted is in that variety, the balance being distributed between the others. The various

SIX-YEAR-OLD PARA RUBBER.
[BASILAN PLANTATION CO.]

grades were represented among the samples exhibited at the recent exposition. The *Castilloa* virgin scrap exhibited is the first *Castilloa* tapped in the Philippines.

SHIPMENTS OF BASILAN RUBBER.

The first small shipment (of Ceara rubber) was made in 1909 to Hamburg, subsequent shipments being Pará. A quantity of 130 pounds was shipped to London in 1910, while 600 pounds were shipped to Hamburg in 1911. Arrangements have been made for shipments to Gravenhorst & Co., New York, thus following up the success achieved in Europe.

An official report confirms the statement of the Moro Province Government that the Basilan Co. is the only one at present actually producing rubber, out of some eight rubber companies established up to the present in the Archipelago.

PROSPECTS OF PHILIPPINE RUBBER.

By the extent of the plantings since 1909, it is evident that large interests are involved in Philippine rubber, which tend to assure its development. It may, therefore, be of interest to glance at the physical conditions under which it is being cultivated.

CLIMATIC CONDITIONS.

Large quantities of Government land can be secured on the easiest terms, and the Philippine soil, it is claimed, is not surpassed by that of any rubber-growing district in the world. The annual rainfall of 100 inches is evenly distributed throughout the year; while being out of the typhoon belt, there are no storms; the temperature rarely exceeding 92 degs. F. In fact, the Philippines have been described for centuries as essentially a "white man's country."

The location of Moro province is an ideal one, its most northern point reaching nine degrees north of the equator; the limit in which *Hevea* rubber does best, being within a zone ten degrees north or south of the line.

COST OF PRODUCTION.

The various elements of cost of production have been carefully analyzed by the Moro Province Government. According to its estimate, new land can be brought into cultivation for a price per acre of $50.94, as compared with $73.60 in Sumatra, $109.94 in Java, and $137.42 in the Straits Settlements.

The relative costs of upkeep per acre are quoted: Moro Province, $18; Sumatra, $20; Java, $23; Malay States, $29. It is claimed that an acre of Pará rubber can be brought into bearing (fifth year) for $100, covering all charges, including cost of land.

Rubber is usually planted from 100 to 150 trees per acre. As the yield increases year by year, the cost of production gradually diminishes. From carefully-kept statistics, five-year-old rubber trees have averaged three-quarters of a pound per tree, against estimates by world's experts of half a pound for trees of that age. This brings the cost per pound of dry rubber of finest quality, ready for shipment, to 33 cents per pound, which can be reduced as the yield increases with age. Abundant native labor is procurable at 20 to 30 cents per day, United States currency, of a character far excelling that of other rubber countries. There is, moreover, a very efficient contract labor law.

TAPPING AND PREPARATION.

The trees are tapped in the early morning, being finished by 10 a. m., when the tappers are available for other work. The latex is coagulated at the factory with acetic acid or other coagulant, the operation taking from one to two hours, and the surplus water expelled by wooden or metal rollers. The rubber is then placed on galvanized woven wire racks to dry. After drying, if so desired, it is smoked, when the sheets, crepe or biscuits are ready for packing.

ESTIMATE OF ACREAGE APPROACHING PRODUCTIVE STAGE.

While the Moro Government Commissioner's estimate of the total planted area in the Philippines is 6,000 acres, the official estimate of the Director of Agriculture places the acreage in promising rubber trees (approaching the bearing stage) as about 1,250 acres. The acreage on paper, it is added, might amount to 125,000 acres.

The official report attributes the failure of the hundreds of thousands of Pará seedlings within the last few years, to drought, unsuitable location, natural enemies, improper planting of seeds, transplanting of young trees and mistakes in management.

Only Pará rubber, it is stated, is now considered of value on the plantations, Ceara and *Castilloa* having in most cases been abandoned, owing to their inability to withstand droughts and strong winds and their variability in yield of latex.

It is understood that the Philippine government will shortly

endeavor to compile a detailed statement of the acreage of rubber in the Philippines, respecting which the data hitherto available are insufficient.

The climate being the finest in the Far East, the Moro Province Government believes it has the best rubber-growing country in existence and predicts a brilliant future for Philippine rubber. Moro Province, it will be recalled, is the most important center of Philippine rubber cultivation.

Rubber-Growing in the Philippines.

By Richard Arthur.

IN 1906 the value of plantation rubber exported from the Middle East was $1,250,000. Last year it was about $30,000,000. In the near future there is no doubt whatever that it will run up to $100,000,000.

"The romance of plantation rubber," says H. Kerr Rutherford, formerly Chairman of the London Rubber Growers' Association, "is the old, old story. A few resolute men working in Eastern jungles, having faith in the ultimate success of the work they had undertaken: hampered by want of capital, but undismayed by the carpings of the pessimists, they doggedly forged ahead to their goal. Some of the pioneers did not live to see the fruits of their labor, but many have been fortunate in bringing in their sheaves, and a host of outsiders, although never having seen a rubber tree, have, from the persevering efforts of these men, reaped a harvest where they had not sown."

The growing of rubber—"the exciting business of running a tree dairy," as someone has called it—is one of the greatest agricultural opportunities in the world today. The English have got a flying start in this venture. English agricultural science, English commercial activity and English capital are largely responsible for the creation of the vast rubber plantations which have come into being in the Malay States, Ceylon, Borneo and the Dutch East Indies. Lately considerable American capital has also been invested in rubber planting in these Eastern countries. But even now the United States is comparatively timid and backward in this respect. And yet this country has an enormous rubber field waiting to be planted—the Philippines. Here are millions of acres of public lands eminently suitable for rubber growing, that may be leased or purchased at a small figure. Labor is not difficult to find, and catch-crops can readily be grown on the same land while the owner is waiting for the rubber trees to mature.

A serious mistake was made, some years ago, in planting a large number of Ceara trees in the Philippines. Experience has shown that these are liable to damage by wind, and it is now an accepted fact that the best possible rubber tree for plantation purposes is the *Hevea Brasiliensis*. There is no hard and fast rubber belt as some experts claim, for the authorities concede that almost the whole extent of the Philippines has climatic and soil conditions favorable for rubber. Trees grow in the vicinity of Manila with the same luxuriance that they show in Mindanao and the islands of the Sulu Sea. In fact, rubber is being grown in Singalong, an experiment station in Manila, and across Manila Bay in Bataan province is the Abucay rubber plantation where two-year-old trees are now 20 feet high. In the island of Basilan are the Basilan Rubber Plantation Company, which has harvested rubber, and the San Rafael Rubber Company, whose trees are making a record for growth.

From Manila to Basilan is 600 miles in a direct line, and it is absolutely proven that all this area, at least, is rubber land, since rubber is growing healthily at its extremities.

Rubber growing in the Philippines is no longer an experiment; several of the existing companies are ready to tap, and one or two of them are already exporting rubber. Some of those whose trees are ready for tapping refuse to stop their work of planting, saying that the trees they are planting now are more of an asset than the small amount of revenue that present tapping would yield. They are working for a large output in the future rather than to make a present small profit.

In Mindanao, the Basilan Rubber Plantation Co. has produced and exported crude rubber for about three years. The San Rafael Rubber Plantation Co. have over 20,000 rubber trees, some of them large enough to tap, and they are planting out another 100,000 seeds and seedlings. Near Nueva Caceras in Ambos Camarines province, Mr. R. Richmond has a Pará rubber plantation of 10,000 trees, four years old, that are doing splendidly. The Abucay Rubber Plantation Co. near Abucay, Bataan province, have 40,000 Pará rubber trees two years old, and they have planted and are planting 100,000 more from the nursery. The Lapac Plantation Co. on one of the southern islands near Jolo, has a hopeful growth of rubber trees nearly ready to tap. Two companies, financed by Seattle capital, have been organized to plant rubber in Davao; and American and English residents of Manila have formed the Baco River Plantation Co., which this year planted 65,000 seeds in its nursery in Mindoro. This company has brought an expert from the Straits Settlements to manage its enterprise.

Wherever the trees in the Philippines are of an age suitable for tapping, the yield of rubber, says the government expert, is equal in quality to that obtained in the most favored localities in the East.

Besides having maintained for several years a conservative interest in the rubber industry in the Philippines, and having published numerous technical articles on the subject, the Bureau of Agriculture in the Philippines has arranged to distribute to the proper centers some 50,000 Pará seedlings; these young plants will be put out under the direction of the Bureau, and will be carefully watched until well established. It is believed that none of the dangerous fungus diseases which affect rubber in other countries have been introduced into the Philippines along with the seeds, which were obtained from Malaya. Nearly all districts of the Philippines, with the exception of Mindanao and some of the southern islands, are subject to a dry season, but the Bureau of Agriculture believes that in many otherwise unfavorable localities the soil about the roots of the young seedlings can be kept sufficiently cool by the new system of leguminous "blanket crops," thus preventing injurious packing and baking by the sun. Many of the failures that have been experienced with young Pará seedlings have been due to the neglect of the planters to furnish this necessary protection to the roots. Many of the planters have only recently learned in the expensive school of experience, that there is a tremendous difference in this connection between grass and plants of the legume family: grass roots excrete poisons which injure the roots of the rubber, whereas legume roots furnish a concentrated form of nourishment with no drawbacks or dangers whatever.

To all actual and prospective rubber planters in the Philippines, the Bureau of Agriculture extends the "glad hand," and stands ready to advise and to assist them as much as possible in the matters of site location, seed, plantings and general culture. With this valuable assistance and the experience of planters in other eastern countries to guide them, the planter of rubber in the Philippines has a first rate chance of obtaining a high degree of success.

Tapping Rubber Trees by Electricity.

SINCE Columbus' Day—and for nobody knows how many centuries before—rubber trees have been tapped in the same old way. An Indian with a machete or some other instrument has cut, hacked or gouged the tree, and placed a little clay cup—or in later years a tin substitute for the clay cup—under the cut for the latex to trickle into. Then he has gone laboriously around from one tree to another, emptying the latex into a gourd, emptying that in turn into a larger receptacle, and then dipped his paddle into the latex and held it over the palm-nut smoke until it coagulated. It has all been done by tedious, individual effort that finally secured the rubber, but very slowly and at great expense. It is not to be wondered at—considering these primitive methods—that rubber, ever since its usefulness became known to civilized man, has sold for $1, $2 and even $3 a pound.

But it looks as if all this might at last be changed, for here comes a scientist, Georg M. von Hassel, a German by nationality, but a Peruvian by many years' of residence, a civil engineer by profession, but an explorer by preference, and employed by the

ELECTRICAL TAPPING DEVICE ATTACHED TO A RUBBER TREE.

Peruvian Government for many years to explore the resources of its rubber territory, who has devised a method of extracting the rubber from the tree, which, if not instantaneous, is at least so rapid and efficacious in its operation that it is likely to supersede the ancient methods of the natives, if it works out in practice as it has given promise of doing in the various tests to which this process has been subjected. Mr. von Hassel's method is

SHOWING THE WIRE CARRYING THE ELECTRICAL CURRENT FROM TREE TO TREE.

nothing less than touching the button, and letting electricity do the rest.

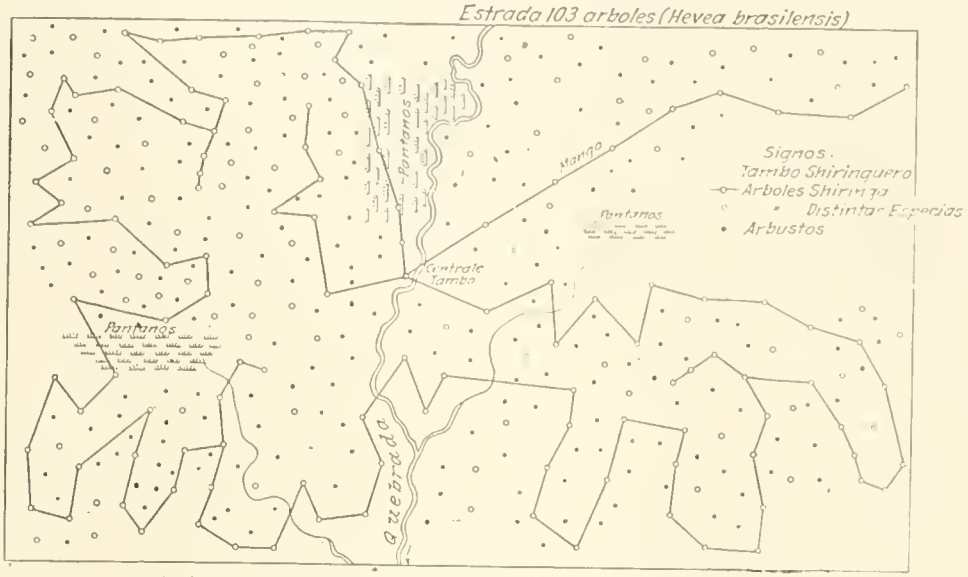
Here briefly is the apparatus that he has devised. He places upon the trunk of the rubber tree a piece of sheet-iron about 5 feet long, 5 inches wide, with the two sides folded back against the tree to a thickness of about 2 inches, constituting a hollow channel of sheet-iron. This hollow channel is divided into a series of fifteen to thirty sections; the number of sections depends upon the number of days the apparatus shall be worked. Each section has a mechanism for the extraction of the latex from the rubber tree and a receptacle for receiving the flour, which also contains a preparation for the coagulation of the latex. When working *Hancornia* and *Castilloa* trees, plates provided with longitudinal canals are used instead of the receptacles for gathering the latex, and the product thus obtained is known as "Sernamby." This product is gained in the form of threads without the aid of acids or other chemical substances.

The method of operating is as follows: This channel of sheet iron, with the above-described mechanism and receptacles, is fastened against the rubber trees. If it is a small tree there will be two of these devices; if it is a large tree there may be as many as nine circling the tree and about a hand-span apart. This apparatus is connected by an insulated wire with a central station which is equipped with electric power. A machine devised by the inventor makes it possible to send the electrical current so that it will set the first section in motion. The latex then oozes out and flows into the receptacle immediately beneath. In the receptacle there is an acid preparation that coagulates the latex, converting it into rubber. The next day—or preferably 48 hours later—the current is turned on again affecting the second section, which in turn pricks the tree, bringing forth the latex which drips into the second cup and is there similarly coagulated. After another interval of two days, the third section is set in motion, and so on for the fifteen to thirty sections which are operated from the central station, tapping the tree and filling the receptacles with rubber.

No one need approach the tree until the expiration of sixty days, when a handful of rubber will be found in each of the receptacles, and on a large tree where there are nine of these

devices—each with thirty cups—there will be 270 lumps of coagulated rubber waiting for the gatherer.

The same current that does the work on one tree can do the work on 5,000 trees by simply equipping that number of trees with these tapping devices, and connecting them by the insulated wire, so that the electrical current can be communicated. In actual tests, already made, between 50 and 60 trees have been tapped at one time from the central station.



A GROUP OF WILD RUBBER TREES CONNECTED BY THE WIRE WITH THE ELECTRICAL TAPPING APPARATUS.

The advantages of this system are obvious. Mr. von Hassel enumerates them as follows: First, the tremendous saving of labor, one man being able to do the work of 40 under the old system; second, the ability to tap trees in the swamps which cannot ordinarily be approached by the tapper; third, the fact that the trees can by this process be tapped very early in the morning before the sun is up, when the latex flows more freely; and fourth, the fact that by this process the trees can never be injured, the punctures made by the apparatus being so small as to heal very rapidly.

The accompanying illustrations give some idea of this method: The first photograph shows three of these sheet iron devices attached to a tree, together with the insulated wire that supplies electricity. The second photograph shows this apparatus on two different trees with a connecting wire. The third is a chart, illustrating the course followed by the wire running from the central station through a group of rubber trees.

The inventor is highly gratified with the success of the various tests his apparatus has been given, and expects to see it entirely supersede the present primitive methods of gathering rubber in the South American jungles.

The labor question has been the most difficult one to solve in the gathering of rubber in the Amazon country, but if Mr. von Hassel's electrical appliance is found, when tried out in a large way, to work satisfactorily, the Amazon labor question will have been solved; and if this apparatus proves practicable in the wild jungles of South America, it can certainly be operated even more efficaciously under the easier conditions of the plantations.

THE WEST COAST RUBBER COMPANY.

This company, which now has a capital of $250,000, expects soon to increase its capital to $500,000. The new issue will be devoted to increasing the plantings of rubber on the property in Guatemala. The property covers 22,000 acres and is located near the port of San José on the Pacific side. They now have 200,000 *Castilloa* trees planted, but expect to put out some *Hevea* next season. They have been shipping rubber each month for about four years except during the dryest months. This rubber was obtained from the wild trees on the property which are estimated to number about 300,000. A shipment is said to have brought within 3c. a pound of the price for Up River Para.

OUR DEBT TO THE TROPICS.

THE report sent out about the middle of November by the Department of Commerce and Labor of the Federal Government has to do with tropical imports into the United States, and contains a number of exceedingly interesting items. The value of the imports into this country from the tropics as shown last year is $750,000,000. One-half of this consists of foodstuffs, sugar leading with a value of $200,000,000, coffee coming next, with $100,000,000. In manufacturers' materials rubber leads by a considerable margin with a value of $100,000,000. The importation of rubber from the Tropics has increased from 58,500,000 pounds in 1900 to 125,500,000 pounds in 1912, the value having increased from $32,000,000 to $100,000,000. The largest contributor to the entire $750,000,000 worth of imports from the Tropics is Brazil, and, of course, Brazil is by far the largest contributor of our crude rubber. The United States takes over 36 per cent. of the exports from Brazil, but of the Brazilian imports less than 13 per cent. represents goods from the United States, showing that to keep up an equality of trade we ought to increase our exports to Brazil by 200 per cent.

ANTICIPATED SURPLUS IN CUSTOMS' RECEIPTS.

ACCORDING to the statement of Acting Secretary James Freeman Curtis, of the United States Treasury Department, the deficiency in customs receipts for the year ending June 30 last, (which he had estimated as compared with the previous year at $18,000,000), only turned out to be $4,000,000.

During the new fiscal year customs' receipts have exceeded by $10,000,000 those of the corresponding period of 1911. Should this improvement continue, he anticipates for the current financial year ending June 30, 1913, a surplus of $50,000,000. In Mr. Curtis' opinion the situation is all the more remarkable in view of the continued agitation for a revision of the tariff downward. There is no way, he adds, to explain the heavy customs receipts except on the theory that importers no longer stand in awe of politics or prospective tariff legislation.

THOUGHT IT PROPER TO TIP REPORTERS.

In the course of the inquiry now being held in the House of Commons as to the responsibility of the British directors of the Peruvian Amazon Co. for the Putamayo atrocities, a newspaper reporter gave evidence that when he was inspecting the charges against the company's directors one of the officials handed him an envelope containing a bank note and told him that this was in recognition of the trouble the reporter had taken, but that the company preferred not to have anything further printed about the charges. The reporter returned the money, and later the chairman of the directors stated, by way of explanation, that the tender was made by one of the foreign directors, who thought it was customary to tip reporters.

NEW TRADE PUBLICATIONS.

THE October number of "The Goodrich," which, by the way, is No. 2 of Volume 2, is, like its predecessors, full of interesting matter and attractive illustrations. The cover is an excellent example of art in commercialism; it shows a night view of Akron, with the big Goodrich mills ablaze with light, and this night landscape is framed in by a cross section of a Goodrich tire.

In the reading matter of this number the important place is given to an article "On the Dawson Trail With Goodrich Tires," by J. C. Manning, who describes the famous Dawson trail, and, incidentally, speaks of "the record of a set of Goodrich tires on a 1909 model Winton Six which, in less than two years, has covered 9,000 miles under the most primitive road conditions to be found on the North American continent. And the tires are still in good condition; they have not cost a penny for repairs or replacement up to date, and apparently have still left in them a few thousand more miles of useful life." This article is generously illustrated.

Easterners have an idea that in matters of art—printing, for instance—they are considerably in advance of their friends in the extreme West; but this is only another one of those superstitions that have come down from the fathers. Here is a catalog issued by the Boyd Rubber Co., of Seattle, coast agents for the Apsley Rubber Co., which shows that just as good commercial printing can be done along the Pacific seaboard as along the Atlantic.

This is a catalog of 72 pages and cover, 4 x 9 inches in size (just a convenient shape for the coat pocket), and contains a great deal of information in compendious shape regarding the rubber lines carried by this company.

A NOTABLE CATALOG.

Combining all the advantages of careful preparation and artistic execution, the new assembled general catalog of the Boston Woven Hose and Rubber Co. ranks among the highest of its class. It is seldom that, even in these progressive days, such completeness in design and execution is met with.

A prominent feature of the catalog is the practical form in which the company's production is classified. Rubber belting, rubber hose, garden hose, fire hose, matting, insulating tape, tubing and molded goods, jar rings and brass fittings, form the links in the chain of the company's products, and are conveniently indicated by marginal indexes, so that the reader can at any time refer to a particular branch.

The general advantages of rubber belts are concisely dealt with in the earlier pages of the catalog, followed by an illustrated description of the fifteen standard brands in which rubber belting is made. Canvas beltings are then taken up in their standard grades, while valuable details as to lacing and putting on belts lead up to a code of "Handy Belt Rules," intended to help users of belts to profit by them to the utmost extent.

Another equally interesting phase of the company's manufactures is the section devoted to hose, with its subdivisions of water, suction, steam, pneumatic, vacuum and railroad hose. These various uses of hose are appropriately illustrated by representations of their application, this forming one of the many attractive features of the catalog.

The domestic uses of the company's products are illustrated by the sections for garden hose, matting, tubing and jar rings, while the importance given to fire hose will be appreciated not only by fire fighters, but by property owners who desire to keep abreast of the latest improvements in that line. The molded goods section includes rubber heels, bath brushes and other specialties.

But apart from its other merits, this comprehensive catalog appeals to the buyer or purchasing agent by its practical features, being frequently interleaved with plain or ruled paper. Its size, about 7 x 8, gives it breadth of beam, allowing of the text and illustrations being effectively displayed. It is printed on a heavy coated paper and the typography is in harmony with its other high-class features.

While the varied extent of the company's products give importance to this catalog (of 300 pages), the manner in which they have been presented calls for special notice. While the numerous illustrations are usually on a white ground, the text is generally upon a delicate Nile ground, which brings up the type most effectively. Nearly every page either carries or faces an illustration; the high character of the artistic work meriting special commendation.

Two distinctive features enhance the usefulness of the catalog. It is on the loose leaf plan, so that any desired portion can be easily removed and replaced, while its flexible leather cover adds to the convenience of using it.

The whole catalog reflects the highest credit upon all concerned in its preparation.

A HANDSOME JUBILEE SOUVENIR.

GERMANY is admittedly the home of the factory jubilee, in which the work of several generations culminates in a festive celebration, shared in with like enthusiasm by the heads of the concern and by its youngest workers. More than usual interest has attended the festivities, marking the fiftieth anniversary of the Hannoversche Gummi-Kamm Co., A. G., now styled the "Hannoversche Gummiwerke 'Excelsior' A. G.," which took place a short time ago.

Through the courtesy of Mr. Julius Lehmann, vice-president of the Hanover Vulcanite Co., the American branch of the concern, THE INDIA RUBBER WORLD has received a copy of the elegant souvenir, lately issued in connection with the celebration. This "Jubiläums-Festschrift" records in the highest style of graphic and pictorial art the chief features of the occasion.

Turning to its various pages, the reader first meets a striking representation of the factory at its various stages—in 1862, 1870, 1880, 1892, 1899 and 1912, together with portraits of the general director, Herr Georg Heise, Royal Prussian Commercial Councillor; Director Wilhelm Siercke, Director Gustav Bartl, and Herr Hans Breul, chairman of board of inspection. Herr Heise entered the company's service in 1872, Herr Siercke in 1886, and Herr Bartl in 1873, these three gentlemen constituting the present management.

Next in order come scenes from the dramatic representations which marked the occasion, in which the staff took part. These included a "Rubber Ball Ballet."

The "History and Gathering of Crude Rubber" are illustrated by representations of tapping, gathering and smoking, with appropriate explanatory text. In another series of illustrations the various processes of manufacture are shown, commencing with the examination of the crude rubber and taking the reader through the various operations of washing, mixing, calendering and other processes. Next follow the pages dealing with the production of combs (the original specialty of the company, from which its earlier name was derived). The various stages of manufacture and packing are effectively illustrated. In following pages the manufacture of hard rubber is dealt with, leading up to that of pneumatic tires, which gives prominence to the "Excelsior" tire. Rubber toys, surgical and sanitary articles, rubber sponges, heels and other branches are next dealt with.

The work appropriately concludes with a series of views of Hanover and Hanoverian life, artistic specimens of color printing, supplemented by highly interesting descriptive text. The form in which the souvenir has been got up reflects the highest credit on all connected with its preparation.

The Editor's Book Table.

THE DETERMINATION OF TOTAL SULPHUR IN INDIA-RUBBER. By C. E. Waters, associate chemist, and J. B. Tuttle, assistant chemist, Bureau of Standards. Reprint 174. Washington, 1912. [Paper, 9 pp.]

IN this summary of the various tests for the determination of sulphur in rubber, the authors refer to that published by Henriques in 1899 as being still the usual method and too well known to need detailed description. Other methods have since been advocated, such as those of Alexander, with sodium peroxide; Esch, with Eschka's mixture; Wagner, with a slight modification of Henriques' method; Pontio, with manganese peroxide and a mixture of sodium and potassium carbonates; Hinrichsen, with nitric acid; and, finally, Hübener, with concentrated or fuming nitric acid and bromine, intended to exclude insoluble mineral sulphates.

Having frequent occasion to determine the total sulphur in rubber, one of the authors made a number of comparative tests of different variations of the Henriques method. These tests were made with two samples of rubber each of 0.50 gram. The proportion of sulphur, as shown by five series of tests, varied from 2.93 to 3.71 in the twenty separate tests.

In an attempt to obtain satisfactory results without fusion, and without a knowledge of Hübener's paper, determinations were made several months later. After Hübener's paper had been called to the attention of the authors, some further determinations were made on a sample of hard rubber containing no barium. These determinations (22 in number) were made with variations of the Hübener and Henriques methods, full particulars of which are recorded.

In their concluding remarks, the authors call attention to the fact that treatment of the rubber with nitric acid alone gives low results, this being probably largely due to loss of free sulphur; since nitric acid alone does not completely oxidize sulphur to sulphuric acid in the length of time usually taken for a determination. The fusion method gives results very close to those obtained by direct precipitation and by neutralization. The best results, in the authors' opinion, seem to be obtained by the use of the method, according to which the rubber is decomposed by means of nitric acid saturated with bromine; this being apparently a modification of the Henriques method.

The treatment of the subject indicates much laborious research and investigation on the part of the authors.

LEADING AMERICAN INVENTORS, BY GEORGE ILES. New York, 1912. Henry Holt & Co. [Cloth, 448 pages.]

Forming part of a series of "Biographies of Leading Americans," this compendium of the lives of a dozen leading American inventors of note contains a wealth of acceptable reading, particularly appealing to those interested in one or another of the branches of industry dealt with.

Seeing the diversified nature of American invention, Mr. Iles has had a difficult task in selecting representative names, but has been successful in his efforts.

John and Robert Livingston Stevens, those pioneers of marine and railroad engineering at the commencement of the last century; Robert Fulton, who developed the steamboat; Eli Whitney, the inventor of the cotton gin; Thomas Blanchard, who made the Blanchard lathe; and Samuel F. B. Morse, the commanding figure in American telegraphy, are successively treated.

Next to these comes Charles Goodyear. The forty pages of Goodyear's biography are replete with incident, following the course of his struggles and successes. He may be said to form the central figure in this brilliant group of inventors.

In continuation of the record of American invention, the lives of John Ericsson, the greatest engineer that Europe ever bestowed upon America; Cyrus H. McCormick, inventor of the reaping machine; Christopher Latham Sholes, to whom we owe the typewriter; Elias Howe, father of the sewing machine; and Benjamin C. Tilghman, who first introduced the sulphite pulp process and the sand blast, are dealt with. Finally the story of the latest in the group, Ottmar Mergenthaler, the inventor of the linotype, is told in detail, closing with his death in 1899.

This valuable record of American invention indicates a vast amount of careful research and forms an appropriate tribute to the American inventive genius which was such a prominent characteristic of the nineteenth century.

Fifteen artistically executed portraits give a marked personal tone to the volume, while the text is supplemented by a number of illustrations.

RUBBER FACTS AND FIGURES, NO. 8. FREDERICK C. MATHESON & Sons, London.

The latest issue of this *vade-mecum* of the rubber share investor records in tabulated form the most recent information about acreage, number of trees and output, as well as dividends. One important fact is shown prominently: the number of tappable trees as compared with the total planted. Now, when production is increasing by leaps and bounds, it is necessary to keep track of the total trees and what is equally important—of the year when they will be in bearing. This last information would acceptably supplement the many other valuable points of this booklet.

DER KAUTSCHUK, SEINE GEWINNUNG UND VERARBEITUNG. (Rubber, Its Production and Manufacture.) By K. W. Wolf-Czapek, Berlin, 1912. Union Deutsche Verlagsgesellschaft. [Cloth, 8vo, 128 pages, with 50 illustrations.]

In this handy little volume, 7 x 5, is condensed a quantity of information, treated in a clear and perspicuous manner, and so divided that those seeking light on a particular subject can readily find what they want.

The scope of the work includes the sources and production of rubber, and its chemistry; as well as the questions of filling substances and rubber solutions. Vulcanization and preparations for manufacture are dealt with in a lucid way; the special subjects of hard and soft rubber goods, rubbered fabrics, hose, tires and seamless rubber goods, being successively handled. Treating the matter from a commercial standpoint, the chapter on "Rubber in the World's Trade" deals with the various classes of rubber and with details affecting their distribution.

One feature of special interest consists of the illustrations showing the inspection of rubber samples by the dealers in a London warehouse; the office of a London rubber broker with samples laid out, and the public auction of rubber in London.

Illustrations of the principal machines used in rubber manufacturing are a valuable aid to the general non-technical reader, for whom the work is largely intended, and to whom its clear explanations appeal.

ACCORDING TO A CONSULAR REPORT ENCOURAGING advices come from the Kagi district of South Formosa concerning the new rubber plantations undertaken by private capital. The rubber seed was imported from Hawaii. Nearly 50,000 rubber trees were transplanted during the rainy season and few died. The Formosa Agricultural and Forestry Co. is engaged in the rubber industry, but private plantations are said to be more promising.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

THE sixth building to be either built or remodeled by the Goodyear Tire and Rubber Co., was started November 16. This will be 100 x 260 and seven stories high, the construction to be absolutely fireproof, of brick, steel and reinforced concrete; estimated cost, $100,000. They are constructing two new factory buildings, remodeling a factory building, an office building and an employment office. The total approximate cost will be $400,000.

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The Goodyear Tire and Rubber Co., of South America, has been organized under the laws of Maine with a capital stock of $3,000,000. The object of the incorporation as given in the certificate is to operate rubber plantations in South America and to manufacture the raw product. Several years ago F. A. Seiberling, president of the Goodyear Co. made an extended trip through South America, where he studied the rubber supply thoroughly.

It is understood that the Goodyear company has representatives in Brazil who are thoroughly investigating this rubber field. The Brazilian government is offering certain exemptions from taxation and bonuses to rubber factories, which were described in detail in the June issue (page 427) and the October issue (page 2) of the INDIA RUBBER WORLD.

C. W. Seiberling, vice-president of the Goodyear Tire and Rubber Co., says: "Our sales for the fiscal year ending November 1 approximate $25,000,000. The contracts indicate that for the coming season we will supply to car makers 200,000 sets of tires. The demand for Goodyear tires has compelled us to add three new buildings. The company has acquired the entire property of the Akron branch of the Great Western Cereal Co., located on East Market street, just west of the company's present buildings. These buildings will be used for storage until such time as it is necessary to utilize the ground for manufacturing purposes. The three latest additions aggregate 335,300 square feet of floor space, which brings the total to date, 1,935,300 square feet, which equals a factory 60 feet wide, one story high and six miles long.

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The Goodyear Tire and Rubber Co., Limited, of Bowmanville, Canada, has built two additional buildings, doubling its 1911 capacity. The company has purchased and remodeled a large hotel in Bowmanville to be used as a club house and has erected a new office building in Toronto. In March, 1912, the capital stock was increased to $250,000, and in October it was again doubled.

* * *

Four hundred members of Cleveland's Chamber of Commerce —all leading business men of that city—recently made a trip to Akron on a special train, for the purpose of visiting the B. F. Goodrich Co.'s factory. The entire trip occupied six hours, two hours of this time being devoted to the inspection of the great Goodrich plant. The visitors were received by C. B. Raymond, H. E. Raymond and other officers of the company, and were divided into twenty different parties, each party with its own guide, so that the tour of inspection might be intelligently made and all questions answered that naturally would arise.

* * *

"The Goodrich" for November is called the "Fire Chiefs' Number" and is given almost exclusively to fire department news.

The B. F. Goodrich Co. is making a more thorough development in its system of training salesmen. Donald Hotchkiss, who has had charge of the Richmond branch, will have charge of the training of salesmen under the direct supervision of the heads of the sales department.

B. G. Work, of The B. F. Goodrich Co., has bought a home on Fifth avenue, New York, and will divide his time between Akron and New York.

The B. F. Goodrich Co. has opened a new store in Los Angeles, California, located at 1175 B street, with Mr. Schoenraub in charge.

Mr. R. W. Hainer, of the Goodrich company, has been elected general manager of the Electric Rubber Reclaiming Co., Barberton, O. The machinery is in place and the company is putting out standard goods.

* * *

The American Tire and Rubber Co., at their directors' meeting on November 18, passed a resolution requesting the stockholders at the next meeting to increase the capitalization from $200,000 to $500,000 to supply the needs occasioned by the growth of their business. A new addition, 40 x 50, consisting of two stories and a basement north of the present plant, has been built for the manufacture of solid tires. Machinery for reclaiming rubber and for the manufacture of steam packing is being installed. The reclaiming is said to be a mechanical process and the company claims for its packing that its longitudinal fabric is compressed in such a manner that it has a marked tendency to retain its original form, thus giving it added expansion qualities.

* * *

The St. Louis Tire and Rubber Co., whose incorporation was mentioned in the November issue of the INDIA RUBBER WORLD will have the following officers: J. A. Swinehart, of Akron, Ohio, first vice-president and general manager, in full charge of the manufacturing end; H. C. Barker, of Carter, Collins, Jones and Barker, president and general counsel; William H. Glasgow, treasurer; and the following directors: C. C. Collins, vice-president of the Missouri Lincoln Trust Co.; Roy F. Brittain, assistant general counsel of the Cotton Belt R. R. Co.; Alfred E. Einstein, vice-president and general manager of the Union Electric Light & Power Co.; and C. N. Skinner, of Buxton & Skinner. In solids, the company expects to manufacture the "Krotz" tire, and a new pneumatic tire, every layer of the fabric of which bears an equal amount of strain. The company has bought fireproof buildings, already built, and will be in a position to place its goods on the market within a short time.

* * *

On November 12 a disastrous fire of unknown origin totally destroyed the palatial summer home of F. H. Mason, first vice-president of the B. F. Goodrich Co., at Turkeyfoot Lake. The loss is estimated at between $50,000 and $100,000. The fire is presumed to have started in the upper part of the house and was not discovered until it had gained a headway that could not be checked. The house was totally consumed within two hours. The blaze was discovered by one of the servants, and all escaped injury.

* * *

At a recent meeting of the stockholders and directors of the Miller Rubber Co., reports read by department heads showed an increase of this year's business over last year's of 60 per cent. In order to handle the immense volume of business and to be in a position to fill the many orders received for next year, the company is now erecting a new factory building 150 x 75 and three stories high. The land adjacent to and formerly belonging to the Franz Body Co., has been leased by the Miller Rubber Co.

* * *

A report of the Akron Chamber of Commerce shows that Akron has 144 industries employing 34,700 persons and has an aggregate capital of more than $142,000,000.

* * *

In view of the indisposition manifested by the local transportation company to provide the necessary accommodation for the growing needs of Akron, a proposal is being considered for the city to build the required extensions. According to the opinions of prominent citizens, by having a system of its own, the city of Akron will be in a position to take over the local company's lines in 1924, when its franchise expires.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

BUSINESS continues about the same as last month's report, with the possible exception of the footwear industry. This is naturally the quiet time for that branch of the trade, as the winter stocks have been ordered and delivered, and until real winter sets in, the trade will be almost at a standstill. The call for heavy goods, however, has been disproportionately large, and the manufacturers are behind their orders on heavy Arctics and Lumbermen's. The tire business is exceptionally good, and new concerns are starting to get a share of the demand, while factories already established are enlarging their capacity. It is reported that one company, whose factory is as yet a hole in the ground, has had sales which will warrant a big output as soon as the plant is ready to begin manufacturing. The clothing business continues good, and the difficulty in securing fabrics has to some extent been overcome, and orders are now being filled in a more satisfactory manner. Taken altogether the trade is in good condition from one end to the other.

* * *

The event of the month in the rubber business has been the labor troubles at the Hood Rubber Co.'s factory at East Watertown, and the threatened extension of that trouble to the American Rubber Co. and the Boston Woven Hose and Rubber Co. in East Cambridge. Early in the month the Hood company posted a notice that the factory would shut down in all departments except the packing room, and the reason given was that there were changes to be made in the calender room, and some new boilers were to be installed. Immediately the agents of the Industrial Workers of the World, who had been recruiting members among the help, announced that the closing was a shut-out, done to intimidate the unionizing of the workers in this organization, and they immediately declared a strike, and proceeded to use forcible tactics to compel or induce those workers who were not laid off to join in the strike. As a consequence some violence and much excitement ensued, and, besides a siege of the works of the Hood company, the strikers formed processions and marched by the factories of the American Rubber Co. and the Boston Woven Hose Co., demanding that the employes of these companies join their ranks. This attempt was unsuccessful, even though the organization had already secured some members in these factories. The Hood factory was somewhat in a state of siege for a few days, and during the disturbances the mob was attacked by well-directed streams of water as well as by the police. Some arrests were made, and the matter culminated when one man was found dead with a bullet in him and another so badly wounded with a knife or other sharp instrument that he was removed to an hospital. The dead man and the wounded man had both, it is reported, stated their intention of going to work when the mill opened. Arrests have been made, but at present writing the authorities are not sure they have the murderers.

Meanwhile the repairs at the factory were continued and so far completed that the factory was opened in nearly all departments except the calender room, and little or no disturbance has resulted since the above-mentioned tragedy, which seems to have served as a deterrent on the part of the agitators and the strikers. Most of the help was taken back, though some, who had been active and aggressive, lost their jobs. The organizer of the society acknowledged the strike to be a failure, and has been endeavoring to secure for all strikers the positions they held previous to the shut-down.

* * *

"What is one man's loss is another's gain." The Boston newspapers had an advertisement in their "Want Columns" offering work to rubber shoe makers, and as a consequence about a hundred rubber workers secured jobs at the Beacon Falls Rubber Shoe Co., some 35 going one day and 65 the next. It is said that none of those applying were given employment unless they could speak the English language.

* * *

The Fisk Rubber Co., of Chicopee, whose re-incorporation was mentioned in the November issue of THE INDIA RUBBER WORLD, will sell $1,000,000 of the new preferred stock, and with the proceeds will add to its facilities for manufacturing pneumatic tires for automobiles and bicycles, and will add thereto the manufacture of solid tires for commercial vehicles. The mills are being enlarged and an entire new four-story steel and concrete building 200 by 90 feet will be ready for the increased force of workmen by the first of the year. The company now employs a force of about 1,200 workmen, but, with these additions, it is expected that the output will be increased between 50 and 60 per cent. Harry G. Fisk, who was secretary of the older corporation, is clerk and treasurer of the newly incorporated company.

* * *

The Apsley Rubber Co., of Hudson, has its own factory, its own box factory and case plant, and now it will have its own printing establishment. Perhaps this is not exactly true in the strict sense, but practically so. For years the Worcester Printing Co. has been a leading industry in Hudson, not only doing a fine business for home concerns, but a much larger outside business. Much of the printing of the Apsley Rubber Co. was turned out from the presses of this establishment. Last month Hon. L. D. Apsley became sole owner of this big printing establishment, when he immediately changed its name to the Hudson Printing Co., and moved the Boston office from the Old South building to one of the three office-rooms of the Apsley Rubber Co. in Haynes building, corner of Summer and High streets. Mr. Worcester remains as manager and will spend the greater portion of his time at the Boston office, and the relations between the rubber company and the printing company are likely to be closer than ever.

* * *

Mr. Apsley is a good loser. One of the greatest admirers of Theodore Roosevelt, he wanted to see him again sent to the White House. He rather expected this to be the result of the election, and he hired the opera house at Hudson for election night and invited the whole population to come and hear the returns and rejoice with him. They came—or enough of them to fill the hall—and, as returns came in slowly, he entertained them with stereopticon pictures of candidates and scenery, and lest they should grow hungry bushels of doughnuts, cans of coffee and baskets of fruit were provided. When the hopes of the Progressive Party were absolutely and unqualifiedly dashed, Mr. Apsley caused a message to be written to the effect that, though people present might differ on political questions, they were unanimous for Hudson and its prosperity, and the crowd amended this by declaring themselves unanimous for Hudson's leading citizen.

* * *

Pine Banks Park is a beautiful natural park situated in Malden and Medford. It was formerly the property of the late Deacon E. S. Converse, of the Boston Rubber Shoe Co., who presented it as a public park to the two cities. It is in care of three commissioners from each city, and to them last month were presented two handsome deer about a year old. These were born on the estate of Col. Harry E. Converse at Marion, and the Colonel deemed the park a fitting place for them. An addition to the zoo at the park is being prepared, and the animals are to be a permanent added attraction to this beautiful place.

* * *

The new factory to be built in Lowell for the Patterson Rubber Co. will be of brick, four stories high and of modern mill construction. The foundation is already laid, and the contract was awarded about the middle of last month. It will be 210 feet long and 68 feet wide. The company proposes to install machin-

cry as fast as the building progresses, the heavy machines being put in as soon as the first story is completed, and so on through the building. The office building has already been erected, as is also a storage shed, and a two-story boiler house 40 by 68 feet will be built near the main factory. It is hoped that the company can begin work early next year, but it is not expected that the entire plant can be in full operation for three or four months. The enterprise starts under the most auspicious conditions, under the immediate personal management of John S. Patterson, for many years in charge of important departments of the Revere Rubber Co., who has associated with him his son, James M. Patterson; the Appletons, Francis H. and Francis H., Jr., and other capitalists. I understand that the product for the first year is already sold.

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The completion of the fine new two-story office building at the plant of the American Rubber Co. at East Cambridge has enabled that company to combine its business forces in one building, and those portions of the purchasing, bookkeeping and record departments which were housed in the Boston office of the company on Essex street have been moved to Cambridge, where they occupy the second floor of the new building. General Manager N. Lincoln Greene will have his office in Cambridge, but, of course, will continue his Boston office, and will divide his time between the two. The Boston headquarters have undergone several alterations, which will result in more and better facilities for the display of samples and the accommodation of customers.

* * *

So important has grown the tire department of the Converse Rubber Shoe Co. that the company will soon build a three-story addition 125 by 65, to accommodate this new branch of the business. When the company secured the location for its factory, a larger lot was purchased than was needed at the time, in anticipation of future needs. Now, in addition to making rubber footwear, the company makes two or more patented styles of rubber heels, and has been eminently successful in turning out automobile tires, which have been in such demand that this new addition seems amply justified.

* * *

The Atlantic Rubber Co., manufacturers of mechanical goods and rubberized fabrics, have sold their factory at Hyde Park, and will seek new and larger quarters where they can double their present force and capacity, being justified in this move by the rapid increase of their business. Whether they will purchase a factory near this city, or will build a concrete factory on land owned by the company, is a question not yet decided upon. Meanwhile they have taken a temporary lease of a factory at Hyde Park, where they will manufacture until the question of relocation is settled.

* * *

The Metropolitan Raincoat Co., which purchased the plant of the Atlantic Rubber Co., will continue manufacturing under the name of the Hyde Park Rubber Co. Besides the factory buildings, this concern acquired some of the heavy machinery already in place, which it will utilize in its own enlarged business.

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The Interchangeable Rubber Heel Co., of Taunton, which has been fitting up a factory in what was known as the Field Shop No. 2, has installed nearly all its machinery and expects to be turning out goods by the time this is read.

A new rubber concern which will locate in Stoughton is the Panther Rubber Co., which was recently incorporated with a capital stock of $150,000. The incorporators are Frank Bernstein and William Bernstein, of Chelsea, Massachusetts, and Mark Marcus.

It is stated that the factory recently vacated by the Plymouth Rubber Co. at Stoughton may be taken by the Elwell Rubber Co. for the manufacture of rubber heels.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

CHICAGO has among its business houses, representatives of practically all the large American manufacturers of rubber goods of all kinds. The city's telephone directory contains the names of several hundred wholesalers, general dealers, brokers and others who handle the manufactures of establishments in other cities. Especially long is the list of those who represent the factories making automobile tires. And yet, in all the long array of names of men connected with some branch of the rubber business there are not to exceed six or seven who manufacture rubber goods, who actually make any of the articles in which they deal. In very few cities in the world are so many automobiles in use as in Chicago. The demand for rubber tires for the hundreds of thousands of wheels on the machines is enormous. That demand constitutes the basis of a tremendous trade by manufacturers' agents, by jobbers and by an immense number of small dealers.

The question very naturally suggests itself: Why is not Chicago making its own automobile tires? Why is the great metropolis which is a leader in so many lines of business willing to sit by and use the output of the factories of other cities, some of which are mere villages compared with itself? Why are the wide-awake men who fear not to grasp the wheels of direction in practically every other manufacturing line of business content to allow Akron, Detroit and other places to occupy the field in connection with this one line of trade?

Does the often-heard statement that labor is higher in Chicago than in Detroit and Akron answer these questions satisfactorily? Is labor higher here than in the cities named? Not so far as can be learned from any comparison based on results of inquiry. Again, is it a full explanation of the situation to assert that there is a material difference in the freight rates between ports of importation and points in Ohio and Michigan and the rates between those ports and Chicago? Is it not a fact that the ultimate freight charges on the manufactured articles from the places of manufacture to this city are more than an offset for any such differences?

In practically every line of business in Chicago trade is good. Factories of all kinds are running full time; many of them are in operation over-time. Manufacturers, jobbers, commission men and retailers are all busy. Collections are good. All reports concerning the early holiday trade agree in the statement that never before in the history of Chicago have the demands been so large for high-grade, high-priced goods as during the year just drawing to a close.

Nearly all lines of rubber goods trade in Chicago have shared in the general conditions. Here and there special reasons have operated to lessen the volume of trade and make demand slight compared with that for other manufactures of rubber. The trade in garden hose is a large factor in the rubber goods business throughout the Northwest and West. In those sections the calls for garden hose are comparatively light. Last season was a very rainy time all over that part of the country. The retailers had comparatively few calls for hose.

In all other lines of mechanical rubber goods, business is reported excellent. Favorable conditions have prevailed throughout the year. Improvement in the tone and the volume of demands has increased as the season has advanced. The cement factories all over the West and Northwest are doing a tremendous business. That, of course, means heavy calls for the output of the manufacturers of mechanical rubber goods. The paper mills are running at full blast. And there, again, is occasion for calls upon the dealers in the required rubber goods. With steel works adding their demands, the jobbers' and manufacturers' agents are busy.

Dealers in rubber boots and shoes report a year of most satis-

factory business, with no sign of discouragement for the future. The fine weather of the last few weeks has enabled the dealers to "straighten out," and business is moving now in the most satisfactory manner. The Chicago manager of the Standard Rubber Shoe Co., with headquarters at 311 West Monroe street, says the record of the year has been most pleasing to his company, and he looks for a continuance of good times in the rubber boot and shoe trade. The Chicago house of the Beaver Falls Rubber Shoe Co., 207 West Monroe street, reports business good and expects that 1913 "will be the best in history."

* * *

Chicago continues to be one of the world's largest patrons of the manufactories of rubber tires. Every local representative of the factories who could be reached by personal call or by telephone reported everything satisfactory in regard to the prospects for 1913.

In druggists' sundries and similar manufactures of rubber the same prosperous conditions are reported. The demand for fire hose increases just about in proportion with the increase in population. Additional purchases are made in some population centers because of discovery that hose on hand is of inferior quality and likely to prove practically useless in case of emergency. As a general rule, however, the calls on the hose manufacturers keep up with the requirements caused by growth in population. In all departments of the "hard rubber" trade in Chicago, business is reported excellent.

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H. W. Fauver has come here from Indianapolis to take position as assistant manager in the Chicago headquarters of the Diamond Rubber Co., 1523 Michigan avenue.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

WITH the election over and the political battles fought, rubber manufacturers and dealers are now down to hard work again to make the year just closing a banner one for their individual institutions. In the rubber clothing trade the weather this fall has been all that could be desired to encourage large orders in this line. Perhaps no other line has shared so well in the prosperity of the city as did the rubber tire industry, and from all local houses comes the same report—"Business is very good."

* * *

Perhaps there was no one person in the country who worked harder for the re-election of President Taft and felt the President's defeat more keenly than did Fred A. Geier, vice-president of the Cincinnati Rubber Co., who was the president of the "Prosperity League" that had its headquarters in this city and was a power in getting before the business men of the country arguments in favor of Mr. Taft's administration.

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The Dayton Rubber Manufacturing Co., manufacturers of the Dayton Airless tire, and termed the "Air Free Care Free" tire, has opened a branch in this city at 803 Race street. B. H. Pfister has been appointed manager in charge for this territory.

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Bumiller & Remlin, local agents for several leading makes of automobile, motorcycle and bicycle tires and dealers in automobile and bicycle accessories, have installed a unique feature in connection with their establishment. This concern, located at 412 Main street, is in the heart of the business district. They have installed at the curb in front of their establishment a reservoir for the purpose of supplying air to all automobile and bicycle owners, free of charge. The supply of air is furnished through the agency of an electrically-operated pump that fills and refills the reservoir automatically, and air is available every day and night throughout the year, the only requirement being a key, which the firm is distributing free to all automobile and bicycle owners on application. The firm has had 500 keys made, and most of them have already been distributed.

* * *

The rubber manufacturers and jobbers maintaining branch houses in this city, which are the distributing points for the central West and South, are unanimous in praising the results obtained by the Merchants' and Manufacturers' Association in the development of the package car system, which is proving a benefit to Cincinnati shippers. The main development is the issuance by the association of shipping guides by which shippers are enabled to judge before shipment what routing to give a package to insure its earliest delivery at its destination. Package cars leave Cincinnati direct for the following distributing points west and southwest and northwest: Chicago, Akron, Denison, East St. Louis, Houston, Kansas City, Little Rock, Memphis, St. Paul, Minneapolis, Peoria, St. Louis, Shreveport (Louisiana) and Vicksburg (Mississippi). At these points package cars start in various directions. A post card accompanies each invoice, giving the date of shipment. The consignee marks on it the time of receipt and puts on it any complaint as to delay. This enables the association to take up with the railroads any just complaints, and the railroads are co-operating to remedy any delays in delivery and appreciate highly the work the association does in locating the blame for delay. A sticker is put on every invoice and on every package. Local managers for the rubber houses who have a large number of shipments each week, and mostly shipments requiring prompt delivery, are enthusiastic over the results the association is obtaining in supplementing the work of the railroads.

* * *

Arthur Jack, for several years active as Cincinnati newspaper man and later engaged as city sales agent for the Diamond Rubber Co., at Minneapolis, has returned to this city to serve in a similar capacity for the Diamond Rubber Co.

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Urged on by widely expanding trade, the United States Tire Co., which operates a branch house at 1121 Race street, has just added two new salesmen to its already large staff—W. C. Price and J. A. Moore.

* * *

I. Z. Stone, of the Diamond Rubber Co., spent several days in the city and while here took advantage of the opportunity of mixing with automobile owners and talking Diamond tires. In speaking of the several fallacies that it seems impossible to get out of the average automobile owner's mind, Mr. Stone said: "The belief that hot weather and road friction increase the air pressure in a tire to a dangerous point, cost the car owners of this country millions of dollars every year. Because of this fallacy thousands of car owners habitually travel on under inflated tires, the 'soft' tire becomes bruised and cut, and before long there is a blow-out. The internal friction in a tire caused by the bending of the material, especially the fabric, does heat the tire, but the softer the tire the greater the bending action and the more internal heat. The increase in air pressure due to heat is not nearly as great as the car owner thinks. To get maximum mileage, the car owner should inflate according to a very simple rule—the pressure per square inch as shown by the pressure gauge should be 18 times the tire's cross section in inches. For instance, a 3½-inch tire should always be inflated to 63 pounds, a 4-inch tire to 72 pounds, and so on, regardless of hot or cold weather."

* * *

The I. J. Cooper Rubber Co., located at 717 Main street, has increased its capital stock from $10,000 to $100,000. The company deals in rubber accessories for bicycles and automobiles. Although the company has been in business a little less than a

year, the business has almost doubled in that time and branches have been established in Columbus and Dayton.

* * *

Cecil F. Adamson, of East Palestine, Ohio, filed suit in the United States District Court here against J. Everett Inman and George Inman, proprietors of the Victor Inner Tire and Rubber Co., of Dayton, Ohio, for alleged infringement of a patent on improvements in tire vulcanizing repair apparatus. He asks damages in the sum of $5,000, an accounting and an injunction restraining the defendants from further infringement of his patent.

* * *

Creditors of the Ohio Motor Car Co., which was placed in the hands of a receiver last month on application of the Diamond Rubber Co., filed a petition of involuntary bankruptcy in the United States District Court. The petition alleges that a specific act of bankruptcy was committed by the company by settling the claim of certain creditors in preference to others.

* * *

F. J. Ramler, formerly with the United States Tire Co., has joined the selling force of the Racine Rubber Co. as general representative for this territory. The local distributor for the product of the company—the Kelly-Racine tires—is the I. J. Cooper Rubber Co.

* * *

The Ideal Steel Wheel Co., a new Cincinnati corporation, has purchased the former plant of the Seufferle Cooperage Co. at Winton Place, paying, it is reported, $41,000 cash for the property. The corporation expects to revolutionize the automobile tire industry by the introduction of a solid tire, made possible through the manner in which the wheel is constructed. President J. B. Fitch of the company stated that the property would be greatly enlarged at an early date. The general dimensions of the main building are 200 x 226 feet, together with several minor structures. Since the latter have strong foundations it is the company's intention to utilize these and connect the whole in the very near future with an immense addition.

* * *

The Ajax-Grieb Rubber Co. is represented in this city by Hanke & Rothe, who have opened warerooms at 803 Race street and are handling the product of this company exclusively.

* * *

The Motz Tire & Rubber Co. of Akron has started active competition for business in this city and territory. An agency has been established with the Selden Auto Agency at 109 East Liberty street.

* * *

The Federal Motor Supply Co., which was recently incorporated in this city, has leased the buildings at 919 and 921 Race street and, after remodeling is finished, will open for business in about 15 days. The company will operate as wholesale and retail dealers in rubber accessories, parts and supplies for automobiles, truck, motor boats, air vessels and bicycles.

* * *

The scrap rubber trade is fast developing into one of Cincinnati's leading commercial lines. Until the advent of the automobile, dealers in rags and papers bought scrap rubber as a side line. Now there are two concerns in the city which are making a specialty of scrap rubber. These two concerns are M. Rider & Co., who operate a big plant at 113 and 115 Sycamore street, and Klein & Cohn, who have a large establishment recently fitted up and equipped for handling scrap rubber at 731 Reading Road.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

CONSTANT increases in output were made during November by the manufacturers of rubber shoes, arctics and boots. The unusual mildness of the season did not seem to affect business in Rhode Island, and in many instances factories ran well into the evening in efforts to keep up with their orders. One concern, the National India Rubber Co., of Bristol, sent shipments as far west as California. These latter were confined to insulated wire, which is being made in immense quantities in the new department which this concern opened, following the transfer of the manufacturing of sundries to Cleveland, Ohio.

* * *

The United Wire and Supply Co. has declared a quarterly dividend of 1¾ per cent. on the preferred stock and one per cent. on its common stock.

* * *

The International Rubber Co. at West Barrington, is increasing its output regularly. It now operates until 9 o'clock each evening.

* * *

A suit for $10,000 was filed in the Superior Court at Providence on Thursday, November 21, by Michael Mountain, of East Providence, against the Uniform Seamless Wire Co., of Providence. The plaintiff alleged that the fingers of his right hand were crushed as the result of a defect in the machinery at which he was working on February 20.

* * *

Owing to a misunderstanding the International Rubber Co., of West Barrington, started to erect a vulcanizing room at its plant in West Barrington recently without obtaining a building permit from the Barrington Town Council. When the attention of officials of the concern was called to the matter an effort to legalize the work was made. The company sent blue prints and a lengthy explanation to the town officials, and the Council voted that it would grant the belated permit.

The officials of this company are endeavoring to locate a place for a new manufactory to be started in New York, but thus far no plans have been decided upon, and the nature of the business has not been announced. At the present time this firm manufactures rubber textiles.

* * *

Although Providence dealers have been experiencing difficulty in securing sufficient coal to satisfy the terms of their contracts for several months, the National India Rubber Co., at Britol, has had large orders filled by the New York operators, and has been storing immense quantities for use during the winter.

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John Anderson, foreman of the shipping department of the wire department of the National India Rubber Co., and Miss Cora F. Shaw, of Fall River, Mass., were married at the home of the bride's parents on November 11.

* * *

The stores of the Diamond Rubber Co. and the B. F. Goodrich Co., of Providence, have been combined at 260 Weybosset street. Although the companies combined last spring, separate stores have been maintained in this and other cities. The separate lines, made by these companies which have been manufactured since the consolidation, will still be carried at the new store. George Coleman has been appointed business manager. Originally the Diamond company store was at 200 Washington street, and the Goodrich company at 392 Weybosset street.

* * *

Col. Samuel P. Colt has started the work of beautifying that part of Bristol which lies near his estate. A steam shovel has

arrived and big embankments are being raised where he will transform a neglected lane into a wide avenue which will pass over the tracks of the New York, New Haven and Hartford Railroad. A bridge 700 feet long will be a part of the improvement. This is another of a long list of improvements which Col. Colt has given to the town, where one of the largest plants of the United States Rubber Co. is located.

* * *

The Bourn Rubber Co., of Providence, which recently began the manufacture of automobile tires in addition to making overshoes, is widely advertising its new product as the Bourn-Goodyear tire. They claim for it that it costs from 10 to 15 per cent. more than other high grade tires to manufacture, but that the retail price is the same. The company is also emphasizing the fact that it has no connection, directly or indirectly, with any other tire manufacturer. The concern was established in 1840.

* * *

Rebuilding tires is now one of the industries of Providence. The Invincible Puncture Proof Tire Co., of which Charles H. Graves is president, is taking old tires at its plant, 53 Sabin street, and making them over and guaranteeing 3,000 or more miles.

* * *

Rhode Island manufacturers are congratulating themselves that they are not having trouble with the "Industrial Workers of the World," like that which some of the other rubber companies have encountered. Organizers of this body have made repeated attempts to gain a foothold here, but their demonstrations have been dealt with vigorously by the police, and public sentiment is so strong against the militant tactics of the "workers," that they have practically no representative in the state at present.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

E. C. TILSLEY, with offices in the Call building is now promoting a company for the purpose of manufacturing and selling a new substitute for rubber. A man by the name of J. H. Schwartz, now of this city, is the inventor of the process, and he claims that it has attained the desired degree of perfection to successfully compete with the genuine product. He has been working on the basic mineral called Gilsonite, for seventeen years, making it up in different combinations until he at last arrived at a result which appealed to him as thoroughly satisfactory. Gilsonite is a black mineral found in large quantities in Colorado, Utah and Nevada. It is a light substance and feels something like a piece of hard tar, or hard metallic rubber. Mixed by Schwartz's chemical process it becomes a crude mass with much resemblance to crude rubber, although more gritty and brittle. After being subjected to a vulcanizing process, however, all sorts of rubber products are produced, which the inventor claims are in every way equal to those made from genuine rubber.

* * *

The Pennsylvania Rubber Co. has opened a fine large branch at Seattle, Washington, and J. E. French, the Pacific Coast manager for the company, who has his headquarters in San Francisco, has returned from that city where he attended to the details of installing the new store. G. J. Brooks, who was the chief clerk in San Francisco has been placed in charge of the Seattle branch. The store is located in the Armory building, and it is the finest store which the company has on the Pacific Coast. It is fitted up in most excellent style, and has every modern convenience, and having 9,000 square feet of floor space, there is plenty of room to carry a large stock. This gives the company a firm hold on the business of the Northwest, as besides the new Seattle store they have a distributing agency with the Yakima Hardware Co., of North Yakima, Washington, and another with the Morrow Drew Co., of Walla Walla. In Oakland, California, the company has made a find in the person of Robert Martland, a pioneer tire man of that city who has a store on Broadway. Mr. Martland is one of the live wires in the tire business, and he has taken hold of the company's Vacuum Cup tires in such a whirlwind campaign that the company is unable to supply him with enough goods. Mr. Martland has imparted his enthusiasm to all kinds of prominent people and even had a Superior Court judge doing some non-skid stunts out on a slippery road for the sake of demonstrating his firm belief in the tires.

* * *

The Superior Vulcanizing Co. has been incorporated at Bakersfield, California, with a capital stock of $20,000, practically all paid up. A. W. Albrecht holds the control, and A. Albrecht and Geo. A. Baer are also owners in the business.

* * *

The Firestone Tire & Rubber Co. has already started work on the foundations of an elegant new building which the company will occupy as soon as completed. It is located on Van Ness avenue between Bush and Pine streets. The building will be completed early in the spring. When the Firestone company established a branch in San Francisco two years ago it erected a three-story building on Van Ness avenue and Fulton streets. Recently the city has been purchasing property in order to establish a great civic center, and this property is included in the civic center and has been taken by the city. The new building will be a two-story structure and will be large enough to accommodate an immense stock. Mr. W. H. Bell, local manager of the company, has just returned from a visit to the factory in the east.

* * *

C. E. Mathewson, Pacific Coast manager of the Diamond Rubber Co., says that the popular belief that hot weather causes the tire pressure to increase and injure the tire, is not only a fallacy, but costs automobile owners millions of dollars every year. "In hot weather," he said, "they are afraid to pump their tires full, and the result is that the half filled tires wear out in half the time."

* * *

The W. D. Newerf Rubber Co. has opened a retail service shop and store at Van Ness and Golden Gate avenues. The company's warerooms are on Mission street.

* * *

J. M. Gilbert, of New York, general manager of the United States Tire Co., is expected in San Francisco in a few days. He will be met by C. A. Gilbert, the Pacific Coast manager in Seattle, and from there they will make a complete tour of inspection of all of the Pacific Coast branches.

* * *

Henry Byrne is no longer connected with the Quaker City Rubber Co., having recently accepted a position with the Plant Rubber & Supply Co.

* * *

Mr. Gibson, who was formerly with the Sterling Rubber Co., has quit the rubber business to take up the agency for a new electric heating device attached to faucets for heating water.

* * *

Mr. Oliver, who was formerly superintendent of the factory of the American Rubber Co., at Emeryville, California, has gone into business for himself, having opened a shop on Broadway, in Oakland, where he makes automobile tubes, and patches only.

* * *

Elliott Mahan, a rubber planter of Colombo, Ceylon, has been a recent visitor in this city. He is on his way to Edinburgh, Scotland, for an extended visit.

* * *

The Acme Rubber Co. has been incorporated in San Francisco with a capital stock of $100,000, the shares being of the value of $1 each. The organizers are L. Seidenberg, G. M. Davis, W. S. Baker, J. C. Montgomery and P. Kenrick.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

THE Roberts Manufacturing Co., of Trenton and New York, which was incorporated November 22, for $1,000,000 under the laws of Delaware, plans to manufacture sectional inner tubes for automobile tires on an extensive scale, at the plant which the company proposes to erect in this city. Frederick T. Roberts, of this city, the promoter of the new company, was one of the incorporators, along with Frederick L. Guggenheim and Edward Howitz, both of New York City, and Walter L. Watson, of Weehawken, New Jersey.

The company is organized to manufacture and sell rubber goods of all kinds, but Mr. Roberts declares that the main business of the corporation will be the manufacture of the patent inner tube automobile tires. These sectional inner tubes are of the pneumatic order, but constructed along entirely new lines. There are ten sections of a tube to each tire. Each section has thirty-two cells running the length of each section, and each cell is filled with compressed air, and then the ends are vulcanized to prevent the escape of the air.

When the inner tubes are placed in an outer tube or shoe they make a complete circle with close fitting joints. The advantage is that when a puncture occurs only a single section is destroyed, if it is destroyed at all, instead of the entire inner tube. By reason of the fact that there are thirty-two longitudinal cells, it is claimed that in an ordinary puncture the air would be let out of a small number of the cells and that the progress of the machine would not be seriously interfered with. By the use of these sectional tubes it is claimed that autoists will not be obliged to carry extra tires on the machine. Only one or two additional sections will be required. The sections are about ten inches in length.

The patent inner tubes are now being manufactured at the plant of the United and Globe Rubber Co. in this city. The placing of compressed air in the cells, and the vulcanizing of the ends of the sections is being done at the plant of the Roberts Co. on Pike street, this city. Mr. Roberts believes the patent sectional inner tube is perfect, and says he has been working on the sectional inner tube for the past two years, and that tests have demonstrated the superiority claimed by the company. The tubes are so constructed that they will fit any rim or shoe on the market.

FROM THE SAYINGS OF SQUANTUM.

Reno—a name suggestive to the ordinary lay mind of divorce and alimony—not to mention subsequent matrimony—has according to so eminent an authority as Squantum, a good Indian chieftain, famous in song and story another meaning, to wit: "lack of attention," which; after all, has no doubt been the forerunner of the conditions first suggested. The late Mr. Squantum, who in addition to being an authority on definition, is a sort of reclaimed sponsor for the Monatiquot Rubber Co., South Braintree, Massachusetts, pledges his aboriginal credit that Monatiquot stocks are not RENO-VATED, but are reclaimed in most—if not all—of their original virtue.

NO EXHIBITION RUBBER IN THE MARKET.

As some manufacturers have reported that they have been approached with the offer to sell them some of the crude rubber that was on exhibition at the recent New York rubber show, it may be well to state that there is none of this exhibition rubber on the market, as all of it was sold on the last day of the exhibition direct to manufacturers.

ANOTHER INCREASE IN CAPITAL.

THE Knight Tire & Rubber Co., of Canton, Ohio, has increased its capital stock to $1,500,000. The increase in the capital stock is to provide a larger working capital and for future improvements and additions to the plant

OBITUARY RECORD.

DEATH OF FRANK W. GREENE.

FRANK W. GREENE, crude rubber broker, of 150 Nassau street, New York, died October 31 of pleurisy at his apartments in the Standish Arms, Brooklyn. He was 73 years of age.

Mr. Greene first became connected with the rubber business in 1870, when he was a member of the firm of Randall H. Greene & Sons, of which his father was the head. In 1883 he opened a rubber brokerage office of his own and was continuously in this business until the time of his death, acting strictly as a broker, and for the greater part of that time as a general broker, though for ten years—from 1888 to 1898—he acted as a special broker for John Kenyon of London.

Mr. Greene was born in New England and was a fine exemplar of the characteristic New England virtues—by which he came quite naturally, as his ancestors settled in that part of the country about 250 years ago. He was a man of quiet tastes, and divided his time between his office and his home, but he had many stanch friends among the rubber men of his generation, among them such well-known and substantial characters as John B. Forsythe, Amadee Spadone, John H. Cheever and William H. Acken. He was deeply interested in everything that pertained to the rubber industry and, incidentally, he had been a subscriber and reader of this publication almost from its initial issue.

He is survived by his widow, one son, Irving W. Greene, and a grand-daughter, Mildred, to whom he was much attached. His son was formerly associated with his father as a rubber broker, but is at present connected with F. W. Devoe and C. T. Reynolds, the paint manufacturers.

THE DEATH OF A RUBBER FOREMAN.

William Folsom, for many years a foreman in the works of the Revere Rubber Co., Chelsea, Massachusetts, died on November 8, in that city, at the age of 68. Mr. Folsom was a veteran of the Civil War and belonged to the Theodore Winthrop Post.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufacturers of india-rubber and gutta-percha from the United States for the months of August and September, 1912, and for the first nine months of five calendar years:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
August, 1912.....	$269,239	$196,415	$763,659	$1,229,313
September, 1912....	237,546	163,809	660,097	1,061,452
January-July	1,381,648	654,464	4,592,615	6,628,727
Total, 1912.....	$1,888,433	$1,014,688	$6,016,371	$8,919,492
Total, 1911.....	1,701,441	1,349,380	5,402,984	8,453,805
Total, 1910.....	1,592,594	1,664,215	4,258,968	7,515,777
Total, 1909.....	1,301,497	1,127,806	3,059,146	5,488,449
Total, 1908.....	926,566	1,043,528	2,629,927	4,600,021

The above heading, "All Other Rubber," for the months of August and September, 1912, and the first nine months of the two calendar years, includes the following details relating to tires:

Months.	For Automobiles.	All Other.	Total.
August, 1912.....	405,781	46,937	452,718
September, 1912.....	292,809	50,002	342,811
January-July	1,835,045	346,504	2,181,549
Total, 1912.....	2,533,635	443,443	2,977,078
Total, 1911.....	1,941,773	437,201	2,378,974

The India-Rubber Trade in Great Britain.

By Our Regular Correspondent.

EXCEPT for the general reason that it is the main topic of the moment, there is no particular reason why I should refer to this subject. I believe I am correct in saying that in none of the five States at war is there a rubber works in the regular sense of the term; but, of course, a considerable business is done in imported rubber goods. This business will naturally be hampered in the same way, though to a less important extent, as has occurred with—for instance—cotton goods, the export of which from Lancashire has for the time entirely ceased. This will not affect the staple Lancashire trade to any great extent, because business generally is very brisk and the merchants have other and more important markets to absorb their attention. In certain cases, however, I hear of mills running on short time, or even closing down, owing to the stoppage of business in the Near East. With regard to imported rubber goods, Turkey is the most important Balkan State. Goloshes come mainly from America and Russia, the latter country having largely increased its trade in South Eastern Europe in late years, a fact due, no doubt, to a large extent, to the common basis of the Slav languages. For many rubber goods, such as mackintoshes, there is very little demand. Probably the rubber imports which have shown the greatest expansion in quite recent years, are motor tires. Since I was in Montenegro the mail car has been converted from a low-wheeled horse vehicle to a motor car, which appears to tackle the 4,000 feet rise from Cattaro to Cettinge without difficulty. The road, I may say, although a monotonous zig-zag, is otherwise a very good one and far superior to any to be found in northern Albania, these being mainly rough tracks freely strewn with boulders. Metalled roads in Montenegro are, however, by no means universal, a fact which does not disconcert the natives, who tackle rocks, as their goats do. The ordinary footwear is an untanned laced calfskin sandal, as leather boots have a very short life on the rocks. Needless to say that Montenegro offers no inducements to the establishment of a golosh store. A largely increased (though it is to be hoped ephemeral) demand is for hospital bandages, etc., as part of the equipment of the various Red Cross League parties that are being dispatched to the theatre of war by Great Britain, Russia and other countries.

THE BALKAN WAR.

WHETHER it is due to inconsiderate usage or to decline in quality I am not in a position to say, but one hears general complaints with regard to these goods. Since a certain legal case of a few years ago, when an action for damages was brought against a chemist, as seller of a bottle that burst when in use, shop keepers have been somewhat chary in giving guarantees. Nowadays some sellers will not give guarantees, while others will give a twelve-month guarantee on the understanding that only hot, but not boiling, water is to be put in them. A good many people, I understand, have given up the use of the more convenient rubber bottles in favor of the glazed stone-ware article, owing to fear of the former bursting at an inopportune time. With the stone bottle the water can be put in at the boiling temperature, the heat being retained for a longer time than in the rubber bottle. I heard recently of a nursing institution, formerly a large user of rubber bottles, which has now entirely given them up. It would, therefore, seem clear that this article, like elastic thread, should be made of one quality only—the best—and that price cutting should be sternly discountenanced by all manufacturers. Exactly how this end is to be attained, I will leave to others to decide.

HOT WATER BOTTLES.

THE number of different advertisements relating to mineral rubber or natural asphalt as obtained in America is a pronounced feature of our trade literature, and those on this side to whom the subject is of interest confess that they are somewhat bewildered. They are wondering whether so much as is claimed really depends upon the special trade mark of the package, or whether there is a certain amount of bluff, owing to close trade competition. Far be it from me to attempt shedding light upon such a dark mystery, but I may perhaps make a few general observations. These asphaltic bodies certainly seem to have substantiated their claims to utility in a variety of rubber mixings, and there can be little doubt that the demand will increase. I have been asked if there is any difference between these natural products and coal tar pitch, which is so largely produced in Great Britain for home use and export. I certainly find a distinct difference not only in chemical constitution—a matter not of great moment—but also in physical properties, particularly in flexibility. The ordinary coal tar pitch is much more brittle at any rate than the particular American products I have had under test. The instrument known as a penetrometer, used in America for differentiating qualities of solid mineral hydrocarbons, does not appear to be much known in England. The manager of one of our largest pitch works tells me that he has heard of its use in America, but knows nothing about it himself. Perhaps our editor could do something to dispel the cloud of ignorance on this side by giving a sketch and brief description of the instrument in use in America. The article on "Mineral Rubbers" in THE INDIA RUBBER WORLD for October is very interesting, though one regrets that the geological illustrations are not explained in the text. For instance, what is the nature of the country rock through which the elaterite vein courses. I am familiar with the limestone district in Derbyshire, where the mineral rubber has long been known. Here it usually occurs in the lead veins at the top of the limestone, where this latter is covered by the black Yoredale shales. Small quantities of mineral oil have in past days been tapped by the lead miners, and it is on record that men have been killed by explosion of petroleum vapor. Owing to its intermittent occurrence in the veins, elaterite has never been commercially worked in England, though quite recently asphalt works have been established at places where the limestone is strongly bituminous.

MINERAL RUBBER.

THIS subject is being investigated by Mr. S. T. Peachey at the Manchester School of Technology, and a preliminary paper giving his results to date was given by him at a meeting of the Manchester Section of the Society of Chemical Industry, on November 1. Special reference was made by the author to the work done recently by Herbst, who passed oxygen through a solution of rubber in benzine and obtained 86.4 per cent. of a body $C_{10}H_{16}O$ in solution, and 1.7 per cent. of an insoluble yellow body $C_{10}H_{16}O_3$. The author's experiments were carried out in a different manner, a thin film of rubber being deposited from solution inside a glass flask, and this being acted upon by a measured volume of oxygen at a temperature of 85 degs. C., until no further oxygen was absorbed, as registered by a gas burette. The rubber used at first was plantation crêpe, freed from resin by acetone. This was found to undergo complete oxidation in 35½ hours. Further experiments were made with the same rubber, which had not had its resins removed, and it was found that the time for complete oxidation was much prolonged, ninety-nine hours being required. The amount of resin

THE ACTION OF GASEOUS OXYGEN ON INDIA RUBBER.

in the rubber was 3.00 per cent. Analysis of the product showed that each $C_{10}H_{16}$ reacted with four atoms of oxygen, the results therefore not being in agreement with those obtained by Herbst. In the discussion which followed the reading of the paper, Mr. H. L. Terry referred to the figures published by Burghardt in 1883 relating to the oxidation of vulcanized elastic thread, and supported Burghardt's statement that the percentage of water found in decayed rubber formed a good index of the amount of deterioration which had taken place. He (Mr. Terry) had observed that where the rubber had oxidized to the degree at which it could be powdered in a mortar, the amount of water was always greater than in the earlier stages of oxidation, and further that the harder the rubber was the greater was the amount of free acid present. He thought that Mr. Peachey's experiments were of great interest, but would prove of more practical importance if applied to vulcanized rubber. The rate of oxidation of rubber was very largely a matter of tenuity, and conclusions must not be drawn too hastily with regard to rubber goods generally, on the basis of the extremely thin films used by the author. Professor Perkin inquired whether the oxygen used was dry or moist, as he would expect a different result in each case, and was any volatile body produced? The answer was that the oxygen used was saturated with moisture, and that some drops of an oily liquid were volatilized. Mr. S. Frankenburg suggested that if the author had used Brazilian Pará instead of plantation rubber, he would have found that a much longer time was required for oxidation. In the course of discussion when the meeting was over, some visitors from rubber works expressed surprise at the resinous rubber giving better results than the resin free—this not being in accord with their practical experience.

SELECT COMMITTEE.

A COMMITTEE, consisting largely of members of Parliament, belonging to both political parties, has been appointed by the government to inquire into the Putomayo atrocities, and, in particular, to decide whether or no the Englishmen on the board of the Peruvian Amazon Company are to be censured for what has taken place. An application made to the courts for the removal of Senor Arana from the position of liquidator in the present voluntary liquidation, has been adjourned until the above committee gets to work.

Another committee has been appointed to inquire into the matter of the celluloid goods manufacture in Great Britain. This is the outcome of a fatal fire which occurred in London a few months ago. These committees, though of a lower status than a royal commission, have much the same powers. Witnesses may be examined on oath, and persons whose actions come into question may be represented by counsel. The proceedings are always open to the reporters of the press.

FIRE HAZARDS IN RUBBER MANUFACTURE.

THE article on this topic in the "Weekly Underwriter," and reproduced in THE INDIA RUBBER WORLD of October 1, is of interest, though all manufacturers will not agree with it throughout. We read that in making rubber cement the rubber is softened in carbon dioxide; presumably carbon disulphide is meant, though it is not customary in this country to use any special softener before dissolving in naphtha. The dangers attached to this branch of the manufacture have often been exaggerated, and what trouble has arisen has usually occurred after it has left the manufacturer's hands. It seems to be going rather too far to expect the manufacturer who knows his business and its associated risks, to restrict himself closely to the amount of cement he has on hand at any particular time. With regard to danger of firing from static electricity, I suppose a case does occur every two or three years. This will be when the atmosphere happens to be very dry. The suggested precaution of "grounding" the machines has been followed to some extent in this country, but a good system of ventilation where naphtha vapors are heavy, will obviate any danger. I have no experience of the danger alleged to exist in the buffing department, and pass on to the chemical room. It is entirely news to me that "barium sulphate" is a rapidly oxidizing metallic substance which is a frequent source of trouble if allowed to become damp. The writer seems entirely off the track here, and I am sure there is no truth whatever in the statement. With regard to unslaked lime becoming slaked and setting fire to things about it, this is quite possible, though the probability is quite remote, at any rate in this country, as all the lime sold for rubber purposes, though nominally the oxide of calcium, is always partially hydrated before sale. The reference to lamp-black is important—too important to be adequately treated in a couple of sentences. There are plenty of instances where blacks have suffered spontaneous ignition in rubber works, but a great deal depends upon the nature and origin of the black. In my experience calcined lamp-black is quite safe—it is certain qualities of vegetable black that always have danger associated with them, and these should be stored in a suitable place apart from anything of a combustible nature.

THE GORTON RUBBER CO., LIMITED.

The annual meeting of the Gorton Rubber Co., Ltd., Manchester, England, was held November 9. There was a large attendance, including all the directors; George H. Cartland (chairman) presided. F. Walmsley and W. H. Veno were re-elected directors. This was immediately followed by an extraordinary general meeting, at which it was resolved unanimously to increase the capital of the company by 30,000 pre-preference shares, 20,833 of which will be issued to the present shareholders at the rate of one new share for every three shares now held. This was agreed to by a separate meeting of the preference and ordinary shareholders. It was stated that the orders on the books at the present moment are double the number at this time last year.

NEW LONDON RUBBER FIRM.

A new firm, under the style of Ritter & Hankin, has been formed in London, as importers of and dealers in india rubber, gutta percha and balata, at 27 Mincing Lane. The partners are Alfred Westendarp, M. A. Ritter and George Hankin, all of whom have long been engaged in the india rubber, gutta percha and balata trades, both as importers and dealers.

MISTOVSKI BECOMES MINTON.

Louis Mistovski, a merchant dealing in raw rubber in the Trevelyan Buildings, Manchester, England, announces that he has changed his name to Louis Minton, and that hereafter he will transact all business under that name.

THE PERCENTAGE OF RUBBER IN ENGLISH CASINGS.

One of the American consuls in Great Britain has been looking into the possible tire market in that kingdom for American tires. According to his opinion, it ought to be possible to sell American tires there because of their better quality. He writes as follows:

"Despite the large sales of American automobiles here, American tires have not been introduced into the United Kingdom to the degree that might have been expected, especially as it is stated that there is more actual rubber in the American article than there is in the British or European product, in which, it is said, there is not more than 7 to 10 per cent. of rubber in the outer casing and 35 per cent. in the inner tube, substitutes and fillers being extensively used."

The Empire Rubber Co. (Messrs. E. Hodgson & H. Waterhouse), of the Leeds Old Rubber Works, pioneers of the scrap rubber trade in Yorkshire, England, have recently purchased the business of the Union Rubber Co., of Leeds, and have again added to their premises by leasing extensive ground adjoining, including the wholesale premises so long occupied by the late John Robshaw in St. Columbia street, Leeds.

THE SETTLEMENT AND TAXATION OF AMERICAN FIRMS IN GERMANY.*

IN dealing with the above subject in the Bulletin of the American Association of Commerce and Trade, Berlin, Dr. Paul Marcuse of that city points out that foreign persons over a year resident in Germany, or engaged in doing business there are subject to the same taxes as German subjects. These taxes come under four heads—income tax; tax on personal property and capital; real estate tax; and tax levied on all persons personally engaged in business (Gewerbe Steuer).

The chief point at issue being that of "doing business," it is of interest to note that, in Dr. Marcuse's opinion, if an American firm sells to or buys in Germany; orders being taken by mail, wire, traveling salesman and canvassers, it is not thereby "doing business" in the sense of the law. Apparently the running by the American firm of a place in Germany, where any business forming part of the home trade is done, brings it within the law.

At the same time, the appointment of an agent or representation by a commission merchant, does not necessarily constitute doing business.

Two typical cases are referred to. In the one a big importing house, which represents many foreign firms, in various trades is an independent business. In the other, the salaried representative of a single firm is to be considered as an employe who runs the foreign firm's establishment. While these two cases are in themselves perfectly clear, it will often be rather doubtful whether the office is that of a German commission merchant or of a foreign firm; for the reason that, as a rule, business men choose the most convenient form of representation, without worrying about the legal side of the question. So it is often very hard to decide whether the foreign firm or its representative is doing business.

The keeping of a large sample room does not constitute doing business. On the other hand a firm was considered as doing business in Germany, which sold its goods through traveling salesmen, which were forwarded from stock held in Berlin.

In conclusion, Dr. Marcuse remarks that there is one way of evading all the above difficulties, by forming an independent corporation, either a stock company or an association with limited liability; the latter form being more appropriate for the representation of foreign firms. Such association can be formed by two persons with a capital of $5,000, and may have for its object the representation of a certain foreign firm. The income tax on such associations is higher than that levied on individuals, but as it will never have to show a profit, it will be consequently practically exempt from that tax, with which the business tax is small in comparison.

The authorities have attempted to claim that such associations should be disregarded, as being in bad faith. The courts have, however, decided that a corporation, duly organized under German laws, cannot be simply overruled by tax officers, for the reason that they were formed to evade taxes.

MR. YAMADA GOES TO THE "GOMU SEKAI."

OUR enterprising correspondent in Japan, Mr. S. Yamada, who has been associated for some time with the Japanese rubber paper called the "Gomu Shimpo Sha," has left that publication to take the position of editor and manager of the Tokyo and foreign office of the "Gomu Sekai," a monthly publication printed in Osaka, which is an organ of the rubber and celluloid trades. Mr. Yamada is a very painstaking and reliable newspaper man and is widely familiar with the rubber trade of Japan, as well as with the trade generally all over the world. He goes to his new position with a fine equipment for his work.

RUBBER TRADE IN JAPAN.

By Our Regular Correspondent.

JAPANESE RUBBER PLANTING IN MALAY PENINSULA.

ACCORDING to the details which appeared in the April, 1912, issue, Japanese investors to the number of 77 had, up to the previous August, acquired in Malaya about 83,750 acres, of which the area of 15,800 acres had been planted. More detailed particulars, since available, show the distribution to be as follows:

STATES.	Number of plantations.	Acreage rented.	Acreage cultivated
Johore	44	77,730	12,785
Negri Sembilan	15	2,845	1,768
Selangor	21	1,420	880
Perak	6	1,055	480
Kedah	1	450	220
(Singapore)	2	250	120
Revised particulars to end of 1911..	89	83,750	16,453

The State of Johore thus contains 50 per cent. of the number of Japanese plantations in the Malay Peninsula, as well as 93 per cent. of their total acreage and 75 per cent. of the cultivated area of its plantations. Eighty per cent. of the whole Johore acreage and 60 per cent. of the cultivated portion belongs to eight plantations. Johore is consequently the most important Malay State for Japanese rubber cultivation.

LATEST EXTENSIONS.

In October, 1912, Mr. Chujun Osada, who had owned 500 acres along the river Johore (not cultivated), established the Malay Planting Co. with $150,000 capital for cultivating 1,000 acres.

The Okura Rubber Co. has been lately established with $50,000 capital to cultivate 1,300 acres along the Central Railway of Johore, in part of which the late Mr. Okura had been interested.

RUBBER PLANTING COMPANIES IN CHINA.

During the rubber boom of 1909-1910 no less than thirty-nine companies were started in China for the purpose of acquiring rights to rubber lands selling them, rather than with the idea of planting trees. When the reaction came these companies were seriously affected, some of them only retaining their name, without any assets.

Six of the companies, however, paid a dividend to the stockholders for a time. These were: (1) Alma Estates; capital, $350,000; paid 3 per cent. in 1910, when they made $18,000, but lost $19,000 in 1911. (2) Chaupedack Rubber and Gambier Co.; capital, $190,000; paid 10 per cent. in 1910, when they made $12,000. In 1911 they made only $5,500 and paid no dividend. (3) Anglo-Java Estate; capital, $1,250,000; paid 7½ per cent. in 1910, when they made $8,500; paying 4 per cent. when profits were reduced in the year 1911. (4) Denkaranturian; capital, $150,000; profits in 1911, $2,000, and $24,000 in 1912, when 12 per cent. was paid. (5) Padang Rubber; capital, $150,000; made $10,000 in 1911, but paid no dividend; made $23,000 in 1912, when paid 6 per cent. (6) Senaivan Rubber Estates; capital, $250,000. In 1911 paid 38 per cent., when they made $75,000.

Most of the investors are Englishmen and the rules of the companies are in accordance with British law.

BRITISH CAPITAL IN SUMATRA.

According to a British Consular Report on the trade of Sumatra, the cultivation of rubber is one of the most important industries of that island, representing about $40,000,000, five-eighths of which is estimated to be British capital, divided among 50 companies. Some 30 companies are said to be producing, but the majority only on a small scale. Returns are quoted which showed that at the end of 1911 there were 130,000 acres planted in *Hevea Brasiliensis*.

Some Rubber Planting Notes.

FEDERATED MALAY STATES RUBBER CO., LIMITED.

ACCORDING to the annual report prepared for presentation to the shareholders at the annual meeting of October 30, at Antwerp, the planted area increased during the year from May 31, 1911, to May 31, 1912, from 3,824 acres to 4,594½ acres, total area having increased in the same time from 7,264 acres to 8,217½ acres.

The total yield of rubber for the year was 720,853 pounds, slightly over the estimate of 711,000 pounds, the average yield per tree having increased from 2 pounds to 2.49 pounds, and per acre from 211 pounds to 227 pounds. The cost of production, including general expenses, equaled 1*s.* 9½*d.* per pound, against 2*s.* 6½*d.* for the previous year, the increased number of trees tapped and the higher yield per tapped tree causing this reduction. For the year 1912-1913 the estimate is 1,000,000 pounds of dry rubber.

SAPUMALKANDE RUBBER COMPANY, LIMITED.

THE total harvested for the first three quarters of 1912 was 149,916 pounds (against about 90,000 for corresponding period of 1911), of which 76,600 pounds were sold at an average gross price of 4*s.* 8*d.*, forward contracts for 13,440 pounds No. 1 having been made at an average gross price of 4*s.* 8½*d.* Forward contracts for 1913 represent 36,000 pounds at a gross average of 4*s.* 8.33*d.*

SEAPORT (SELANGOR) RUBBER ESTATE, FEDERATED MALAY STATES.

Having produced in the year ended June 30, 1911, a yield of 17,717 pounds, the figures for the year ended June 30, 1912, of 130,291 pounds show more than a seven-fold increase in the production of the Seaport Rubber Estate.

The cost of production was 2s. 0.38d. per pound, or, including all London charges, 2s. 6.54d. per pound.

MALAYAN GOVERNMENT WARNING INVESTORS.

The government of the Federated Malay States has issued a warning against participation in certain speculative companies. During the boom of 1910 they started acquiring rubber estates, but are now devoting their energies to cocoa nuts and copra. In the cable which transmitted this warning it was likewise stated that several retired English officials were mixed up with these companies, the financial status of which is not thereby strengthened.

MALAYAN COMPANIES' RETURNS.

The returns of six leading Malayan companies for the eight months ended August 31 compare very favorably with those for the corresponding period of last year. Exact figures are:

	Eight months to August 31	
	1911	1912
	pounds	pounds
Anglo Malay	461,966	516,760
Pataling	196,230	281,118
London Asiatic	188,294	406,309
Golden Hope	62,488	85,760
Selaba	115,104	196,676
Bikam	54,906	97,630
Total	1,078,988	1,584,253

MR. WICKHAM'S IMPROVED SMOKING APPARATUS.

In the October issue attention was called to the fact that the new smoking apparatus designed by Mr. H. A. Wickham and made by David Bridge & Co. was to be shortly demonstrated at the works of the Colombo Commercial Co. According to the "Colombo Observer," the demonstration has now taken place, with the result that a block has been produced resembling fine hard Pará in appearance, but on being cut was seen to be finely laminated, each flake of rubber having been well smoked. The block produced was about nine inches or a foot square, and at the time of writing was not quite hard.

This condition would be attained in about a fortnight, and then its appearance would closely approximate that of hard Pará.

The process is interesting. Latex is poured into a revolving drum, smoked and pressed. In the Amazon the smoking is done with fuel obtained from the palms. The palms, however, are different from those growing in Ceylon, but Mr. Wickham thinks that the local palm tree will be quite suitable for his process. The machine at present is foot powered, but it is adaptable for belt drive. There is a possibility of a further demonstration in Colombo. Those who have seen both the rubber and the process are convinced that it is a good thing, and may have an important bearing on the plantation industry.

PROSPECTS OF SOUTHERN INDIA.

The report of Harrisons & Crosfield (Limited), London, in speaking of the acquisition of the business of Cameron & Co., of Quilon, Southern India, adds:

"We decided to extend the interests the company had in Southern India, which country, we feel, has a great future before it in connection with the tea and rubber industries, having many natural and economic advantages for the production of both."

As this company acts as secretary for various large rubber companies, it is in touch with the situation generally.

FEDERATED MALAY STATES RUBBER EXPORTS.

	1910. lbs.	1911. lbs.	1912. lbs.
January	768,743	1,329,170	2,730,576
February	728,458	1,490,849	2,715,767
March	899,383	1,916,219	3,089,583
April	1,123,097	1,235,917	2,285,390
May	877,435	1,147,488	2,255,034
June	879,675	1,229,754	2,305,915
July	971,469	1,581,993	2,695,861
August	981,022	1,651,845	3,655,535
September	1,110,476	1,677,062	2,968,121
October	1,484,847	2,182,857	3,210,831
Total	9,824,605	15,443,154	27,912,613

By the above returns it will be seen that this year's rubber exports from the Federated Malay States are so far nearly double those for the corresponding period of last year, and almost three times those for the first ten months of 1910.

RUBBER EXPORTS FROM PANAMA.

According to the report of the German commercial expert for the West Coast of South America, the rubber exports of Panama are still inconsiderable; planting being only as yet in its commencement. Good prospects, however, exist for the future. *Castilloa elastica* is found in nearly all parts of the interior, and a little rubber has been exported for many years. In former years the Indians used to cut down the trees for the sake of the latex; but more recently they have been re-planting. The plantations are, however, still too young to produce a yield. The rubber exported as "Panama Rubber" is quoted in Germany at the same price as Peru rubber.

BRAZILIAN VIEW OF NEW YORK PRIZE AWARD.

The "Revista" of the Amazonas Commercial Association of Manáos, in commenting upon the cable advice of the award to the State of Amazonas of The India Rubber World trophy, remarks:

"It is beyond doubt that our rubber forms a distinct type, superior in resistance and elasticity to the rubbers obtained by the chemical coagulation of the latex, seeing that in competition with the latter it has obtained the special prize in three expositions."

A CHANCE TO START RUBBER IN BURMA.

A letter has been received in the office of The India Rubber World from an Englishman resident in Burma, who believes that there is a very fine prospect for the profitable planting of rubber in that country. He writes as follows: "I am very much interested in rubber, being a practical planter of seven years' experience in Sumatra, Malay States and Burma, and from what I have seen this country compares very favorably with the others, and I am certain there is a great future for rubber-growing in Burma. The principal reasons in support of the above statements are as follows:

"1. Large tracts of suitable rubber-growing land.

"2. Soil and climatic conditions excellent.

"3. Plenty of labor, and cheaper labor than in other countries, daily labor varying from 16 to 25 American cents per day, principally the former.

"4. Estates are very free from disease.

"5. Easy communications by road, rail or sea.

"6. Land is rent-free for eight years.

"And lastly, estates can be opened up, burnt, cleared and stumped, planted and brought into bearing easily for $150 American money, which compares very favorably with other countries."

He goes on to say that he believes there is a fine opportunity for American capitalists to invest money in a rubber plantation in Burma, and he would like very much to undertake the management of such a plantation, and refers to a number of people in the Middle East and in London who will vouch for his personal reliability.

PLANTATION AND WILD RUBBER—AS VIEWED BY A BELGIAN EXPERT.

In a review of the above question in the columns of the "Gummi-Zeitung," M. G. van den Kerckhove, of Brussels, refers to the opinion often heard that wild rubber is destined to be superseded by plantation rubber, but takes exception to that view of the case. Here is his opinion of the matter:

"Wild rubber will always retain its market, particularly the fine Pará of the Amazon, which will always remain the standard of elasticity for all the rubber manufacturers in the world. Fine Pará will not allow itself to be dethroned, and will always take the lead for elasticity, although many Ceylon and Malay descriptions may surpass it as to purity and dryness."

From the above it is deduced that the efforts of the planting companies should be directed towards a product as far as possible equal to fine Pará.

Attention is called to the fact that there is in plantation rubber a great diversity of quality, though from the same source (*Hevea*) and cultivated on the same soil. At a recent London auction, according to this writer, there were 11 or 12 well marked qualities of crepe ranging in price from 3s. 8d. to 4s. 8d., and five qualities of biscuits and sheets from 4s. 4½d. to 4s. 7¼d. Only block was fairly uniform in price and quality.

He continues:

"Is there any way of counteracting this diversity in quality, which affects the good reputation of this rubber? I must answer this in the affirmative. In my opinion, binding agreements should be made at one of the next rubber congresses, between the planting companies as to a uniformity in the form of their product, and about uniform coagulation of the latex."

In conclusion, it is added, that while such an arrangement would be extremely difficult, yet if a majority of the rubber producing companies were in favor of the measure, the others must necessarily follow. The consequent uniformity would lead to greater confidence on the part of manufacturers and to a higher valuation of the product; to the advantage of plantation industry; particularly in the Malay States, Ceylon and the Dutch Indies.

SUMATRA'S RUBBER OUTLOOK.

Since the United States Rubber Co. invested in an 80,000-acre plantation in Sumatra and has started to plant this to rubber—having, as a matter of fact, nearly one-third of this great acreage already set out in rubber trees—a great deal of attention has been turned on the part of rubber planters everywhere to this particular island. Baron Autenried, the manager of one of the large English plantations in Sumatra, who recently passed through New York on a trip around the world, was very enthusiastic over the Sumatra rubber outlook. He expressed himself as follows:

"Of course, everybody out there seems to be going in more or less for rubber. The first trees were planted in 1899, and then in 1903 the great estates, many of which had been devoted to coffee raising, began to plant rubber. A little later came the rubber boom, when a great deal of English capital came in, and much new land was opened. Up to 1911 there were 126,000 acres on the east coast in rubber. Now about $25,000,000 of English capital, $3,500,000 Dutch, $2,000,000 of French, $400,000 of German, and $4,000,000 of American money are invested in the industry.

"Experiments have shown that the eastern district of Sumatra is more favorably adapted to rubber cultivation than Ceylon, and is equally as good for that purpose as the Federated Malay States. Besides, labor conditions are much better than in most other countries. We import coolies from Java, which is overpopulated, and the workmen are very satisfactory. It takes a rubber tree four years to bear in Sumatra. We have better weather and a more equable temperature than they have in Singapore.

"As a rubber producing country, Sumatra is only beginning. So far only some twenty estates are actually producing, for most of the planting was done during the boom. The exportation of rubber in 1911 was 1,400,000 pounds. In 1914 this will be doubled."

AN ENGLISH OPINION OF UNITED STATES RUBBER CO.'S PLANTATION.

In reviewing the above subject the "Financier" of London remarks that it will be about two or three years before the United States Rubber Co. can reasonably expect to get any quantity of rubber from its 80,000-acre plantation in Sumatra. But, it is added, after the trees come into bearing they should rapidly increase their production, until a yearly total of 15,000,000 to 20,000,000 pounds of rubber should be available.

Whether production will ever reach a point where the company is not obliged to buy any rubber in the open market, it is considered too early to predict, but it is remarked that in the best opinion this idea will be very closely realized.

Until the trees come into bearing the capital which will have been poured into this Sumatra investment, will, it is calculated, have reached $6,000,000, this money in the meantime earning nothing. As to prospective value of the property, the journal says in conclusion:

"This rubber plantation is a valuable equity with fascinating possibilities. Its income-producing ability has not begun to be discounted in the price of the shares. As time goes on, it must inevitably receive an increasing degree of speculative attention.

AMERICAN SYNTHETIC RUBBER PATENTS.

IN view of the attention now being paid to the question of synthetic rubber, interest attaches to a series of four American patents recently issued to Lucas Petron Kyriakides and Richard Blair Earle, of Boston, Massachusetts. The applications had been made on November 11, 1911, and the patents were granted on July 23, 1912.

The claims of the four patents are as follows:

PROCESS OF PRODUCING PIPERYLENE.

1. The process for producing piperylene, which consists in passing the vapors of amylene oxid over heated dehydrating catalytics at temperatures from 400°-500° C., *in vacuo*, at pressures less than 60 millimeters of mercury.

2. The process for producing piperylene which consists in passing the vapors of amylene oxid over heated aluminum silicate at temperatures from 400°-500° C., *in vacuo*, at pressures less than 60 millimeters of mercury.

PROCESS OF PRODUCING ISOPRENE.

1. The process for producing isoprene, which consists in passing the vapors of the valeraldehyde over dehydrating catalytics at temperatures from 400° to 600° C., *in vacuo*, at pressures less than 60 millimeters of mercury.

2. The process for producing isoprene, which consists in passing the vapors of the valeraldehyde over aluminum silicate at temperatures from 400° to 600° C., *in vacuo*, at pressures less than 60 millimeters of mercury.

PROCESS OF PRODUCING ERYTHRENE.

1. The process for producing erythrene, which consists in passing the vapors of normal butyraldehyde over heated dehydrating catalytics at temperatures ranging from 500°-600° C., *in vacuo*, at pressures less than 60 millimeters of mercury.

2. The process for producing erythrene, which consists in passing the vapors of normal butyraldehyde over heated aluminum silicate at temperatures from 500°-600° C., *in vacuo*, at pressures less than 60 millimeters of mercury.

PROCESS FOR PRODUCING β γ DIMETHYLBUTADIENE.

1. The process for producing β γ dimethylbutadiene, which consists in passing the vapors of the hexylene oxid over heated dehydrating catalytics at temperatures from 400°-500° C., *in vacuo*, at pressures less than 60 millimeters of mercury.

2. The process for producing β γ dimethylbutadiene, which consists in passing the vapors of the hexylene oxid over heated aluminum silicate at temperatures from 400°-500° C., *in vacuo*, at pressures less than 60 millimeters of mercury.

SYNTHETIC RUBBER FIGURES.

IN the "Ceylon Observer," D. U. Weigel, of Kollupitiya, questions the figures of yield put forward in the prospectus of the synthetic rubber promoters. These yields, it is recalled, were stated as follows:

1. Starch from potatoes .....60 per cent.
2. Fusel oil from starch.....43 per cent.
3. Isoprene and rubber from fusel oil..50 per cent.

The first figure he characterizes as "utter nonsense" the maximum yield being 24 per cent., and the average 17 per cent.; adding that there had apparently been some confusion with the 55 per cent. yield from maize.

As to the alleged 43 per cent. of fusel oil from starch, Mr. Weigel remarks that the bacteria which influence butylic fermentation are known, but he has never found any authority to attribute to any of them the power of activity up to a 43 per cent. yield.

This discussion of the question of yield from a scientific point of view, at such an important point as Ceylon, indicates the widespread interest which the subject of synthetic rubber has aroused throughout the world.

FAREWELL DINNER TO MR. MANDERS.

AMONG the many farewell luncheons and dinners tendered A. Staines Manders prior to his departure to Europe, one of the most notable was the dinner at the Lotos Club on the evening of November 12. There were present only men identified with the rubber trade. Informal speeches were made by Arthur W. Stedman, J. O. Stokes and George B. Hodgman. In behalf of friends of Mr. Manders in the rubber trade, H. C. Pearson presented a beautiful loving cup. Mr. Manders, in accepting it, paid a high tribute to American enterprise as evidenced by the prosperous rubber industry.

The cut below shows the cup on an ebony standard. The cup alone stood about 12 inches high and was etched on its face with a decorative design of rubber leaves framing the following inscription:

Presented to
A. STAINES MANDERS
Organizing Manager
and
MISS D. FULTON
Secretary
Of the
Third International Rubber
And Allied Trades Exposition
New York, 1912
By Their Friends
Of the
American Rubber Trade.

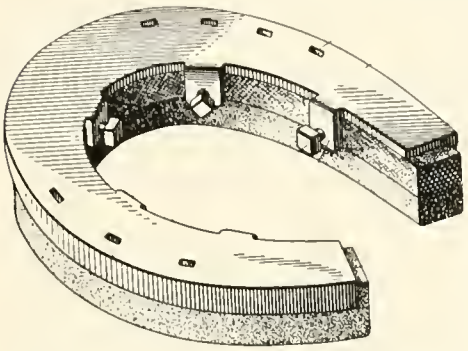
Mr. Manders was greatly pleased with this token of regard from his American friends, and though he received a number

of other souvenirs of his six months' stay in the United States, he probably received none that he will treasure more highly.

New Rubber Goods in the Market.

A NEW RUBBER HORSESHOE.

EVERYBODY ought to be glad when things come the horse's way. Here is a new horseshoe that should do a great deal to relieve the horse's burden. It really puts him on a quick-detachable tire footing. The accompanying cut will give some idea of this new shoe. It consists of an iron shoe that is nailed on the horse's hoof like any other shoe. Around the outer edge of this shoe there is a flange and on the inner edge five lugs, each with a threaded bolt with a square head. This flange and these lugs form a channel, into which is fitted a solid rubber tread, the lower half of it, which touches the ground, being resilient rubber, the upper half, which fits into the iron shoe, consisting of rubber and canvas. A layer of stout fabric covers this upper half of the tread, reaching down to the lower or rubber half. This canvas cover makes it possible to screw the bolts in so as to hold the tread securely without damaging that part of the tread that comes in contact with the bolts.



This shoe gives the horse an all-rubber tread, and at the same time leaves the frog of the foot entirely open. When the tread is worn out another can be inserted in a couple of minutes by simply loosening and then tightening the bolts, and the iron part of the shoe gets no wear whatever and consequently stays permanently on the horse's foot without the necessity of replacing. This new horseshoe was invented and has been patented by G. E. McKinnon, Little Falls, New Jersey.

THE TWIN NURSING BOTTLE.

The youngster who has not yet arrived at the stage of life where he is interested in table d'hotes, and must still subsist solely on milk, has had a good many devices prepared for his convenience and health. Here is one of the very latest. It is a nursing bottle, very simple in construction, consisting of one tube and two rubber caps—one at each end.

When the cap, or "the breast," as the manufacturers call it, at one end of the tube is turned inward, it forms a base for the nursing bottle. This base may contain a puncture in the nipple, or not, as preferred. When the nipple is perforated, air is admitted to the bottle by way of the base, which makes nursing easier for the child. This device is easy to clean. [Hygeia Nursing Bottle Co., Buffalo, New York.]

THE LIBBY ANTI-BURSTING DEVICE FOR TIRES.

AN objectionable feature of pneumatic tires on automobile wheels has been that they would frequently burst or blow out, on account of excess pressure within the tire, caused by the expansion of air confined therein, resulting from friction or changes in temperature, or from sudden contact of the tire with obstacles in the road. This trouble is of comparatively frequent occurrence and has not only proved a source of expense, but has led to many serious and fatal accidents. Moreover, the constant variations of pressure shorten the life of the tire.

An invention of John K. Libby, of Malden, Massachusetts, for which a United States patent (No. 1,035,207) has been issued, consists of a vehicle wheel having a pneumatic tire, whose interior communicates with an elastic relief chamber. When the pressure of the air in the tire increases, it is exhausted into the relief chamber, thereby preventing an excessive or injurious pressure in the tire. When the pressure in the tire falls, air will be exhausted from the relief chamber into the tire, thus preventing an excessive reduction of pressure in the latter. A normal safe working pressure, according to the inventor, will thus be maintained, notwithstanding variations of temperature within the tire, however caused.

The device is a mechanical one, composed of metal and rubber and mounted on the hub of the wheel. It is already patented in the United States, and patents have been applied for in Great Britain, France, Germany, Italy and Canada.

THE RUBBER CUSHION HAIR BRUSH.

Rubber-cushion hair brushes are not so particularly new; the Pearson hair brush, for instance, first appeared on the London market about twenty-eight years ago. But it is an interesting article, in which rubber plays a considerable part, and it has proved extremely popular. As the accompanying cut shows, the bristles are imbedded in a cushion of rubber. This enables the brush to combine the durability of stiff bristles, together with the yielding effect of the rubber cushion, which, in reality, is an air-cushion; accordingly the brush has a certain pneumatic resiliency. These Pearson rubber-cushion brushes are now made in a great variety. They are made in three sizes: in black and white, cherry, rose, satin and ebony woods. The American agents are Alfred H. Smith Co., 35 West Thirty-third street, New York City.

PEARSON'S RUBBER-CUSHION "IDEAL" HAIR BRUSH.

A LIGHT SANITARY, INEXPENSIVE FOOT ARCH.

An Albany physician—or to be more explicit—Dr. John J. Collins, 69 Ten Broeck street, Albany, New York, has invented a new sort of foot arch, made from reinforced hard rubber. It is thoroughly ventilated, which makes it sanitary and cool. It is impervious to moisture and is extremely light. Moreover, it can be made flexible by the application of a certain degree of heat, which makes it possible to adjust it to any normal or abnormal condition of the foot. Another point in its favor is that it can be manufactured very inexpensively, so that it can be put on the market at an attractive price. The doctor, who has other affairs to attend to, has never put this arch on the market or advertised it, and he is willing to dispose of the patent (which has 14 years to run) and the molds at quite a reasonable figure. This arch has been examined by other physicians and highly commended by them. Here appears to be a chance for somebody to acquire a good foot arch on favorable terms.

THE BRAENDER AUTO TIRES.

The illustration below shows a tire made by the Braender Co., which has a somewhat peculiar tread. These tires are said to be made of exceedingly fine fabric and rubber, with particular

THE BRAENDER TREAD.

attention given to the tread, so that it is unusually durable. These tires range in size from 30 x 3 inches to 37 x 5½ inches. [The Braender Rubber & Tire Co., Rutherford, New Jersey.]

A FINE USE FOR OLD AIR-BRAKE HOSE.

To find a good use for a useless thing is to confer a benefaction on all mankind. That is practically what one of the Eastern railroads has done in converting worn-out air-brake hose into rubber mats on which to drop trunks. To be sure, old air-brake hose is not absolutely useless, for the rubber can be extracted from it, but if it can be converted into a satisfactory mat its value is much enhanced. The mats used by this particular railroad consist of about 24 pieces of old hose, cut a little less than 2 feet in length. These pieces are put side by side close together and fastened to four strips of wood that form a base and serve to keep the strips in place. This makes a mat nearly 2 feet wide by about 4½ feet long, and when trunks are pulled out of the cars or dumped off of trucks, instead of being smashed on stone or concrete flooring, they land on these resilient mats with very little harm. Probably some other sort of base made of rope or fibre would be even better than the wooden base, but the essential feature, of course, is the layer of rubber tubes that form the mat.

RUBBER COMPANIES AT THE AUTO. SHOWS.

THE automobile manufacturers will hold their annual shows in New York, Chicago and Boston as follows: In New York there will be two shows, one in the Madison Square Garden and the other in the Grand Central Palace. Both will continue two weeks, from January 11 to January 25. The Chicago show will continue two weeks, from February 1 to 15, and the Boston show will be held for one week, from March 5 to March 12.

The following tire and accessory manufacturers will take part in the two weeks' show at the Madison Square Garden:

Ajax-Grieb Rubber Co., New York; S. F. Bowser & Co., Fort Wayne, Indiana; Consolidated Rubber Tire Co., New York; Continental Caoutchouc Co., New York; The Diamond Rubber Co., Akron, Ohio; Joseph Dixon Crucible Co., Jersey City, New Jersey; Empire Tire Co., Trenton, New Jersey; Firestone Tire & Rubber Co., Akron, Ohio; The Fisk Rubber Co., Chicopee Falls, Massachusetts; G. & J. Tire Co., Indianapolis, Indiana; The B. F. Goodrich Co., Akron, Ohio; The Goodyear Tire and Rubber Co., Akron, Ohio; The Hartford Rubber Works Co., Hartford, Connecticut; Link-Belt Co., Philadelphia, Pennsylvania; Michelin Tire Co., Milltown, New Jersey; Morgan & Wright, Detroit, Michigan; The Motz Tire and Rubber Co., Akron, Ohio; Pennsylvania Rubber Co., Jeannette, Pennsylvania; The Republic Rubber Co., Youngstown, Ohio; A. Schrader's Son, Inc., New York; Swinehart Tire and Rubber Co., Akron, Ohio; The United Rim Co., Akron, Ohio.

The following tire manufacturers will exhibit in Madison Square Garden only for the first week:

The Batavia Rubber Co., Batavia, New York; Endurance Tire and Rubber Co., New York; New Jersey Car Spring and Rubber Co., Jersey City, New Jersey; The Pantasote Co., New York; The Seamless Rubber Co., New Haven, Connecticut; Voorhees Rubber Manufacturing Co., Jersey City; Walpole Rubber Co., Boston; Marathon Tire and Rubber Co., Cuyahoga Falls, Ohio.

A. Schrader's Son, Inc., New York, will exhibit at the Grand Central Palace for two weeks. The Continental Rubber Works Co., Erie, Pennsylvania, will exhibit at the Grand Central Palace for the first week only.

The following tire manufacturers will exhibit at the Chicago show for the entire two weeks:

Ajax-Grieb Rubber Co., New York; S. F. Bowser & Co., Fort Wayne, Indiana; Consolidated Rubber Tire Co., New York; Continental Caoutchouc Co., New York; The Diamond Rubber Co., Akron, Ohio; Joseph Dixon Crucible Co., Jersey City, New Jersey; Empire Tire Co., Trenton, New Jersey; Firestone Tire and Rubber Co., Akron, Ohio; The Fisk Rubber Co., Chicopee Falls, Massachusetts; G. & J. Tire Co., Indianapolis, Indiana; The B. F. Goodrich Co., Akron, Ohio; The Goodyear Tire and Rubber Co., Akron, Ohio; The Hartford Rubber Works Co., Hartford, Connecticut; Link-Belt Co., Philadelphia, Pennsylvania; Morgan & Wright, Detroit, Michigan; The Motz Tire and Rubber Co., Akron, Ohio; Pennsylvania Rubber Co., Jeannette, Pennsylvania; The Republic Rubber Co., Youngstown, Ohio; Swinehart Tire and Rubber Co., Akron, Ohio; The United Rim Co., Akron, Ohio.

The following manufacturers will exhibit at the Chicago show for one week only:

The Batavia Rubber Co., Batavia, New York; Double Fabric Tire Co., Auburn, New York; Endurance Tire and Rubber Co., New York; Federal Rubber Manufacturing Co., Cudahy, Wisconsin; Leather Tire Goods Co., Niagara Falls, New York; Lee Tire and Rubber Co., Conshohocken, Pennsylvania; Michelin Tire Co., Milltown, New Jersey; New Jersey Car Spring and Rubber Co., Jersey City; The Pantasote Co., New York; Racine Rubber Co., Racine, Wisconsin; The Seamless Rubber Co., New Haven, Connecticut; C. A. Shaler Co., Waupun, Wisconsin; Universal Tire Protector Co., Angola, Indiana; Voorhees Rubber Manufacturing Co., Jersey City.

The following tire manufacturers will exhibit at the Boston show: Ajax-Grieb Rubber Co., New York; S. F. Bowser & Co., Fort Wayne, Indiana; Consolidated Rubber Tire Co., New York; Continental Caoutchouc Co., New York; The Diamond Rubber Co., Akron, Ohio; Firestone Tire and Rubber Co., Akron, Ohio; The Fisk Rubber Co., Chicopee Falls, Massachusetts; G. & J. Tire Co., Indianapolis, Indiana; The B. F. Goodrich Co., Akron, Ohio; Goodyear Tire and Rubber Co., Akron; Hartford Rubber Works Co., Hartford, Connecticut; Morgan & Wright, Detroit, Michigan; The Motz Tire and Rubber Co., Akron; Pennsylvania Rubber Co., Jeannette, Pennsylvania; Swinehart Tire and Rubber Co., Akron; The United Rim Co., Akron; Voorhees Rubber Manufacturing Co., Jersey City; The Batavia Rubber Co., Batavia, New York; Double Fabric Tire Co., Auburn, Indiana; Endurance Tire and Rubber Co., New York; Empire Tire Co., Trenton, New Jersey; Federal Rubber Manufacturing Co., Cudahy, Wisconsin; Leather Tire Goods Co., Niagara Falls, New York; Lee Tire and Rubber Co., Conshohocken, Pennsylvania; Michelin Tire Co., Milltown, New Jersey; The Pantasote Co., New York; The Republic Rubber Co., Youngstown, Ohio; The Seamless Rubber Co., New Haven, Connecticut; C. A. Shaler Co., Waupun, Wisconsin.

News of the American Rubber Trade.

PENNSYLVANIA RUBBER COMPANY.

THE annual stockholders' meeting of the Pennsylvania Rubber Co. was held at the main office of the company at Jeannette, Pennsylvania, on November 8. The office of chairman of the board of directors was created, to which Mr. Herbert DuPuy was elected, having retired from the presidency in favor of H. Wilfred DuPuy, who was elected to that office in addition to that of treasurer. The other officers and directors were re-elected as follows: Charles M. DuPuy, vice-president; George W. Shiveley, secretary; Seneca G. Lewis, general manager; Charles G. Morrill, assistant treasurer. Mr. Lewis announced that business had increased 75 per cent. over the previous year, and that contracts on hand would tax the utmost capacity of the plant during 1913.

THE HARTFORD'S OUTPUT OF BICYCLE TIRES.

A GREAT many people have the idea that the bicycle has lapsed into innocuous desuetude—to use a term quite popular twenty years ago. To be sure, one doesn't bump into a bicycle every time he goes out now, as he did some years ago, but evidently the bicycle is still affected by a very considerable part of the population—judging from the number of tires made for this comparatively inexpensive but convenient vehicle. Take, for instance, the output of one factory alone. The Hartford Rubber Works' factory manager says that two years ago they manufactured 230,000 bicycle tires; last year the number increased to 450,000; for the year 1912 he estimates 650,000, and for 1913 100,000 more, which would seem to indicate that bicycles were not only holding their own, but really growing in popularity.

THE AKRON MOLD AND MACHINE CO.

One of the best equipped foundries in Akron is that of the Akron Mold and Machine Co. This company specializes in rubber mill works and has recently moved into its present quarters, built especially for the purpose to which it is devoted, and which was made necessary by the remarkable increase in the company's business during the past three years. A unique feature of the new building is a well appointed toilet and locker room for the use of the 60 men employed. In addition to its regular line the company is making the famous Y. and S. core. Stanley Harris, the president, is one of the most capable machinists in the trade, and to him belongs the credit of the development of the Akron Mold and Machine Co. to its present enviable position.

The Gordon Rubber Co., Canton, Ohio, has become an important factor in drug sundry and automobile tire lines. The Gordon product is of recognized standard, and the company has expanded continuously since the inception of the present management. The superintendent, Neil Crawford, formerly of the Hewitt Rubber Co., is producing excellent results in his present position.

The Indiana Rubber and Insulated Wire Co., Jonesboro, Indiana, estimates that its present automobile tire production will be multiplied by three in 1913.

A surgeon's glove with a patent knuckle, which is claimed to obviate tension at finger ends is a recent production of the Hadfield Rubber Co., Akron, Ohio. It is said to be favorably received by surgeons.

A map of Akron, "the city of opportunity," surrounded by cuts of several of the prominent rubber mills, has recently been issued by a local printing concern.

A hard rubber corset stay with re-enforced ends is a recent patent of the Summit Rubber Co., Barberton, Ohio.—Another new Summit offering is a dipped narrow-necked water bottle.

NET EARNINGS OF NEARLY 14 PER CENT.

The annual report of the Ajax-Grieb Rubber Co. for the year ending August 31 last has recently been published, and shows a net business of $2,936,923.19, with net earnings of $408,434.53, or almost 14 per cent. The company's statement is as follows:

ASSETS.

Cash in banks and offices		$110,307.48
Bills receivable		137,389.42
Accounts receivable		291,313.65
Merchandise and materials		432,672.81
Mortgages, etc. (owned)		12,912.61
Real estate, buildings, machinery and equipments	$322,296.72	
Less depreciation charges	57,844.01	
		264,452.71
Patents		10,000.00
Total assets		$1,259,048.68
Net earnings for year	$408,434.53	
Fire insurance carried	890,000.00	

LIABILITIES.

Notes payable		None
Accounts payable (not due)		$155,161.77
Capital stock:		
Preferred 7 per cent	$285,000.00	
Common	450,000.00	
		735,000.00
Surplus August 31, 1912		368,886.91
Total liabilities		$1,259,048.68

MESSRS. PATTERSON & APPLETON START A TIRE COMPANY.

John S. Patterson, who has been factory superintendent of the Revere Rubber Co. for the past 10 years, and Capt. Francis H. Appleton, of F. H. Appleton & Son, Inc., the well-known rubber reclaimers of Boston, have organized a stock company, under the laws of Massachusetts, under the name of the Patterson Rubber Co., with a capital stock of $500,000, for the manufacture of automobile tires. Mr. Patterson will be president of the company and have general charge. His son, who has also been with the Revere company for some years, will be manager of the new factory, and have as his assistants a number of men who have been his former associates, among them Walter F. McDonald, who will be assistant factory manager; Frank Chamberlain, who will be factory superintendent, and Charles H. O'Neil, who will be mechanical engineer.

The work of building the factory has already begun. It will be located in Lowell, Massachusetts.

A NEW TIRE CO. IN EAST PALESTINE.

A new tire company has just been started in East Palestine, Ohio, under the name of the East Palestine Rubber Co., incorporated under the laws of Ohio. The president is the well-known rubber chemist, Wilmer Dunbar; the vice-president is A. S. Mauk, and the secretary and treasurer, Abram Hartley. The company is capitalized at $50,000. It has started on its factory, and is putting up a two-story building 50 x 110 feet, with a power house 35 x 50 feet. It expects to be manufacturing tires by the 1st of January.

The land was given the company free of tax by the town, and the townspeople have also subscribed a considerable bonus.

THE UNITED STATES RUBBER CO.

The rapid rise in the price of the common stock of the United States Rubber Co. during the latter part of November, which in a week's time carried it up some 10 points, gave rise to a great deal of conjecture as to its cause. Quite a good many of the financial writers said that this stock was to be placed on a 5 per cent. dividend basis, which accounted for its activity in the market. Inquiry at the office of the United States Rubber Co., however, brings the information that at the present time no such dividend increase is being considered. The report that the company's gross business shows an increase for the 10 months ending October 31 of 30 per cent. over the same period for last year, is confirmed at the company's office. This is a very substantial increase, and in itself would be sufficient to explain a marked rise in the price of the common stock.

NEW INCORPORATIONS.

American Kushion Kore Tire Co., Inc., November 12, 1912; under the laws of New York; authorized capital, $10,000. Incorporators: Charles H. Taylor, Christopher M. Baldy and K. E. Wilhelm—all of 558 Ellicott square, Buffalo, New York. Location of principal office, Buffalo, New York.

American-Mexican Rubber and Coffee Corporation, November 12, 1912; under the laws of New York; authorized capital, $2,000,000. Incorporators: William C. Douglas, 409 Eddy street; Arthur N. Gibb, 106 Cayuga Heights road, and Isaac K. Bernstein, 433 North Geneva street—all of Ithaca, New York. Location of principal office, Ithaca, New York.

Auto Tire Repair and Supply Co., November 4, 1912; under the laws of New Jersey; authorized capital, $100,000. Incorporators: Joseph Michel, 236 Salem street, Gloucester City, New Jersey; Thomas F. Golden, 2729 North Twentieth street, and Thomas J. Manning, 2229 North Fifteenth street—both of Philadelphia, Pennsylvania. To manufacture and deal in automobiles, cars, carriages, wagons, trucks and vehicles of all kinds.

The Carbone Co., Inc., October 28, 1912; under the laws of New York; authorized capital, $200,000. Incorporators: W. E. Greene, 100 Reade street, New York; G. C. Leonard, 472 Broadway, and W. G. Van Loon, 100 State street—both of Albany, New York. Location of principal office, Albany, New York. To deal in all kinds of rubber tires, etc.

The Goodyear Tire and Rubber Co., of South America, October 14, 1912; under the laws of Maine; authorized capital, $3,000,000. Incorporators: Joseph Williamson, Augusta; E. M. Leavitt, Winthrop, and E. M. Hussy, Augusta—all of Maine. To manufacture articles from rubber and refine crude rubber and to do all things incidental thereto.

Ithaca Boot Shop, September 17, 1912; under the laws of New Jersey; authorized capital, $25,000. Incorporators: James B. Banister, John W. and George M. Denny—all of Newark, New Jersey. Location of principal office, Ithaca, New York. To deal in boots, shoes, etc.

M. R. L. Resilient Tire Co., October 15, 1912; under the laws of Illinois; authorized capital, $25,000. Incorporators: Mitchell R. Labbee, Martin O. Lundholm and B. Wilson Moore. To manufacture and sell resilient non-puncturable tires, and deal in motor vehicles, and their parts and accessories.

Macandaruba Tire Filler Co., November 9, 1912; under the laws of Delaware; authorized capital, $1,500,000. Incorporators: H. Ralph Ewart, Clarence J. Jacobs, and Harry W. Davis—all of Wilmington, Delaware. To sell and place on the market a composition used as a filler for rubber tires known as the Macandaruba Elastic Filler.

The Owen Rubber Co., October 29, 1912; under the laws of Ohio; authorized capital, $10,000. Incorporators: Thomas J. Owen, F. E. Henry and Frank A. Owen. Location of principal office, Ashtabula, Ohio. To manufacture and deal in rubber goods, druggists' sundries, novelties, and merchandise.

St. Louis Tire & Rubber Co., November 15, 1912; under the laws of Missouri; authorized capital, $150,000. Incorporators: J. A. Swinehart, St. Louis, Missouri; Harry C. Barker, Webster Groves, Montana, and Alfred C. Einstein, St. Louis, Missouri. Location of principal office, University City, St. Louis County, Missouri. To manufacture, sell, import, and export and deal in vehicle and automobile tires, and to buy and sell as owners or on consignment, merchandise, etc., of which rubber is wholly or in part a component.

Triangle Tire Co., October 7, 1912; under the laws of Illinois; authorized capital, $5,000. Incorporators: Lawrence A. Cohen, Charles Aaron, and Floyd M. Stahl. Location of principal office, 59 East Garfield Boulevard, Chicago. To manufacture and repair automobile tires, accessories, automobiles, motorcycles, and operate a garage.

Tuxedo Tire Co., Inc., November 9, 1912; under the laws of New York; authorized capital, $8,000. Incorporators: Augusta Hormann, 429 East 157th street; Emilie and Adolph Walterberg—both of 558 Mott avenue, New York. Location of principal office, Bronx, New York.

Wetnot Manufacturing Co., Inc., November 18, 1912; under the laws of New York; authorized capital, $10,000. Incorporators: Charles Pechner, Henry L. and Samuel Speiling—all of 302 Broadway, New York. Location of principal office, New York. To deal in rubber goods.

TO SELL U. S. MOTOR CO. AT AUCTION.

A decree was signed on November 17 ordering the sale of the assets of the United States Motor Company and five subcompanies—the Alden Sampson Manufacturing Co., Brush Runabout Co., Columbia Motor Car Co., Dayton Motor Car Co. and the Maxwell Briscoe Motor Co.—on January 8 next, in Room 47, New York Postoffice Building, at 11 A. M. W. E. S. Strong and Roberts Walker may receive sealed bids at their office, Sixty-first street and Broadway, New York, up to 10 A. M. of January 8, which bids will be opened in the presence of Judge Hough in Room 47, Postoffice Building, at 11 A. M.

The property will be offered for sale in six parcels, in the order named above. The entire properties, as a whole, will also be offered in a single lot. After the sale of the properties bids will be received for shares of stock in various companies held by the United States Motor Company.

THE ATLANTIC RUBBER COMPANY.

Owing to the large increase in their business during the past year or two, The Atlantic Rubber Co. found their present factory inadequate, and have therefore sold it, and expect to build a new fireproof one next year. They have moved to another factory in Hyde Park, on River street, where they will remain until their new factory is fully equipped. In addition to selling their buildings and real estate, they sold a few of their heavy machines, which were expensive to move.

THE NORTH BRITISH PICTURES.

Mention was made in our November issue of the very interesting moving picture display contributed to the Rubber Exposition by the Malayan planters, but through an oversight no mention was made of the equally fine moving pictures, showing the process of manufacturing rubber, contributed by the North British Rubber Co. These pictures followed immediately after the plantation pictures and completed the story—the two series together giving the entire history of rubber from the time the seed is planted to the packing of the goods for the consumers' use. These pictures constituted one of the most valuable features of the exposition.

A PUNCH BOWL FOR MR. RODENBACH.

THE Rubber Reclaimers' Club held its annual meeting on November 7, at the Hotel Belmont, New York. All but three of the members were present. The officers of the preceding year were re-elected for the coming year; they are as follows:

President—F. H. Appleton.
Treasurer—R. W. Seabury.
Secretary—J. A. Norman.

The annual meetings of this club are always highly enjoyable occasions; this was particularly so by reason of the presentation of a Paul Revere punch bowl to Mr. W. T. Rodenbach, general manager of the United States Rubber Co.'s reclaiming plant, at Naugatuck, Conn. The presentation speech was made by President Appleton in the happy manner which is his habit. The following paragraph shows its general tenor: "It is surely a part of your nature," he said to Mr. Rodenbach, "to aid and

W. T. RODENBACH.

uplift mankind, apparently without distinction, and as far as I have been able to see, I have found you ready to help even a competitor whenever the opportunity has presented itself to you. You have ever been, and are, the father of this club, for without your aid, in my opinion the club would not have existed, but with your wise council all members have been benefited, so that today the club is in a flourishing condition, with a kindly feeling existing among all its members."

Mr. Rodenbach, like Mr. Woodrow Wilson—who was a professor before he undertook the reclaiming of politics—was a professor before he reclaimed rubber, and enjoys an exceptional facility in the expression of his ideas. Accordingly, while taken totally by surprise, he acquitted himself most creditably.

After the lunch had been adequately analyzed, the club proceeded to the discussion of the question of old tires, which, with not a few of the reclaimers, have now become the chief source of their old rubber supply.

BOSTON RECEIVES BIG RUBBER SHIPMENT.

ON the 11th of November a British freight steamer from the Far East arrived at Boston with a general cargo valued at more than $2,000,000, which is said to be the most valuable cargo of merchandise brought into that port in recent years. Among the interesting items that constituted the cargo was a consignment of 3,000 large cases of rubber.

PERSONAL MENTIONS.

According to an interview which a reporter secured with the American Consul at Para, Mr. George H. Pickerell, Commodore E. C. Benedict, one of the directors of the United States Rubber Co., has secured a rubber plantation not far from the city of Pará and has already planted 50,000 trees.

Mr. Lester Leland, vice-president of the United States Rubber Co., has been made a director of the Second National Bank of Boston.

Mr. Frank M. Hale, who has been in the service of the Woonsocket Rubber Co., as chemist, for the past three years, has given up that position to accept a similar one with the Whitall-Tatum Co., of New York. He will be located at their factory at Keyport, New Jersey.

Mr. W. T. Walker, formerly with the Oldsmobile and Matheson companies and other automobile concerns, has been appointed New England branch manager of the Kelly-Springfield Tire Co., with headquarters in Boston.

A. E. Williams, formerly manager of the advertising department of the Swinehart Tire and Rubber Co., Akron, Ohio, recently resigned to accept a position as district sales manager of the Stevens Motor Car Company of Chicago, Illinois.

Among the many visitors to Akron rubber mills during November was R. J. Caldwell, of R. J. Caldwell Co., of 374 Broadway, New York. Mr. Caldwell is among the well known and successful operators in tire fabrics. The Caldwell Co. control the output of several large mills.

T. F. O'Brien, formerly identified with a prominent rubber culture company is now a partner in a well known Canton, Ohio drug house, as well as being a successful operator in oil lands.

Mr. Guy W. Parsons, assistant treasurer of the United States Rubber Co., was recently called to Kansas City, Mo., by the illness of his mother. Her death occurred in that city on Monday, November 18.

Mr. A. Bambęrger, manager of the New York office of Meyer Cohn, of Hanover, Germany, expects to sail for Europe in a few days in the interest of his constantly increasing American trade.

MR. GOUGH CHANGES HIS OFFICE.

Mr. Wallace L. Gough announces a change in location of his office from 108 Water street, to 2 and 4 Stone street, New York City. The new telephone number is 1480 Broad. Cable address "Wallagough."

MR. MANDERS THANKS HIS AMERICAN FRIENDS.

Mr. A. Staines Manders, the organizing manager of the International Rubber Exposition recently held in New York, and Miss D. Fulton, the secretary of that Exposition, sailed from New York for England on the steamship *Caronia*, November 16. They arrived in New York early in April last, and the intervening months were devoted exclusively to the big rubber show. Mr. Manders had also made several preliminary visits to this country in connection with this enterprise. Many friends were at the dock to see them off and to wish them a pleasant voyage. Mr. Manders expressed himself as very much gratified, not only with the success of the enterprise to which he has devoted so much time and work, but with the way in which he had been received by the American rubber trade; and he said that he wished to thank the hundreds of friends he had made in this country, both for their assistance in making the Rubber Show so successful, and for the many agreeable recollections that he carries away of his six months in America.

AN EXPERT ON THE RUBBER SHOW.

Mr. W. P. Wilson, the managing director of the Commercial Museum of Philadelphia, is an expert on exhibitions, as he has had charge of a continuous industrial and commercial exhibition in Philadelphia for some years. His opinion of exhibitions in general, therefore, is one of more than ordinary value, and Mr. Manders may well feel complimented in receiving the communication given below from Mr. Wilson. This is only one of many complimentary letters received by Mr. Manders, but this is particularly worth quoting because of its authoritative source

THE COMMERCIAL MUSEUM,
Thirty-fourth Street, Below Spruce Street.
PHILADELPHIA, October 28, 1912.

MR. A. STAINES MANDERS, Manager Third International Rubber & Allied Trades Exhibition, New Grand Central Palace, New York, N. Y.:

MY DEAR MR. MANDERS,—I came home the other day after visiting the Rubber & Allied Trades Exposition in New York, with a new mass of knowledge relating to rubber and its production over all quarters of the globe. Although I had been over the building before the exhibit was opened and had seen something of the magnitude of the display, I really had no adequate conception of what this exhibition was to be. Its magnitude was beyond anything that I had in mind.

The whole arrangement and organization of the exposition seemed to me to be well done and followed out on excellently-laid lines. The only regret I had on leaving it was that I could not return and spend ten days in studying the great diversity of products, rubber and allied, which you had brought together.

A graphic exhibit of this kind does more than anything else to impress one with the great value and extensive use of this absolutely necessary product. The Exposition, a great success in every way, I hope repaid you for your painstaking and hard work which I know full well an exposition of this kind requires.

Yours very truly, W. P. WILSON, Director.

A MANUFACTURER'S VIEW OF THE EXPOSITION.

Editor, INDIA RUBBER WORLD: Dear Sir.—

Now that the crude rubber exhibition is a thing of the past, one wonders how much good has come of it.

It was my privilege to spend a whole week at the Grand Central Palace, taking in all the lectures and discussions during the conferences. After returning home and digesting the many things I learned there, I could not help but feel that we fail to make the most of our opportunities.

We on this continent seem to be imbued with the idea that if we open up a little in a discussion we are surely going to expose our knowledge to others, and in that are giving something away. But, coming down to hard facts, what have we got to give away? Is there anything we know that the average intelligent rubber company does not already know? I think not. It is foolish to think otherwise; if anyone has a machine more advanced than others it is quite within reason to keep it secret as long as possible, but to think we are ahead of others in the technical understanding of the rubber business is at once erratic and foolish.

I heard some men say that the Exhibition and conferences were of no particular use to them. In such cases it was surely their own fault. Any man with a modicum of common sense, who was looking for and wanted information, surely found it there. I have been twenty-one years in the business and have spent much time in the technical part of it, and I must say I learned much. There were learned men from different parts of the world whom we may never have the opportunity of meeting again. To engage in conversation with these men was to realize quickly how willing they were to open up and to give one a tremendous amount of the most valuable information—information that cannot be bought; and I for one feel that this exhibition afforded one of those opportunities rarely obtained in our business. Yours truly, MANUFACTURER.

A WORD OF WARNING.

Editor, THE INDIA RUBBER WORLD:

In reference to the Rubber Show recently held in New York, it has suggested itself to me that, whilst all manufacturers received much benefit from being in attendance, some may become so over-enthusiastic as to be led to the excessive uses of some of the grades, without sufficient tests, both as to percentages to be used and the proper working of the rubber, as well as the time to cure, and under what pressure.

It would seem to me to be well to caution those, not yet well informed, to the end that they should commence with, say, one to two per cent., and make *their own experiments,* as they finally must stand or fall by their own acts.

Time, only, gives the final test to rubber, and I earnestly recommend everyone to not follow too closely advice not proved by actual personal knowledge.

The whole rubber trade is now in a most critical position—we are at the apex in the use of Parás, African and Central rubbers, and at the base in the use of Ceylon, Strait Settlements and kindred plantation grades, and there are such radical differences in coagulation, locality and climate that special expert knowledge must be had if the uses of plantation rubber in substitution of other, proved, grades be successful.

As in a crossing, I can only advise, "STOP! LOOK! LISTEN!

Respectfully submitted,

New York, November 21, 1912. ROBT. B. BAIRD.

AS SEEN BY A FRIENDLY VISITOR.

THE INDIA RUBBER WORLD tried to acquit itself creditably at the Rubber Exposition recently held in New York City, and it hopes that it succeeded in that worthy purpose. The following paragraph would seem to indicate that it did. It is taken from a column and a half description of the Exposition which appeared in a recent number of the *Daily Chronicle* of Georgetown, British Guiana, written by the paper's special correspondent:

"Of course, our first attention was given to the space devoted to THE INDIA RUBBER WORLD, which was decorated with a map bearing the names of all the countries where it is circulated. A wonderful portrait painted on hard rubber of Mr. Goodyear, of Vulcanite fame, one of Mrs. Goodyear and Mr. Webster, on the same rubber, hung on the walls. These portraits are very valuable and were heavily insured. Specimens of all rubber-bearing trees, collected, arranged and named by Miss Pearson, were shown, and all sorts of rubber literature, including Mr. Pearson's latest on his visit to the tropics—in which British Guiana is not included. Mr. Pearson, however, assured me that the next book should be all about British Guiana, which is promising. In stoppered bottles, Hevea and all other seeds were shown, personally collected, as were the rubber snakes, centipedes, lizards, spiders and other familiar objects. Wonderfully lifelike these were, very much admired."

RETROSPECT OF THE NEW YORK RUBBER EXPOSITION.

In discussing the features of the recent exposition in the columns of the "Gummi-Zeitung," Mr. E. G. Salmon, who represented various European interests, expresses the opinion that both Germany and England missed a valuable opportunity of showing their capacity as makers of rubber machinery. He adds that while the exposition was a very good display of crude rubber, manufacture and machinery were much less efficiently represented.

The importance is recognized of the direct relations established between Eastern planters and the American market, which, it is added, will lead to the former dealing with New York directly, instead of through London. This would possibly lead to a reduction of rubber prices. American manufacturers, it is remarked, are all looking for cheaper rubber and would welcome any methods tending in that direction.

It was noticed at the Exposition that American manufacturers much appreciated the opportunity of seeing rubber, if not actually in cultivation, at least in the stages least removed therefrom. Whatever the final mode of purchase might be, it was doubtless to the advantage of both seller and buyer to know each other's peculiar needs, in a manner possible only through personal association. One prominent importer was heard to remark that he would at all times prefer to do business with a buyer acquainted with the goods he was bargaining for, rather than with one devoid of that knowledge. This personal coming together of producer and purchaser was inevitably to the advantage of both.

THE PENNSYLVANIA RUBBER CO. OPENS A PARK.

The days have gone by when manufacturers looked upon their employes as simply so many machines from which the maximum amount of work was to be extracted. Employers now realize that sound bodies and contented minds are desirable for their employes, not only from the standpoint of humanitarianism, but from the standpoint of efficiency; and manufacturers of the more advanced sort are taking steps for the physical and moral welfare of those depending upon them. As an illustration of this tendency, the Pennsylvania Rubber Co., of Jeannette, Pennsylvania, may be cited, which has recently opened a fine park in that city for the benefit of its employes. It is called Paruco Park. The significance of the word "Paruco" will be fairly obvious to the analytical mind, being a composite of the name Pennsylvania Rubber Co.

Paruco Park is a sixty-acre tract of wood and meadow land on a large knoll back of the company's works, and is admirably adapted for a recreation ground. The park was opened with appropriate exercises which were attended by a thousand of the company's employes and their friends. Refreshments in bountiful quantities were furnished for all who attended, and 500 children were given park membership badges, which entitled them to admission to the park any time during the next year. The enclosure contains an ample baseball field, besides equipment for various other sports. The entire expense of fitting out and maintaining this magnificent playground is borne by the company.

THE PARK OPENED BY THE PENNSYLVANIA RUBBER CO., AT JEANNETTE, PA.

NO CAUSE FOR ALARM.

A NUMBER of magazine writers have done excellent work during the last two or three years, in calling attention to "occupational diseases," that is, the troubles that workmen are especially liable to in various branches of manufacture. In a recent contribution of this sort there was a short paragraph devoted to rubber factories which reads as follows:

"Workers in the india rubber industry suffer frequently from the fumes of carbon disulphide. It brings on a dull headache, confused sight, vertigo, unrestrained inclination to talk, which in turn is followed by moodiness, irritability, insomnia and insensibility to pain in many parts of the body."

There is no great cause for alarm, however, in this particular charge against the rubber industry, because carbon disulphide is used in a very small department of rubber manufacture, being employed only in the making of a few specialties. The number of rubber workers, therefore, who suffer from carbon disulphide fumes is a small percentage, and where these fumes do exist special care is taken with the ventilation.

A NEW RUBBER HOUSE IN SYRACUSE.

THERE is a new rubber jobbing house dealing in druggists' sundries and rubber goods in Syracuse, New York. It is called The Wm. G. Yeckel Co., and is composed of William G. Yeckel and William H. Kemp. Mr. Yeckel was connected for fifteen years with the Syracuse Rubber Co., during the last five years of that time acting as the company's buyer of druggists' sundries. Mr. Kemp was for many years connected with the Goodyear Rubber Co.'s office in Buffalo, and was later a member of the firms of Hall & Kemp, and the Kemp Rubber Co. Both men are widely known through central New York.

AMERICAN TIRES ABROAD.

THAT American-made tires are pushing ahead in foreign countries in competition with the European product is indicated in a contract made by Backdahl & Co., of Stockholm, for 750 sets of the United States Co. tires for taxicab service in Norway, Sweden, Denmark and Finland. As the price asked for American tires in Europe is considerably in advance of that charged for the native product, competition must be founded on a basis of quality and mileage service.

Commenting on the general trend of the tire industry in foreign countries, John B. Tower, export manager of the United States Tire Co., remarks that in this country tires must necessarily be constructed to meet a wide variety of road conditions, many of them extremely bad, which explains why our tires show up so well in comparison when they are tested out on European highways, which, generally, are far superior to American roads. The United States Tire Co. now has agents in Japan, the Philippines, Australia, Chile, Uruguay, Brazil, Venezuela, Panama, Costa Rica, Cuba, Porto Rico, Mexico, Finland, Norway, Denmark and Sweden, and, of course, in Canada, and it sells a great many tires in Germany, France, Egypt and South Africa.

FIRE IN A RAINCOAT FACTORY.

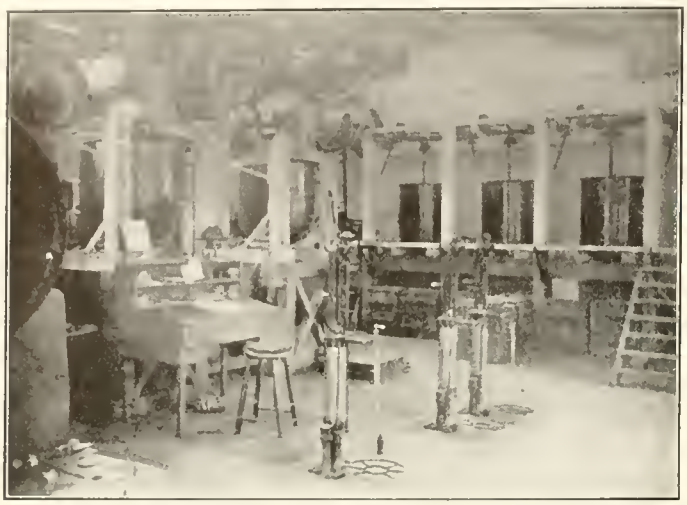
THE building occupied as a factory by the Standard Raincoat Co. of Milford, Massachusetts, was destroyed by fire on October 30 last. It was a 4½ story wooden structure, and the fire was too far advanced before the arrival of the firemen to be checked. The entire loss on the building and stock was placed at $40,000.

A JERSEY RUBBER PLANT BURNS DOWN.

THE plant of the Harmer Rubber Works in East Millstone, New Jersey, was destroyed by fire, October 29, entailing a loss of $100,000. A locomotive, rushed from New Brunswick, aided in extinguishing the flames by pumping water from the Raritan canal.

A CANADIAN CEMENT HOUSE.

PROBABLY few rubber factories make the same quantity and variety of cement as The Canadian Consolidated Rubber Co. of Montreal, Limited. The company being a manufacturer of shoes, waterproof clothing and general mechanical goods, uses an immense quantity of cement. In addition to these lines,

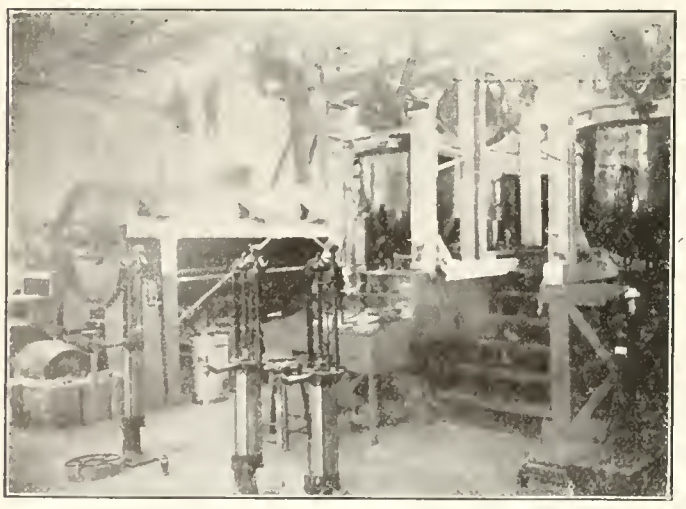


AN INTERIOR VIEW OF THE CANADIAN CEMENT HOUSE.

the company supplies large quantities to the leather boot and shoe factories, of which Montreal is the centre for Canada.

The Cement House is probably not excelled in America. It contains 52 churns of various sizes, the largest having a capacity of 5,200 pounds. The method of supplying naphtha is by pumps. The tanks are buried in the yard. Bowser pumps are placed in the Cement House, and an exact amount taken as required. Great care is taken to insure the correct quality of naphtha. On arrival of a tank, a telephone message brings an assistant from the laboratory, who immediately makes the usual hydrometer tests. Afterwards evaporation tests are carried on in the laboratory. This applies to every tank.

The building is constructed on a principle particularly suited



ANOTHER VIEW OF THE CANADIAN CEMENT HOUSE.

for a business of this character. Should an explosion take place, it would take the roof off the supporting walls, leaving the walls intact, but owing to the use of the Bowser Pump no clear naphtha is ever lying around, which of course reduces the chance of an explosion to a minimum. Perfect cleanliness is the order of the day, and instead of being the usual dirty, untidy corner, the cement department of the Canadian Consolidated Rubber Co. is one of the cleanest, and is a pleasure to the eye of any rubber man.

THE RUBBER TRADE IN CANADA.

CANADIAN imports of manufactures of india-rubber and gutta-percha for the fiscal year ended March 31, 1912, by countries, are officially stated to have been in value as follows:

	United States.	Great Britain.	Other Countries.	Total Value.	Duties Collected.
Boots and shoes...	$40,614	$53	...	$40,667	$10,166.75
Belting	46,578	185	$578	47,341	13,018.91
Clothing and waterproof cloth	30,564	4,495	367	35,426	12,399.10
Hose	100,495	....	51	100,546	38,191.10
Packing and mats..	70,206	606	465	71,277	24,946.95
Vehicle tires	651,316	70,849	16,212	738,377	258,431.95
All other	644,983	12,290	51,371	708,644	194,879.78
Total, 1911-12...	$1,584,756	$88,478	$69,044	$1,742,278	$552,034.54

There may also be noted the following imports, not classified by the customs as "rubber goods," but having a relation to the industry:

	United States.	Great Britain.	Other Countries.	Total Value.	Duties Collected.
Webbing, elastic and non-elastic	$265,794	$8,244	$24,801	$298,839	$59,767.80
Stockinettes for rubber footwear.	47,727	1,760	.....	49,487	7,423.05
Duck for rubber belting and hose.	106,960	6,776	151	113,887	free
Rubber thread..	21,853	.....	.....	21,853	free

EXPORTS OF CANADIAN RUBBER GOODS.

Belting	$60,613	All other	$80,666
Hose	6,517		
Footwear	122,613	Total	$270,500
Clothing	91		

DISTRIBUTION OF RUBBER GOODS EXPORTS.

To	Value.	To	Value.
Great Britain	$38,743	Chili	$215
Bermuda	450	Denmark	1,311
Australia	48,277	France	7,195
British Guiana	277	French Africa	2,116
B. South Africa	14,143	Germany	10,556
B. India	38	Italy	520
B. West Indies	43	Japan	82
New Zealand	34,814	Miquelon & St. Pierre.	59
Other British Possessions	513	Mexico	884
Newfoundland	63,431	Norway	164
Alaska	4	Spain	4,281
Argentina	545	Sweden	1,493
Belgium	8,790	United States	31,556
			$270,500

IMPORTS OF RAW MATERIALS.

	Pounds	Value
India-rubber and gutta-percha	4,431,335	$4,250,269
Rubber recovered; rubber substitute; hard rubber in sheets	4,870,394	792,444
Rubber, powdered, and rubber waste..	2,452,944	289,814
Rubber thread not covered	11,289	21,853
Total, 1911-12.....	11,765,962	$5,354,380

ITHACANS TO PLANT RUBBER IN MEXICO.

THE American-Mexican Rubber and Coffee Corporation, with principal office at Ithaca, was incorporated in New York State November 12 with a capital of $2,000,000, to cultivate rubber and coffee lands in Mexico. The directors are: William C. Douglas, Isaac K. Bernstein, Fred H. Smith, Arthur N. Gibbs, Benjamin Johnson, Robert A. Heggie, E. D. Button, Edwin S. Banks, Alfonso R. Swayer, Ithaca; Joseph Bondy, Syracuse, and Frank E. Pino, Tapachula, Chiapas, Mexico.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED OCTOBER 1, 1912.

No. 1,039,697. Machine for coating hose. H. Z. Cobb, Chelsea, Mass.

1,039,731. Coupling for train pipes. W. A. Greenlaw, Melrose Highlands, Mass., assignor to The Greenlaw Manufacturing Co., Boston, Mass.

1,039,760. Vehicle tire and rim. E. H. Koken, Akron, Ohio.

1,039,805. Resilient tire. E. Rimailho, Neuilly-sur-Seine, France.

1,039,838. Motorcycle stand. S. Y. Steinberger, Peoria, Ill.

1,039,843. Combination non-refillable bottle and drinking cup. F. Fortunatus, Syracuse, N. Y.

1,039,857. Spring-wheel. U. Grant Weidman, Knightstown, Ind.

1,039,877. Combination syringe case and supporter. J. W. Allan, Omaha, Neb.

1,039,897. Resilient tire for vehicles. H. A. Carmichael, West Lorne, Ontario, Canada.

1,039,898. Convertible-tread wheel. H. W. Clapp, Berkeley, and B. C. Edgar, San Francisco—both of California.

1,039,943. Motorcycle. E. O. Himes, Albion, Ind.

1,039,946. Roll for cotton-gins and machines for burring wool. G. E. U. Huckaby, Houston, Tex.

1,040,074. Cushion tire for vehicle wheels. M. M. Weiss, Detroit, Mich.

1,040,114. Pneumatic cushioned wheel. I. H. Babcock, De Ruyter, N. Y.

1,040,134. Method of rolling tubing. R. E. Brock, Monessen, Pa., assignor to Pittsburgh Steel Products Co.

1,040,139. Hose-supporting clasp. D. H. Buell, Bridgeport, Conn.

1,040,157. Wheel for vehicles. W. Dalton, Schenectady, N. Y.

1,040,173. Resilient wheel. G. Dorffel, Oakland, Cal.

1,040,246. Tire protector. R. A. Willett, Warren, Ohio, assignor of one-half to E. J. Maxwell and one-half to G. M. Hughson, Los Angeles, Cal.

Trade Mark.

64,229. The Manhattan Rubber Mfg. Co., New York. The word *Condor*. For belting.

ISSUED OCTOBER 8, 1912.

1,040,275. Demountable rim. J. C. Cole, assignor to Fisk Rubber Co.—both of Chicopee Falls, Mass.

1,040,276. Force and suction pump. A. J. Coleman, Pittsburgh, Pa.

1,040,285. Manufacture of chewing gum. J. D. Darling, Philadelphia, Pa.

1,040,311. Air-supply device for firemen. J. D. Halloran, New York.

1,040,334. Rubber valve for pumps and the like. T. Howland, Mackay, Queensland, Australia.

1,040,426. Spring wheel. L. Sanders, Cravens, La.

1,040,431. Cushion tire. Paul Schneider, Webster Groves, Mo.

1,040,436. Resilient wheel. A. Seibert, Harvey, Ill.

1,040,471. Vehicle wheel tire. C. Van Smith, Kansas City, Mo.

1,040,511. Automobile wheel. H. B. Coats, Veedersburg, Ind.

1,040,512. Spring wheel. H. B. Coats, Veedersburg, Ind.

1,040,569. Method of making seamless tubes. J. W. Offutt, Ellwood City, Pa., assignor to The Shelby Steel Tube Co., Pittsburgh, Pa.

1,040,581. Tire for automobiles, vehicles or the like. A. W. Rowe, Philadelphia, Pa.

1,040,599. Resilient hub for wheels. C. A. White and F. McLaughlin, London, Ontario, Canada.

1,040,647. Pneumatic tire. M. A. Dees, Pascagoula, assignor to American Tire Co., St. Louis, Mo.

1,040,737. Apparatus for producing rubber bulbs for atomizers, syringes, etc. J. A. Murray, assignor of one-half to J. L. Mahoney—both of New Haven, Conn.

1,040,865. Non-skidding tire. J. G. Boss, Denver, Col.

1,040,877. Tire-repairing case. C. Byrne, Pompton Lakes, N. J., assignor of one-half to G. W. Drew, Florida, N. Y.

1,040,920. Tire. H. G. Fiske, New York, assignor to The Columbia Motor Car Co., Hartford, Conn.

1,040,926. Hose-band. H. Gibbs, assignor to W. D. Allen Mfg. Co.—both of Chicago, Ill.

Design.

43,105. Garter. R. J. Freeman, Overbrook, Pa., assignor to Pioneer Suspender Co., of Pennsylvania.

Trade Marks.

60,330. The Star Rubber Co., Akron, Ohio. The word *Saturn*. For household rubber gloves and bath caps.

60,333. The Star Rubber Co., Akron, Ohio. The word *Jupiter*. For household rubber gloves and bath caps.

65,059. The L. Candee & Co., New Haven, Conn. The word *Es-ki-mo*. For rubber boots and shoes.

65,060. The L. Candee & Co., New Haven, Conn. A picture of an eskimo. For rubber boots and shoes.

ISSUED OCTOBER 15, 1912.

1,041,012. Bathing suit. J. F. Burke, Philadelphia, Pa.

1,041,026. Tire-tightener. T. F. Chrane, Cravette, Ark.

1,041,062. Temporary locking-piece for transversely-split vehicle-wheel rims. R. W. Funk, Weehawken, N. J.

1,041,074. Roll for leather-working machines. R. H. Harris, Boston, Mass., assignor to the Turner Tanning Machine Co., Peabody, Mass.

1,041,097. Combined vehicle-hub and shock-absorber. C. L. Kennedy, Winnipeg, Canada.

1,041,104. Garment support. F. E. Krauch, Indianapolis, Ind.

1,041,139. Anti-skid device for block tires. S. S. Miller, Akron, Ohio, assignor to Consolidated Rubber Tire Co., New York.

1,041,172. Wiper for windows and the like. W. A. Roth and F. O. Moldenhauer, Chicago, Ill.

1,041,182. Cushion-tired wheel. W. D. Simpson, Columbia, S. C.

1,041,216. Automatic elastic check-valve for pneumatic tires. P. P. Wood, Hot Springs, Ark.

1,041,244. Resilient wheel. C. J. Craig, Lathrop, Mo.

1,041,336. Pneumatic-pressure gage. O. Olsen, Oakland, Cal., assignor of one-half to H. T. Carvin, Alameda, Cal.

1,041,350. Pneumatic tire for vehicle wheels. E. R. Riedinger, assignor of one-half to A. Fraser—both of London, England.

1,041,391. Air-brake coupling. O. P. Wilhelm, Michigan City, Ind.

1,041,408. Supporter for articles of apparel. A. B. Beck, Cranford, N. J., assignor to M. W. Schloss, New York.

1,041,460. Spring attachment for vehicles. G. Graybill, York, Pa.

1,041,519. Motor wheel for cycles. A. C. Seibak, San Francisco, Cal.

1,041,526. Core-filling compound for pneumatic tires and process of making the same. H. M. Suss, Fall River, Mass.

1,041,544. Apparatus for manufacturing rubber tires, etc. Emrys T. Williams, Akron, Ohio.

1,041,567. Detachable and divisible rim for motor cars and other vehicles.

1,041,632. Tire lock. T. J. Kelly, Denver, Col.

1,041,660. Tire tool. A. A. Nelson, Washington, D. C.

1,041,702. Shock-absorbing hub for vehicle wheels. J. W. Tilton, assignor of one-half to G. Hoefer, J. C. Adams and N. W. Young—all of Atlantic City, N. J.

Trade Marks.

62,741. The Continental Supply Co., St. Louis, Mo. The initials C. S. Co. intertwined. For rubber machinery belts, etc.

ISSUED OCTOBER 22, 1912.

1,041,739. Tire. W. G. Chipley, New Orleans, La.

1,041,774. Bottle-stopper. J. D. Geraghty and J. E. Hager, New York.

1,041,907. Coupling gasket. J. M. Towne, East Orange, N. J., assignor to Safety Car Heating & Lighting Co., of New Jersey.

1,041,958. Golf ball mold. E. W. Buckau, New York.

1,042,016. Tire traction device. R. Livingston, Los Angeles, Cal.

1,042,026. Tire casing. E. B. Nathan, New York.

1,042,035. Resilient vehicle wheel. A. D. Ray, Cleveland, Ohio.

1,042,065. Automobile tire. W. J. Woodcock, Brooklyn, N. Y.

1,042,157. Tire protector. C. J. Shumaker, Tupelo, Miss.

1,042,178. Tire. A. G. Walker, Pacific Junction, Ia.

1,042,209. Closure for vessels. J. C. Eichhorn, assignor to The Victor Jar Co.—both of Detroit, Mich.

1,042,214. Vehicle wheel. H. S. Grace, San Francisco, Cal.

1,042,237. Bottle for jar closure. W. Koufman, Paterson, N. J.

1,042,327. Life-saving garment for aviators. J. J. Costanzo, Alexandria, Egypt.

Trade Mark.

63,649. General Electric Co., Schenectady, N. Y. The word *Acme*. For electrical insulating tape.

ISSUED OCTOBER 29, 1912.

1,042,377. Tire lock for automobiles. B. A. Alperin, New York.

1,042,392. Automobile tire. C. L. Butler, Chicago, Ill., assignor to American Steel Tire Co., Milwaukee, Wis.

1,042,426. Tire. W. F. Gaul, Jersey City, N. J., assignor of one-half to E. H. Fahey, Philadelphia, Pa.

1,042,478. Rim. A. D. Reid, West Chester, Pa.

1,042,479. Rim. A. D. Reid, West Chester, Pa.

1,042,592. Resilient tire. J. M. O'Rear, Birmingham, Ala.

1,042,593. Manufacture of tubing. P. Patterson, Pittsburgh, Pa.

1,042,604. Belt fastener. W. A. Roos, Newark, N. J.

1,042,632. Elastic fabric or webbing. C. J. White, assignor to C. J. White Mfg. Co.—both of New Britain, Conn.

1,042,649. Tire-making machine. L. D. Crosby, Hartford, Conn.

1,042,684. Hose-coupling. C. E. Judkins, Columbia River, Wash., assignor of one-half to C. Masini, Coeur d'Alene, Idaho.

1,042,705. Bottle atttachment. R. McConnell, Barton Heights, Va., assignor of one-half to G. B. Hutchings, Richmond, Va.

1,042,711. Vacuum cleaning device. A. E. Moorhead, assignor to American Rotary Valve Co—both of Chicago, Ill.

1,042,713. Pneumatic scrubbing appliance. A. E. Moorhead, San Francisco, Cal., assignor to American Rotary Valve Co., Chicago, Ill.

1,042,722. Anti-skidding device. T. W. Simmons, Bridgeport, Conn.

1,042,795. Apparatus arranged on locomotives and other power-propelled vehicles for utilizing the resistance of the air. J. Jaensch, Breslau, Germany.

1,042,870. Back strap for shoes. C. M. Benninghaus, Govans, Md.

1,042,875. Lock for vehicles. E. M. Bishop, Kingston, N. Y.

1,042,884. Tire filler. W. B. Buckley, Washington, D. C., assignor to Air-Ease Tire Filler Co., of Delaware.

1,042,909. Device for milk bottles. K. Graham, Baltimore, Md.

1,042,939. Suspenders. S. Martin, Chelsea, Mass.

1,042,941. Cushion-tire. W. D. McCormack, Nashville, Tenn.

1,042,943. Cushioned horseshoe. G. E. McKinnon, Little Falls, N. J.

1,043,024. Pneumatic cleansing implement for removing dust. A. E. Moorhead, San Francisco, Cal., assignor to American Rotary Valve Co., Chicago, Ill.

1,043,025. Pneumatic cleansing apparatus. A. E. Moorhead, Chicago, Ill., assignor to American Rotary Valve Co. of Illinois.

Trade Marks.

62,245. J. H. Graham, New York. The words "*Kork-Tred.*" Heels for boots, shoes, etc.

64,053. The American Mills Co., New York. The word *Reclastic*. Elastic webbing.

65,297. Revere Rubber Co., Providence, R. I. The word *Shower*. For rubber hose.

65,631. The Imperial Merchandise Co., Perry, Ohio. The word *Daylight*. For fruit-jar rings.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 2, 1912.]

13,867. Air tubes. Marquis G. Fossi, 6 Piazza Peruzzi, Florence, Italy.

13,881. Vehicle wheels. A. H. Roberts, "Rockbank," Victoria street, West Brunswick, Melbourne, Australia.

13,897. Horseshoes. F. Gundlach, 4b, Vorwerksgasse, Celle, Germany.

13,951. Horseshoes, etc. G. A. Bennett, 14 Blythswood road, Goodmayes, Essex.

*13,973. Vehicle wheels. J. A. Anglada, 225 West Fifty-seventh street, New York, U. S. A.

*13,974. Vehicle wheels. J. A. Anglada, 225 West Fifty-seventh street, New York, U. S. A.

14,015. Boots, etc. J. J. Hartopp, Rutland street, Leicester.

14,078. Vehicle wheels. C. G. Kleinschmidt, 19 Siepenstrasse, Herne, Westphalia, Germany.

14,087. Wheel tires. Albion Motor Car Co., and T. B. Murray, South street, Scotstoun, Renfrewshire.

14,119. Collapsible boats, etc. W. J. Simpson, 28 Clerkenwell road, London.

*14,145. Hot water bottles, syringes. L. F. Gilletie, 11 Wall street, Concord, New Hampshire, U. S. A.

*14,206. Firemen's dress. F. W. Vinton, 48 Fulton street, Weehawken, N. J., U. S. A.

14,250. Vehicle wheels. G. P. Milnes, Whitehall, Stroud, Gloucestershire.

14,304. Treads for tires, boots, etc. G. C. Taylor, "Ravencar," Helsby, Cheshire.

14,411. Vehicle wheels. A. C. Frost, Hazelmere, Lichfield road, Four Oaks, Warwickshire.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 9, 1912.

14,495. Toys, games. A. Jud, 83 Stalden, Solothurn, Switzerland.

14,524. Fire valves. W. de C. Prideaux, 12 Frederick place, Weymouth, Dorcetshire.

14,584. Floor mats. P. M. Justice, 55 Chancery lane, London.

14,693. Covers for food vessels, etc. B. J. Letherland, 562 Woodborough road, Nottingham.

14,696. Stair treads. Safety Tread Syndicate, 15 Barbican and E. S. Higgins, 21 Cornford Grove, Balham.

14,761. Door stops. C. W. Wood, 372 Euston road, London.

*14,858. Erasers. A. Tregoning, 841 North Bunker Hill avenue, Los Angeles, Cal., U. S. A.

14,892. Vehicle wheels. Vicomte M. A. M. J. de Grassin, Chateau de Louvieres, Bayeux, Ca'vados, France.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 16, 1912.]

14,910. Heel pads, etc. H. Thorne, 241 Collins street, Melbourne, Australia.

14,930. Balls. P. A. Martin, Granville street, and J. Stanley, 137 Ivor road, Sparkhill both in Birmingham.

14,939. Stuffing boxes. J. Walker & Co., and J. Walker, Lion Works, Garford street, Poplar, London.

14,940. Stuffing boxes, etc. J. Walker & Co., and J. Walker, Lion Works, Garford street, Poplar, London.

14,943. Artificial leather. E. D. Delahaye, 40 Boulevard de l'Est, C. Vesinet, France.

15,045. Heel protecters, etc. F. Knipp, 51 Bessungerstrasse, Darmstadt, Germany.

15,164. Testing golf balls. R. Ramsbottom, Scarrwheel, The Cliff, Higher Broughton, Manchester.

15,288. Tapping rubber trees. G. S. Brown, 46 Hammerfield avenue, Aberdeen.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 23, 1912.]

15,353. Wheel tires. A. R. Harris, 84 Mount Pleasant, Cross street, Sale, Manchester, England.

15,363. Vehicle wheels. J. Windibank, 123 Ribblesdale road, Streatham, London.

*15,415. Wheel tires, etc. J. W. Driscoll, P. O. Box 143, Central City, Colorado, U. S. A.

15,417. Wheel tires. D. Maggiora, 153 Warwick street, Belgravia, London.

*15,450. Block tires. C. B. Morris, 5821 Chester avenue, Philadelphia, Pa., U. S. A.

15,496. Vehicle wheels. C. H. Sims, 18 Sir Thomas White road, Coventry.

15,557. Mud guards for wheels. F. Stenning, 29 Cambridge road, and W. Bailey, 12 Cambridge road—both in Sidcup, Kent.

15,566. Stocking-suspenders, etc. J. D. Gillespie, 481 Grimsby road, Cleethorpes, Lincolnshire.

15,588. Sole and heel protectors. J. G. West, 8 Fairfield road, Kingston, Surrey.

15,713. Wheel tires. W. Edgell, Westfield House, and A. T. Edgell, Redfield road both in Midsomer Norton, Somerset.

15,761. Artificial leather. E. Reidel, 3 Rupprecht Strasse, Mannheim, Germany.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 30, 1912.]

15,835. Closing tire punctures. F. H. Hall, Gannaway Gate, Norton, Lindsey, Warwickshire.

15,938. Vehicle wheels. T. H. Rushton, 158 Grimsby road, New Cleethorpes, Lincoln.

15,945. Substitutes for gutta-percha, etc. E. C. R. Marks, 57 Lincoln's Inn Fields, London.

15,973. Boots. F. Knipp, 51 Bessungerstrasse, Darmstadt, Germany.

16,108. Removing tires. J. Hornby, 97 Kensington road, T. Sawyer, 45 St. John's road, Firkdale, and T. Rimmer, Linaker street—all in Southport, Lancashire.

16,139. Inflating pumps. H. Lea, 38 Bennett's Hill, Birmingham.

16,149. Tire attachments to rims. R. Brown, 2 Eddington street, Tollington Park, and C. Pallash, 14 Boundary road, Wood Green—both in London.

16,157. Head-washing appliances. J. S. Withers, 323 High Holborn, London.

16,164. Pressure gauges. Erste Suddeutsche Manometerbau-Anstalt und Federtriebwerkfabrik, J. C. Eckhardt, 72 Pragstrasse, Cannstatt, Germany.

16,189. Apparatus for making tire covers. F. H. Hall, Gannaway Gate, Norton Lindsey, Warwickshire.

16,212. Manufacture of packing. J. C. Cuthbertson, 113 Fenchurch street, London.

16,226. Head-washing appliances. J. S. Withers, 323 High Holborn, London.

16,260. Horseshoes. A. W. Knight, 4 Upper street, St. Martin's lane, London.

16,276. Tapping rubber trees. H. F. Browell, Fairfield, Longdown, Guildford, Surrey.

16,326. Tire attachments to rims. A. Buckland, 41 Westfield road, Hornsey, London.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

441,273 (March 12, 1912). L. Prochazka. Elastic tire for automobiles and other vehicles.

441,324 (March 13). J. H. Messenger. Improvements in tires.

441,400 (March 16). J. B. Rozet. Elastic tire for bicycles, automobiles and other vehicles.

441,461 (March 18). P. Fontenelle. Improvements in pneumatic tires.

441,477. (March 18). "Farbenfabriken," formerly F. Bayer & Co. Process for preventing the glutination and resinification of substances resembling rubber.

441,404 (March 16). G. Evans. Improvements in removable heels.

441,514 (March 19). C. H. Myers. Anti-skid device for pneumatic tires.

441,534 (March 21). W. H. Bitnam. Anti-skid device for automobiles.

444,554 (March 4). A. M. P. Huchon. Elastic tire.

441,569 (March 20). T. Christopherson. Improvements in automobile and other tires.

441,568 (March 20). C. Beyer. Process for preserving the elasticity of rubber objects.

441,635 (March 22). P. G. Seward. Improvements in elsatic tires.

441,771 (March 26). Continental Caoutchouc and Gutta Percha Co. Improved air chamber for automobile wheels.

441,773 (March 26). M. A. Kennedy. Improvements in elastic tires.

441,655 (March 22). "Farbenfabriken," formerly F. Bayer & Co. Process for producing substance analogous to rubber.

441,840 (March 27). J. R. Salmon & E. W. Roy. Improvements in pneumatic tires.

441,881 (March 28). J. Bermudez de la Puenti. Improvements in air chambers of pneumatic tires.

442,056 (February 14). H. Bagieu. New method of fixing rubber to vehicle wheels by rims.

441,802 (February 19). "Farbenfabriken," formerly F. Bayer & Co. Process for production of rubber, its homologues and analogues.

442,107 (April 2). Arnold & Johnston. Improvements in pneumatic tires.

442,179 (April 4). G. Gray. Elastic automobile tire.

442,250 (April 21). P. Bourcet. Protection for pneumatic tires.

442,260 (April 6). B. W. Dinne. Tire for vehicle wheels.

442,231 (April 9). C. Beyer. Process for preserving the elasticity of rubber objects.

442,492 (April 12). A Steinhauser. Improvements in pneumatic tires.

442,521 (April 13). H. Döhne. Attachment to air cushions.

442,525 (April 13). G. L. Pauer. Apparatus for vulcanization and repair of pieces of rubber.

442,665 (April 18). K. Rechberg. Manufacture of covers for pneumatic tires.

[NOTE. Printed copies of specifications of French patents can be obtained from R. Bobet, Ingénieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

252,104 (September 30, 1911). Process for recovery of rubber from rubber waste. The Moore Architectural and Engineering Co., Akron, U. S. A.

252,109 (December 5, 1911). Process for hot vulcanization of tire cover. Etablissements Bergougnan, Clermont-Ferrand, France.

252,111 (June 29, 1911). Rubber tires for motor trucks, etc., with inserted twisted wire. Heinrich Rentz, Goldberg, Silesia.

252,789 (February 8, 1912). Rubber or other elastic packing for steam doors. Haniel & Lueg, Dusseldorf-Grafenberg.

252,705 (July 6, 1910). Manufacture of products resembling rubber. Chemiche Fabrik Florsheim. Dr. H. Nordlinger, Florsheim, a. M.

253,400 (July 27, 1911). Press with extensible core for vulcanizing tires. Lucien Morane, Paris.

253,269 (January 31, 1912). Adjustable rubber sole for shoes. Eugene Fuller and Joseph Rosenblatt, Providence, R. I., U. S. A.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

248,432 (1912). "Farbenfabriken," formerly F. Bayer & Co., Elberfeld. Production of substance resembling rubber.

248,417 (1912). The Diamond Rubber Co., Akron, U. S. A. Process for improving inferior qualities of rubber.

247,981 (1912). "Farbenfabriken," formerly F. Bayer & Co., Elberfeld. Manufacture of product resembling vulcanized rubber.

248,080 (1912). M. Kochnitzky and A. Fried, Brussels. Process of extraction of resin from crude rubber.

247,627 (1912). Gesellschaft fur Teerverwertung, G. m. b. H., Duisburg-Meiderich, Germany. Process of manufacturing a substance analogous to rubber.

247,518 (1912). G. Millienne, rue Richer 10, Paris. Appliance for gathering latex of rubber and gum trees.

247,901 (1912). C. E. Anquetil, place St. Michel, Marseilles. Process of making synthetic rubber.

247,493 (1912). H. Auzies, Toulouse, France. Process for making plastic substances resembling gutta percha.

UNITED STATES RUBBER CO.'S ISSUES.

TRANSACTIONS on the New York Stock Exchange for four weeks, ending November 23:

COMMON STOCK, $25,000,000.

[The treasury of a subsidiary company holds $1,334,000.]

Last Dividend, October 31, 1912—1%.

Week November 2	Sales	3,715 shares	High	51⅝	Low 50¾
Week November 9	Sales	4,500 shares	High	53	Low 51
Week November 16	Sales	23,490 shares	High	56¼	Low 51⅜
Week November 23	Sales	52,450 shares	High	60⅝	Low 55½

For the year—High, 67⅞, May 21; Low, 45¼, February 1.
Last year—High, 48½; Low, 30½.

FIRST PREFERRED STOCK, $39,824,400.

Last Dividend, October 31, 1912—2%.

Week November 2	Sales	1,150 shares	High	107⅞	Low 106¾
Week November 9	Sales	1,400 shares	High	108⅜	Low 107
Week November 16	Sales	3,650 shares	High	109	Low 107⅛
Week November 23	Sales	1,066 shares	High	109⅜	Low 108¼

For the year—High, 116, May 20; Low, 105⅝, July 25.
Last year—High, 115½; Low, 104.

SECOND PREFERRED STOCK, $9,965,000.

Last Dividend, October 31, 1912—1½%.

Week November 2	Sales	... shares	High	....	Low ....
Week November 9	Sales	... shares	High	....	Low ....
Week November 16	Sales	310 shares	High	80¼	Low 80
Week November 23	Sales	800 shares	High	80¼	Low 80

For the year—High, 85½, May 21; Low, 75, January 23.
Last year—High, 79; Low, 66.

SIX PER CENT. TRUST GOLD BONDS, $18,000,000.

Outstanding of the 1908 issue of $20,000,000.

Week November 2	Sales	17 bonds	High	103⅜	Low 103⅛
Week November 9	Sales	3 bonds	High	103⅜	Low 103
Week November 16	Sales	22 bonds	High	103⅛	Low 103
Week November 23	Sales	21 bonds	High	103⅛	Low 103¼

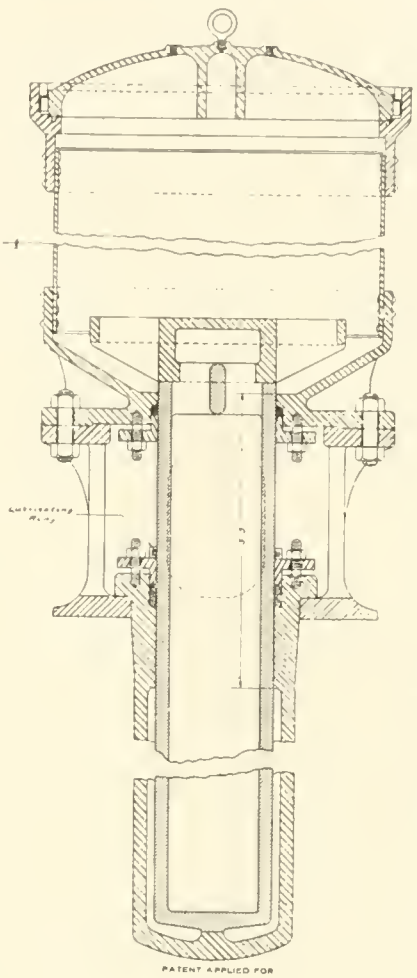
For the year—High, 105, February 24; Low, 103, October 19.
Last year—High, 105; Low, 101¾.

GENERAL BAKELITE CO. STARTS INFRINGEMENT SUITS.

The General Bakelite Co. has brought suits for infringements of its Bakelite patents against the Condensite Co. of America and several users of "Condensite," among them the Dickinson Manufacturing Co., of Springfield, Massachusetts; The Duranoid Mfg. Co., of Newark, and Hardman & Wright, of Belleville, New Jersey.

A NEW TIRE-HEATING PRESS.

THE revised design of the Akron-Williams Tire Vulcanizing Press, which is proving very popular for the curing of automobile tires at the present time, has a number of valuable improvements. As the expert will discover by the examination of the cross-section diagram which is here shown, the unusually long ram-bearings noticeable in this diagram insure its exerting pressure at right angles to the press lid, between which and the ram cap the molds are squeezed during the process. Even a slight amount of play in these bearings will permit the ram to slant considerably when fully extended and may leave the molds open a little on one side or the other. The design obviates this trouble.



In the ordinary construction the packing gland for the hydraulic ram is placed in the bottom of the vulcanizing chamber. It is difficult to re-pack this gland on account of its position. The condition of the packing cannot be determined while a cure is in process. A slight leakage through the hydraulic packing will permit cold water to enter the vulcanizing chamber, reducing the efficiency and uniformity of the cure.

The new design effectually overcomes this difficulty.

STATEMENT OF THE INDIA RUBBER WORLD.

Statement of the ownership, management, circulation, etc., of THE INDIA RUBBER WORLD, published monthly at New York, required by the Act of August 24, 1912.

Editor, Henry C. Pearson, Tompkins Corners, Putnam Co., N. Y.; managing editor, John P. Lyons, 150 West 91st St., New York City; business manager, Edward F. Pfaff, 94 Hawthorne St., Brooklyn, N. Y.; publisher, The India Rubber Publishing Co., 15 West 38th St., New York City.

Owners: (If a corporation, give names and addresses of stockholders holding 1 per cent. or more of total amount of stock.) Henry C. Pearson, Tompkins Corners, Putnam Co., N. Y.

Known bondholders, mortgagees and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

(Signed) HENRY C. PEARSON, Editor.

BOSTON WOVEN HOSE AND RUBBER CO.

The directors of the Boston Woven Hose and Rubber Co. have declared a semi-annual dividend of $3 per share on the preferred stock, and a quarterly dividend of $3 per share on the common stock, both payable December 16, 1912, to stockholders of record December 5

Review of the Crude Rubber Market.

THE fall in value of fine Pará in London, which had marked the latter part of October, bringing the price to 4*s.* 6*d.* on October 26, made further progress during the closing days of that month and the opening days of November. By the 6th it had reached 4*s.* 3¾*d.*, when the tide turned, the price of 4*s.* 5*d.* being established on the 7th.

During the succeeding portion of the month it ranged from 4*s.* 4¾*d.* to 4*s.* 6*d.*, thus keeping within a narrow margin and reaching 4*s.* 5*d.* on November 25, at time of writing.

While Pará thus recovered only part of the fall which had taken place, plantation rubber advanced in the four weeks from 4*s.* 2½*d.* to 4*s.* 3¾*d.*, having in the interim touched 4*s.* 5*d.* A month ago fine Pará stood at 4*s.* 6*d.*, while pale crêpe was at 4*s.* 2½*d.* At time of writing the prices are respectively 4*s.* 5*d.* and 4*s.* 3¾*d.*, a closer approximation being thus indicated.

In contrast with the two preceding fortnightly London auctions which averaged about 900 tons, that of November 5 only included 720 tons. The tone was firmer, the decline having been partially arrested, and prices being only 1*d.* below those of last auction. At the decline a good demand was created, which checked the downward tendency.

The second London November auction took place on the 19th, when 750 tons were offered. Although demand was not active, the improvement established in the outside market led to an advance at the opening of 2½*d.* per pound on the prices of the previous sale. A slight reaction took place on the second day.

While the recent political complications and the stringency of money affected the tone of the Antwerp sale of October 22, it was generally satisfactory in character. Of the 503 tons offered, 406 were sold; the average fall being about 3¾ per cent. Congo descriptions formed 75 per cent., and plantation 20 per cent., the balance being composed of various grades. At the sales of November 14, 315 tons Congo and 114 tons plantation were offered. Sales made were at an advance on valuations of about ⅝*d.* per pound.

The Havre sale of October 20 was marked by reduced demand, but 27 tons Congo were sold with an average fall of about 5 per cent. Owing to the reserve of sellers only about one-half of the 33 tons offered at Rotterdam, November 12, was sold, averaging slightly under valuations.

At the Amsterdam sale of November 15, about 40 tons were sold, chiefly *Hevea;* mostly at steady prices.

Messrs. Hecht, Levis & Kahn's statistics for end of October show visible supply as follows:

	1911. Tons.	1912. Tons.
Pará grades	6,862	5,225
Medium grades	2,439	3,976
	9,301	9,201

New York Quotations.

FOLLOWING are the quotations at New York for Pará grades, one year ago, one month ago, November 30—the current date:

PARA.	Dec. 1, '11.	Nov. 1, '12.	Nov. 29, '12.
Islands, fine, new	93@ 94	99@100	95@ 96
Islands, fine, old	96@ 97	.....	.....
Upriver, fine, new	103@104	105@106	106@107
Upriver, fine, old	107@108	.....	113@114
Islands, coarse, new	58@ 59	54@ 55	54@ 55
Islands, coarse, old	none here	.....	.....
Upriver, coarse, new	89@ 90	83@ 84	82@ 83
Upriver, coarse, old	none here	.....	.....
Cametá	60@ 61	55@ 56	55@ 56
Caucho (Peruvian) ball	89@ 90	82@ 83	81@ 82
Caucho (Peruvian) sheet	none here	.....	.....
Plantation Pará.			
Fine smoked sheet	117@118	108@109	111@112
Fine pale crepe	118@119	102@103	106@107
Fine sheets and biscuits	113@114	100@101	105@106
Centrals.			
Esmeralda, sausage	83@ 84	77@ 78	78@ 79
Guayaquil, strip	none here	.....	.....
Nicaragua, scrap	82@ 83	77@ 78	77@ 78
Panama	none here	.....	.....
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	81@ 82	76@ 77	76@ 77
Mexican, slab	none here	.....	.....
Managabeira, sheet	62@ 63	.....	.....
Guayule	47@ 48	57@ 58	58@ 59
Balata, sheet	86@ 87	.....	82@ 83
Balata, block	55@ 56	.....	54@ 55
AFRICAN.			
Lopori, ball, prime	101@102	96@ 97	98@ 99
Lopori, strip, prime	none here	.....	.....
Aruwimi	100@101	87@ 88	87@ 88
Upper Congo, ball, red	96@ 97	.....	97@ 98
Sierra Leone, 1st quality	84@ 85	.....	95@ 96
Massai, red	85@ 86	95@ 96	98@100
Soudan, Niggers	81@ 82	.....	.....
Cameroon, ball	63@ 64	.....	.....
Benguela	62@ 64	.....	73@ 74
Madagascar, pinky	75@ 76	.....	.....
Accra, flake	27@ 28	25@ 26	25@ 26
Pontianak	55⅛@ ..	.....	.....
EAST INDIAN.			
Assam	none here	.....	.....
Pontianak	5⅝ ..	6⅝ ..	6¾@ 7
Borneo	none here	.....	.....

Late Para cables quote:

	Per Kilo.		Per Kilo.
Islands, fine	4$000	Upriver, fine	5$500
Islands, coarse	2$250	Upriver, coarse	3$700
		Exchange	16 3/8d.

Latest Manaos advices:

Upriver, fine	5$500	Exchange	16 5/16d.
Upriver, coarse	3$700		

African Rubbers.

NEW YORK STOCKS (IN TONS).

October 1, 1911	67	May 1, 1912	62
November 1	45	June 1	94
December 1	60	July 1	62
January 1, 1912	58	August 1	85
February 1	150	September 1	156
March 1	90	October 1	89
April 1	80	November 1	90

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During November the market has continued about the same as in October, the demand for paper being light, and almost entirely from out-of-town banks, rates ruling at 6@6¼ per cent. for the best rubber names and 6½@7 per cent. for others."

NEW YORK PRICES FOR SEPTEMBER (NEW RUBBER).

	1912.	1911.	1910.
Upriver, fine	$1.10@1.22	$1.13@1.20	$1.55@1.90
Upriver, coarse	.87@ .95	.94@ .99	1.22@1.42
Islands, fine	1.07@1.13	1.06@1.12	1.50@1.82
Islands, coarse	.55@ .59	.62@ .64	.90@ .92
Cametá	.61@ .67	.66@ .68	.90@ .98

NEW YORK PRICES FOR OCTOBER (NEW RUBBER).

	1912.	1911.	1910.
Upriver, fine	$1.04@1.11	$1.00@1.12	$1.37@1.50
Upriver, coarse	.81@ .86	.90@ .96	1.02@1.20
Islands, fine	.99@1.06	.96@1.07	1.20@1.46
Islands, coarse	.53@ .56	.56@ .63	.73@ .90
Cametá	.56@ .61	.60@ .66	.75@ .89

Statistics of Para Rubber (Excluding Caucho).

	New York. Fine and Medium.	Coarse.	Total, 1912.	Total, 1911.	Total, 1910.
Stocks, Sept. 30.....*tons*	147	34 =	181	322	175
Arrivals, October	1,059	4 =	1,423	1,923	1,240
Aggregating.....	1,206	398 =	1,604	2,245	1,415
Deliveries, October	1,062	381 =	1,443	1,893	1,204
Stocks, October 31...	144	17 =	161	352	211

	Pará. 1912.	1911.	1910.	England. 1912.	1911.	1910.
Stocks, Oct. 31....*tons*	1,420	2,690	860	380	855	1,308
Arrivals, October	3,300	2,990	2,705	710	288	332
Aggregating.....	4,720	5,680	3,565	1,090	1,143	1,640
Deliveries, October ...	2,875	2,205	2,690	850	393	520
Stocks, October 31....	1,845	3,475	875	240	750	1,120

	1912.	1911.	1910.
World's visible supply, October 31....*tons*	3,524	5,887	3,524
Pará receipts, July 1 to October 31.....	8,455	7,950	7,535
Pará receipts of caucho, same dates.....	1,440	1,050	1,800
Afloat from Pará to United States, Oct. 31.	418	530	278
Afloat from Pará to Europe, October 31..	860	780	1,040

WEEKLY MOVEMENT OF LONDON PRICES.

[In Shillings and Pence Per Pound.]

May 3, 1912.....	4/7½	August 16, 1912.....	5/0½
May 10	4/7½	August 23	5/2
May 17	4/7½	August 30	5/1¾
May 24	4/7½	September 6	4/11½
May 31	4/7½	September 13	4/9½
June 7	4/8½	September 20	4/8
June 14	4/10	September 27	4/7
June 21	4/9½	October 4	4/7
June 28	4/7½	October 11	4/7
July 5	4/9	October 18	4/6½
July 12	4/10	October 25	4/6
July 19	4/10	November 1	4/4½
July 26	4/11¾	November 8	4/5
August 2	4/11	November 15	4/5¼
August 9	5/0½	November 22	4/5¼

Liverpool.

William Wright & Co. report [November 1]:

Fine Pará.—There has been a shortage of spot rubber, so that prices ruling have not been a fair indication of the market. For delivery, prices have steadily declined, showing a total drop of 4*d.* per pound. Supplies of Brazilian and plantation continue ample, and at present there is every indication of a further decline in values of Pará, which we still maintain will have to assimilate itself to the level of plantation. Closing value: Hard fine spot, 4*s.* 5*d.* [$1.07]; Island, 4*s.* [97 cents].

Receipts for the month, 3,920 tons, including 400 tons Caucho, against 2,620 tons last month and 2,990 tons last year, totalling 10,380 tons, against 8,640 tons last season.

Rubber Stock at Para.

On May 31 the stock had increased, but had receded by June 30; and had again fallen off on July 31. Large sales by the syndicate materially reduced the stock by the end of August, from which point it had slightly increased by September 30. A further increase was shown on October 31.

March 31, 1911.....*tons*	4,214	January 31, 1912....*tons*	3,370
April 30	5,104	February 29	3,240
May 31	5,350	March 31	2,730
June 30	4,545	April 30	2,770
July 31	3,884	May 31	2,995
August 31	3,450	June 30	2,685
September 30	3,102	July 31	2,300
October 31	3,320	August 31	1,355
November 30	3,050	September 30	1,420
December 31	2,675	October 31	1,845

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

October 24.—By the *Clement*, from Manáos and Pará:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	211,900	39,100	74,600	29,400=	355,000
Meyer & Brown	175,700	10,400	19,300	105,700=	311,100
General Rubber Co.....	171,100	26,800	72,100	.....=	270,000
New York Commercial Co..	147,700	24,500	20,800	18,000=	211,000
Henderson & Korn.....	97,700	6,800	31,800	78,500=	214,800
De Lagotellerie & Co.....	44,200	4,000	20,500	.....=	68,700
Robinson & Co.....	28,900	23,400	.....	.....=	52,300
Hagemeyer & Brunn.....	7,200	300	9,200	.....=	16,700
W. R. Grace Co.....	11,200	.....	2,600	.....=	13,800
F. Rosenstern & Co.....	3,100	.....	2,800	.....=	5,900
Total	898,700	135,300	253,700	231,600=	1,519,300

November 4.—By the steamer *Huber*, from Manáos and Pará:

Arnold & Zeiss.....	177,500	39,300	118,300	12,500=	347,600
Henderson & Korn.....	58,500	9,400	38,100	86,800=	192,800
New York Commercial Co..	105,400	18,200	20,300	23,600=	167,500
Meyer & Brown.....	73,600	7,800	33,100	28,500=	143,000
General Rubber Co.....	69,800	15,300	10,400	.....=	95,500
Edward Maurer	24,700	1,400	11,200	.....=	37,300
Robinson & Co.....	18,000	2,200	1,800	6,600=	28,600
De Lagotellerie & Co.....	10,700	1,100	3,300	.....=	15,100
Hagemeyer & Brunn.....	.....	.....	9,200	.....=	9,200
G. Amsinck & Co.....	2,100	.....	1,300	.....=	3,400
Total	540,300	94,700	247,000	158,000=	1,040,000

November 16.—By the steamer *Boniface*, from Manáos and Pará:

Arnold & Zeiss.....	268,400	71,100	177,600	.....=	517,100
New York Commercial Co..	217,400	43,200	107,800	30,300=	398,700
General Rubber Co.....	103,200	20,400	99,100	1,000=	223,700
Henderson & Korn.....	3,200	1,100	46,200	58,500=	109,000
Meyer & Brown.....	55,200	7,700	23,200	27,300=	113,400
Robinson & Co.....	35,600	4,300	900	.....=	40,800
Ed. Maurer	7,900	700	7,900	.....=	16,500
G. Amsinck & Co.....	3,500	.....	2,000	.....=	5,500
Total	694,400	148,500	464,700	117,100=	1,424,700

PARA RUBBER VIA EUROPE.

		Pounds.
October 28.—By the *Carmania*=Liverpool:		
Arnold & Zeiss (Fine).....	45,000	
Raw Products Co. (Coarse)....	7,000	52,000
October 30.—By the *Zeeland*=Antwerp:		
L. Blitz (Fine).....		5,500
November 4.—By the *Laconia*=Liverpool:		
N. Y. Commercial Co. (Fine)..	13,500	
Arnold & Zeiss (Fine).....	11,000	
A. W. Brunn (Fine).....	4,500	29,000
November 6.—By the *Pennsylvania*=Hamburg:		
Ed. Maurer (Fine).....	13,500	
Raw Products Co. (Coarse)....	10,000	
L. Blitz (Fine).....	2,500	26,000
November 6.—By the *Tivives*=Mollendo:		
New York Commercial Co. (Fine).....		8,000
November 11.—By the *Caronia*=Liverpool:		
Arnold & Zeiss (Fine).....	11,000	
N. Y. Commercial Co. (Fine)..	3,000	
Raw Products Co. (Coarse)....	11,500	
Raw Products Co. (Caucho)...	4,500	30,000
November 11.—By the *Pretoria*=Hamburg:		
N. Y. Commercial Co. (Fine)..	11,500	
Arnold & Zeiss (Coarse).....	3,500	15,000
November 13.—By the *Almirante*=Mollendo:		
F. Rosenstein Co. (Fine).....		5,500
November 18.—By the *Campania*=Liverpool:		
New York Commercial Co. (Fine).....		67,000
November 21.—By the *Panama*=Mollendo:		
W. R. Grace & Co. (Fine).....	4,500	
W. R. Grace & Co. (Caucho)...	7,000	11,500
November 22.—By the *Adriatic*=Liverpool:		
N. Y. Commercial Co. (Fine)...	15,000	
N. Y. Commercial Co. (Coarse).	15,000	
A. W. Brunn (Fine).....	7,000	37,000

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

		Pounds.
October 24.—By the *Oruba*=Colon:		
Brandon & Bros.....	7,500	
G. Amsinck & Co.....	3,500	
A. M. Capen's Sons.....	3,000	
Maitland, Coppell & Co.....	3,000	
R. Castillo & Co.....	2,500	
Kunhardt & Co.....	2,000	
Lanman & Kemp.....	1,500	
Mecke & Co.....	1,000	
Gillespie Bros. & Co.....	1,000	25,000
October 25.—By the *Camus*=New Orleans:		
Manhattan Rubber Mfg. Co....	8,000	
A. N. Rotholz	2,000	
Eggers & Heinlein	1,500	11,500
October 25.—By the *Bayamo*=Tampico:		
Continental-Mexican Rubber Co.	*115,000	
New York Commercial Co.....	*70,000	
Charles T. Wilson.....	*22,500	
For Europe	*25,000	*232,500
October 25.—By the *Carmania*=Liverpool:		
Henderson & Korn.....		9,000
October 25.—By the *Monterey*=Frontera:		
Harburger & Stack	8,000	
E. Steiger & Co.....	4,500	
Meyer & Brown.....	4,500	
Willard Hawes & Co.....	3,000	
Herman Kluge	1,000	21,000
October 28.—By the *Panama*=Colon:		
G. Amsinck & Co.....	9,000	
J. Sambrada & Co.....	8,000	
A. N. Rotholz.....	3,500	
Pottsberg Eberling Co.....	3,000	
Hirzel, Feltman & Co.....	3,000	
George A. Alden & Co.....	1,000	27,500
October 28.—By the *Frutera*=Honduras:		
A. Rosenthal & Sons.....	7,000	
Isaac Brandon & Bros.....	2,500	9,500
October 28.—By the *Cincinnati*=Hamburg:		
A. Hirsch & Co.....		34,000
October 28.—By *El Rio*=Galveston:		
Charles T. Wilson.....	*34,000	
Continental-Mexican Co.	*35,000	*69,000

OCTOBER 31.—By the *Prinz August Wilhelm*=Colon:

G. Amsinck & Co.	38,000	
Isaac Brandon & Bros.	12,000	
Mecke & Co.	4,000	
Caballero & Blanco	2,000	
Roldau & Van Sickle	1,000	57,000

NOVEMBER 4.—By the *Eastern Prince*=Bahia:

A. Hirsch & Co.	15,000	
J. H. Rossbach & Bros.	4,500	19,500

NOVEMBER 6.—By the *Minnetonka*=London:

General Rubber Co.		22,500

NOVEMBER 6.—By the *Pennsylvania*=Columbia:

Henderson & Korn		22,500

NOVEMBER 7.—By the *Thames*=Columbia:

A. M. Capen's Sons	5,000	
Pottsberg Eberling Co.	4,500	
Isaac Brandon & Bros.	5,000	
Mecke & Co.	3,500	
G. Amsinck & Co.	2,500	
Hirzel, Feltman & Co.	2,500	
J. Sambrada & Co.	2,500	
Kunhardt & Co.	2,000	
De Lima Cortissoz Co.	1,000	
Gillespie Bros. & Co.	1,000	29,500

NOVEMBER 9.—By the *Colon*=Colon:

Andean Trading Co.	8,000	
G. Amsinck & Co.	5,000	
Wessels, Kulenkampff & Co.	1,000	14,000

NOVEMBER 11.—By the *Cymric*=Liverpool:

Henderson & Korn		3,500

NOVEMBER 11.—By the *Esperanza*—Frontera:

Herman Kluge	5,000	
H. Marquardt & Co.	3,500	
Harburger & Stack	3,000	
E. Steiger & Co.	3,000	
Meyer & Brown	2,000	
W. Loaiza & Co.	1,000	
George A. Alden & Co.	1,000	18,500

NOVEMBER 11.—By the *Antilla*=Tampico:

Continental Mexican Rubber Co.	*115,000	
Ed. Maurer	*55,000	
New York Commercial Co.	*33,000	
Arnold & Zeiss	*22,000	
For Europe	*50,000	*275,000

NOVEMBER 11.—By the *Camagney*=Tampico:

Continental-Mexican Rubber Co.	*150,000	
Arnold & Zeiss	*50,000	
New York Commercial Co.	*40,000	*240,000

NOVEMBER 12.—By the *Westerwald*=Columbia:

G. Amsinck & Co.	7,000	
Winter & Smilhe	1,000	
Caballero & Blanco	1,000	
R. Castilloa & Co.	1,000	10,000

NOVEMBER 12.—By *El Occidente*=Galveston:

Charles T. Wilson	*34,000	
For Europe	*56,000	*90,000

NOVEMBER 12.—By the *Comus*=New Orleans:

Manhattan Rubber Mfg. Co.	4,500	
Egger & Heinlein	2,000	6,500

NOVEMBER 12.—By the *President Lincoln*=Hamburg:

General Rubber Co.	11,000	
Arnold & Zeiss	5,000	
Ed. Maurer	3,500	19,500

NOVEMBER 13.—By the *Prinz Joachem*=Colon:

G. Amsinck & Co.	5,500	
Pablo Calvet & Co.	2,000	
A. Rosenthal & Sons	1,500	
Gillespie Bros. & Co.	1,000	10,000

NOVEMBER 15.—By the *Mexico*=Frontera:

Charles T. Wilson	9,000	
E. Steiger & Co.	5,500	
Herman Kluge	5,500	
H. Marquardt Co.	4,500	
Laguna Importing Co.	3,000	
Maitland, Coppell & Co.	2,500	
Meyer & Brown	2,500	
G. Amsinck & Co.	2,000	
Harburger & Stack	1,500	36,000

NOVEMBER 18.—By the *Santiago*=Tampico:

Continental-Mexican Rubber Co.	*40,000	
New York Commercial Co.	*34,000	
Ed. Maurer	*15,000	
For Europe	*13,500	*102,500

NOVEMBER 18.—By the *Matanzas*=Tampico:

Continental-Mexican Rubber Co.	*65,000	
Ed. Maurer	*45,000	
New York Commercial Co.	*34,000	
Arnold & Zeiss	*25,000	*169,000

NOVEMBER 19.—By *El Mundo*=Galveston:

Continental-Mexican Rubber Co.	*70,000	
Charles T. Wilson	*10,000	*80,000

NOVEMBER 19.—By the *Albingia*=Columbia:

Mecke & Co.	1,500	
G. Amsinck & Co.	1,500	
De Lima Cortissoz & Co.	1,000	4,000

NOVEMBER 20.—By the *Trent*=Columbia:

W. R. Grace & Co.	15,000	
Brandon & Bros.	5,000	
Kunhardt & Co.	4,500	
A. M. Capen's Sons	4,500	
J. Sambrada & Co.	3,500	
Neuss Hesslein & Co.	2,500	
Silas Elias Abdoo	1,000	
A. Held	1,000	37,000

NOVEMBER 21.—By *El Rio*= Galveston:

Charles T. Wilson	*45,000	
Continental-Mexican Rubber Co.	*45,000	*90,000

NOVEMBER 21.—By the *Panama*=Colon:

L. Johnson & Co.	15,000	
G. Amsinck & Co.	11,500	
J. Sambrada & Co.	11,000	
Piza, Nephews Co.	4,000	
Andean Trading Co.	3,500	
Pablo Calvet & Co.	2,500	
American Trading Co.	2,000	
J. H. Thompson	1,000	
Dumarest Bros. Co.	3,500	54,000

NOVEMBER 22.—By *El Dia*=New Orleans:

G. Amsinck & Co.	3,500	
Eggers & Heinlein	3,500	
In transit	7,000	14,000

NOVEMBER 23.—By the *Monterey*=Frontera:

Harburger & Stack	1,500	
E. Steiger & Co.	1,000	
Herman Kluge	1,000	
Mecke & Co.	1,000	
For Europe	4,500	9,000

AFRICAN.

	POUNDS.	

OCTOBER 28.—By the *Carmania*=Liverpool:

General Rubber Co.	11,500	
James T. Johnstone	8,000	
George A. Alden & Co.	5,500	
Ed. Maurer	4,500	29,500

OCTOBER 28.—By the *Cincinnati*=Hamburg:

Meyer & Brown	90,000	
Ed. Maurer	4,500	
L. Blitz	3,500	
Rubber Trading Co.	2,500	100,500

OCTOBER 29.—By the *Minnewaska*=London:

Charles T. Wilson		11,000

OCTOBER 30.—By the *Niagara*=Havre.

Ed. Maurer		25,000

OCTOBER 30.—By the *Zeeland*=Antwerp:

Meyer & Brown	45,000	
Arnold & Zeiss	11,500	
Robert Badenhop	9,000	
Raw Products Co.	4,500	70,000

NOVEMBER 1.—By the *Corcovado*=Hamburg:

General Rubber Co.	10,000	
Ed. Maurer	9,000	19,000

NOVEMBER 4.—By the *Laconia*=Liverpool:

Robinson & Co.	7,000	
George A. Alden & Co.	3,000	
Henderson & Korn	2,000	12,000

NOVEMBER 6.—By the *Pennsylvania*—Hamburg:

Meyer & Brown	67,000	
Rubber Trading Co.	11,000	
Wallace L. Gough Co.	7,500	
Charles T. Wilson	5,000	
Robert Badenhop	4,500	95,000

NOVEMBER 6.—By the *Finland*=Antwerp:

Robinson & Co.	40,000	
George A. Alden & Co.	17,000	
Robert Badenhop	17,000	74,000

NOVEMBER 11.—By the *St. Paul*—London:

George A. Alden & Co.	5,500	
Arnold & Zeiss	4,500	10,000

NOVEMBER 11.—By the *Caronia*=Liverpool:

Wallace L. Gough Co.	7,000	
Robinson & Co.	3,500	
Earle Brothers	2,500	13,000

NOVEMBER 11.—By the *Pretoria*—Hamburg:

Arnold & Zeiss	30,000	
Ed. Maurer	40,000	
George A. Alden & Co.	40,000	
Rubber Trading Co.	20,000	
Robert Badenhop	4,500	
General Rubber Co.	4,500	
Wallace L. Gough Co.	15,000	
F. Rosenstein & Co.	2,000	156,000

NOVEMBER 11.—By the *Chicago*=Havre:

George A. Alden & Co.	5,500	
Arnold & Zeiss	4,500	10,000

NOVEMBER 12.—By the *President Lincoln*=Hamburg:

Wallace L. Gough Co.	9,000	
Rubber Trading Co.	4,500	
General Rubber Co.	2,000	15,500

NOVEMBER 13.—By the *Vaderland*=Antwerp:

George A. Alden & Co.	165,000	
Henderson & Korn	15,000	180,000

NOVEMBER 15.—By the *Gresham*=Lisbon:

Ed. Maurer	35,000	
Santos & Seguera	34,000	
George A. Alden & Co.	18,000	87,000

NOVEMBER 18.—By the *Baltic*=Liverpool:

Wallace L. Gough Co.	5,500	
James T. Johnstone	4,500	
George A. Alden & Co.	2,500	
General Rubber Co.	2,500	15,000

NOVEMBER 18.—By the *Minneapolis*=London:

Charles T. Wilson		11,500

NOVEMBER 18.—By the *Amerika*=Hamburg:

Ed. Maurer	10,000	
Rubber Trading Co.	2,500	12,500

NOVEMBER 18.—By the *Lapland*=Antwerp:

Meyer & Brown	9,000	
Charles T. Wilson	5,000	
Robert Badenhop	3,500	17,500

NOVEMBER 20.—By the *Oceanic*=London:

Robert Badenhop		11,500

NOVEMBER 22.—By the *Pangalos*=Lisbon:

Ed. Maurer	7,000	
F. Rosenstern Co.	4,500	11,500

NOVEMBER 22.—By the *Patricia*=Hamburg:

George A. Alden & Co.	25,000	
Ed. Maurer	25,000	
Wallace L. Gough Co.	25,000	
Robert Badenhop	11,000	
Meyer & Brown	11,500	
General Rubber Co.	11,500	
Rubber Trading Co.	4,500	113,500

EAST INDIAN.

[*Denotes plantation rubber.]

	POUNDS.	

OCTOBER 28.—By the *Minnewaska*=London:

New York Commercial Co.	*145,000	
Meyer & Brown	*70,000	
Arnold & Zeiss	*45,000	
Ed. Maurer	*30,000	
Charles T. Wilson	*30,000	
James T. Johnstone	*22,500	
Rubber Trading Co.	*5,000	
Robinson & Co.	*5,000	
Ed. Maurer	5,500	358,000

OCTOBER 29.—By the *Katuna*=Colombo:

Meyer & Brown	*35,000	
New York Commercial Co.	*30,000	
Ed. Maurer	*25,000	
Robert Badenhop	*5,000	
Wallace L. Gough Co.	*4,500	*99,500

OCTOBER 30.—By the *Zeeland*=Antwerp:

Meyer & Brown		*67,000

OCTOBER 31.—By the *Oceanic*=London:

Henderson & Korn	*30,000	
New York Commercial Co.	*34,000	
Ed. Maurer	*25,000	
Meyer & Brown	*22,500	
Charles T. Wilson	*15,000	
Arnold & Zeiss	*11,500	
Arnold & Zeiss (Penang*)	77,000	
In transit	*90,000	305,000

NOVEMBER 1.—By the *Ambria*=Singapore:

Ed. Maurer	*100,000	
L. Littlejohn Co.	*25,000	
New York Commercial Co.	*9,000	
Wallace L. Gough Co.	9,000	143,000

NOVEMBER 1.—By the *Calliope*=Colombo:

New York Commercial Co.	*45,000	
Meyer & Brown	*30,000	
Robert Badenhop	*5,500	
Raw Products Co.	*3,500	
L. Blitz	*2,500	*86,500

NOVEMBER 6.—By the *Minnetonka*=London:

General Rubber Co.	*375,000	
New York Commercial Co.	*70,000	
Meyer & Brown	*17,000	
S. Falke Co.	*34,000	
Charles T. Wilson	*15,000	
Robert Badenhop	*11,000	
Ed. Maurer	*7,000	
James T. Johnstone	*4,500	*533,500

NOVEMBER 6.—By the *Finland*=Antwerp:

Meyer & Brown	*70,000	
Robert Badenhop	*9,000	*79,000

NOVEMBER 6.—By the *Noordam*=Rotterdam:

Meyer & Brown	*27,000	
Rubber Trading Co	*8,000	
Robinson & Co	*7,000	
Raw Products Co	*9,000	*51,000

NOVEMBER 7.—By the *New York*=London:

Arnold & Zeiss	*60,000	
Ed. Maurer	*25,000	
Meyer & Brown	*9,000	*94,000

NOVEMBER 9.—By the *St. Paul*=London:

New York Commercial Co	*35,000	
Ed. Maurer	*8,000	*43,000

NOVEMBER 11.—By the *Mesabu*=London:

Henderson & Korn	*50,000	
Arnold & Zeiss	*45,000	
New York Commercial Co	*35,000	
Meyer & Brown	*25,000	
Ed. Maurer	*15,000	
James T. Johnstone	*13,500	
Rubber Trading Co	*15,000	
Robinson & Co	*13,500	
Robert Badenhop	*11,000	*223,000

NOVEMBER 12.—By the *Ryndam*=Rotterdam:

Manhattan Rubber Mfg. Co	7,000

NOVEMBER 13.—By the *Vaderland*=Antwerp:

Meyer & Brown	*40,000	
Henderson & Korn	*7,000	*47,000

NOVEMBER 14.—By the *Uhenfels*=*Colombo*:

Meyer & Brown	*85,000	
New York Commercial Co	*80,000	
Ed. Maurer	*11,000	
Raw Products Co	*9,000	
L. Blitz	*5,000	*190,000

NOVEMBER 15.—By the *Inverclyde*=Singapore:

General Rubber Co	*34,000	
L. Littlejohn & Co	*33,000	
Ed. Maurer	*56,000	
Wallace L. Gough Co	*13,500	
New York Commercial Co	*5,500	*142,000

NOVEMBER 16.—By the *Marienfels*=Colombo:

Meyer & Brown	*77,000	
New York Commercial Co	*60,000	
Raw Products Co	*7,000	
Robert Badenhop	*7,000	*151,000

NOVEMBER 18.—By the *Lapland*=Antwerp:

Meyer & Brown	*11,500

NOVEMBER 18.—By the *Philadelphia*=London:

New York Commercial Co	*90,000	
Meyer & Brown	*45,000	
Arnold & Zeiss	*35,000	
Charles T. Wilson	*9,000	
In transit	*40,000	*219,000

NOVEMBER 18.—By the *Minneapolis*=London:

General Rubber Co	*415,000	
New York Commercial Co	*135,000	
Arnold & Zeiss	*45,000	
Meyer & Brown	*55,000	
Ed. Maurer	*56,000	
James T. Johnstone	*34,000	
Henderson & Korn	*22,500	
Robert Badenhop	*11,500	
William H. Stiles	*11,000	
Charles T. Wilson	*7,000	
Raw Products Co	*5,000	
In transit	*25,000	*822,000

NOVEMBER 20.—By the *Oceanic*=London:

New York Commercial Co	*70,000	
Robinson & Co	*35,000	
Meyer & Brown	*25,000	
Arnold & Zeiss	*25,000	
Henderson & Korn	*45,000	
Charles T. Wilson	*22,500	
In transit	*80,000	*302,500

NOVEMBER 22.—By the *Patricia*=Hamburg:

Rubber Trading Co	*11,000	

BALATA.

	Pounds.	
OCTOBER 29.—By the *Saramaca*=Demerara:		
Ed. Maurer	13,500	
Schutte Bunemann & Co	11,500	
Yglesias Lobo & Co	4,500	
Middleton & Co	2,500	
George A. Alden & Co	2,000	34,000
NOVEMBER 6.—By the *Marowijne*=Trinidad:		
G. Amsinck & Co	4,000	
American Trading Co	1,500	
Gillespie Bros.	1,500	
George A. Alden & Co	1,000	
M. A. De Leon Co	1,000	9,000
NOVEMBER 8.—By the *Maracas*=Trinidad:		
G. Amsinck & Co	15,000	
American Trading Co	11,500	
Schutte Bunemann & Co	7,000	
Ed. Maurer	6,500	
Middleton & Co	4,000	44,000
NOVEMBER 13.—By the *Coppename*=Demerara:		
Gillespie Bros.	2,000	
George A. Alden & Co	1,000	
Wessels, Kulenkampff & Co	1,000	
M. J. Secklen	1,000	5,000

GUTTA-PERCHA.

	Pounds.	
NOVEMBER 15.—By the *Inverclyde*=Singapore:		
L. Littlejohn & Co		33,500
NOVEMBER 18.—By the *Amerika*=Hamburg:		
Robert Soltau & Co		22,500

GUTTA-JELUTONG.

	Pounds.	
NOVEMBER 1.—By the *Ambria*=Singapore:		
L. Littlejohn & Co	155,000	
Wallace L. Gough Co	55,000	210,000
NOVEMBER 15.—By the *Inverclyde*=Singapore:		
L. Littlejohn & Co	600,000	
Haebler & Co	325,000	
Wallace L. Gough Co	125,000	
George A. Alden & Co	50,000	1,100,000

BOSTON ARRIVALS.

	Pounds.	
OCTOBER 8.—By the *Indrawadi*=Singapore:		
G. A. Alden & Co. (Jelutong)	150,000	
L. Littlejohn & Co. (Jelutong)	780,000	930,000
OCTOBER 10.—By the *Kansas*=Singapore:		
State Rubber Co. (East Indian)	26,000	
L. Littlejohn & Co. (Gutta Percha)	25,000	
State Rubber Co. (Gutta Percha)	22,500	
L. Littlejohn & Co. (Jelutong)	300,000	
State Rubber Co. (Jelutong)	125,000	
George A. Alden & Co. (Jelutong)	135,000	633,500
OCTOBER 15.—By the *Indragara*=Singapore:		
State Rubber Co. (East Indian)	25,000	
L. Littlejohn & Co. (Jelutong)	830,000	
George A. Alden & Co. (Jelutong)	255,000	
State Rubber Co. (Jelutong)	106,000	1,216,000
OCTOBER 17.—By the *Sagamore*=Liverpool:		
George A. Alden & Co. (Africans)	2,600	
For Canada (Africans)	10,000	22,600
OCTOBER 26.—By the *Ambria*=Singapore:		
State Rubber Co. (Gutta Percha)	22,500	
L. Littlejohn & Co. (Gutta Percha)	34,000	
L. Littlejohn & Co. (Jelutong)	215,000	271,500

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—OCTOBER, 1912.

	Pounds.	Value.
Imports:		
India-rubber	9,096,981	$7,706,710
Balata	233,671	159,672
Guayule	871,470	372,285
Gutta-percha	21,054	14,118
Gutta-jelutong (Pontianak)	1,812,506	81,039
Total	12,035,682	$8,333,824
Exports:		
India-rubber	91,055	$77,059
Balata	17,023	10,400
Guayule	.....	.....
Gutta-percha	.....	.....
Reclaimed rubber	17,797	3,828
Gutta-jelutong (Pontianak)	.....	.....
Rubber scrap, imported	2,230,838	$179,821
Rubber scrap, exported	447,675	35,998

EXPORTS OF INDIA-RUBBER FROM PARA FOR SEPTEMBER, 1912 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					GRAND
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	TOTAL.
Zarges, Berringer & Co	21,038	15,423	124,206	31,640	192,307	194,860	21,173	20,135	25,448	261,616	453,923
Ad. H. Alden, Ltd	.....	2,720	28,710	4,200	35,630	55,420	3,060	16,500	2,520	77,500	113,130
General Rubber Co. of Brazil	26,714	3,314	32,341	22,400	84,769	27,513	2,288	50	15,120	44,971	129,740
Suarez, Hermanos & Co., Ltd	116	.....	.....	93	209	9,770	845	5,513	15,041	31,169	31,378
R. O. Ahlers & Co	24,570	2,657	21,316	1,485	50,028	38,499	.....	8,392	17,116	64,007	114,035
De Lagotellerie & Co	9,350	850	9,900	.....	20,100	.....	.....	.....	.....	.....	20,100
Pires Teixeira & Co	11,900	680	3,960	.....	16,540	2,380	340	.....	.....	2,720	19,260
Syndicate J. Marques	.....	.....	111,118	35,311	146,429	.....	.....	.....	.....	.....	146,429
J. Marques	43,353	5,106	40,210	9,202	97,871	32,709	5,601	12,643	1,515	52,468	150,339
Sundry exporters	9,010	680	2,310	560	12,560	.....	.....	.....	.....	.....	12,560
Itacoatiara, direct	.....	.....	.....	.....	.....	7,129	2,344	4,793	.....	14,266	14,266
	146,051	31,430	374,071	104,891	656,443	368,280	35,651	68,026	76,760	548,717	1,205,160
Manáos, direct	389,879	85,380	76,845	24,003	576,107	417,835	80,569	61,535	71,657	631,596	1,207,703
Iquitos, direct	6,297	.....	2,253	510	9,060	38,757	12,163	13,015	25,227	89,162	98,222
Total, September, 1912	542,227	116,810	453,169	129,404	1,241,610	824,872	128,383	142,576	173,644	1,269,475	2,511,085
Total, August, 1912	706,115	141,209	533,033	170,294	1,550,651	771,671	81,869	186,983	167,370	1,207,893	2,758,544
Total, July, 1912	579,011	117,387	324,108	160,593	1,181,099	589,286	58,728	185,106	479,399	1,312,519	2,493,618
Total, January-June, 1912	4,409,232	1,064,132	3,562,570	2,071,223	11,107,157	6,251,126	744,600	1,479,253	3,316,123	11,791,102	22,898,259

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR SEPTEMBER, 1912 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					GRAND
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	TOTAL.
Zarges, Obliger & Ca	211,012	21,120	53,159	52,002	537,293	232,682	33,600	12,120	29,096	307,498	644,791
Adelbert H. Alden, Ltd	161,216	57,940	27,293	5,682	252,131	58,979	9,861	9,820	.....	78,660	330,791
General Rubber Co. of Brazil	45,346	8,416	9,736	4,266	67,764	86,366	15,848	12,527	35,697	150,438	218,202
Ahlers & Ca	54,179	13,092	6,145	12,143	85,559	90,930	12,276	18,477	2,808	124,491	210,050
De Lagotellerie & Co	5,600	640	900	150	7,290	50,578	9,054	10,595	4,051	74,278	81,568
Sundries	.....	300	.....	4,692	4,992	2,661	1,516	3,939	2,584	10,700	15,692
	477,353	101,508	97,233	78,935	755,029	522,196	82,155	67,478	74,236	746,065	1,501,094
De Iquitos, direct	2,205	.....	1,305	3,139	6,649	128,313	7,261	31,603	100,763	267,940	274,589
Total, September, 1912	479,558	101,508	98,538	82,074	761,678	650,509	89,416	99,081	174,999	1,014,005	1,775,683
Total, August, 1912	194,739	34,654	44,691	38,668	312,752	388,198	32,359	60,654	90,698	572,409	885,161
Total, July, 1912	177,787	47,976	46,874	36,951	309,588	131,295	13,120	59,558	216,591	420,564	730,152
Total, January-June, 1912	2,523,525	633,319	1,019,142	860,626	5,036,612	2,791,987	465,094	665,339	2,108,191	6,030,611	11,067,223

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Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound—are practically unchanged.

	November 29.
Old rubber boots and shoes—domestic	9¾@ 9⅞
Old rubber boots and shoes—foreign	9¼@ 9⅜
Pneumatic bicycle tires	4¾@ 5
Automobile tires	9¾@ 9⅞
Solid rubber wagon and carriage tires	9¼@ 9½
White trimmed rubber	11 @11½
Heavy black rubber	4¾@ 5
Air brake hose	6 @ 6½
Garden hose	1⅛@ 1¼
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾

Amsterdam.

JOOSTEN & JANSSEN report [November 15]:

The sale today included 27 tons *Hevea* and 11 tons *Ficus* with 1 ton *Castilloa*. For the first valuations were realized, while a fall of 2 per cent. and 4 per cent. was recorded for the others. Generally speaking the tendency was very steady.

Antwerp.

RUBBER STATISTICS FOR OCTOBER.

DETAILS.	1912.	1911.	1910.	1909.	1908.
Stocks, Sept. 30..*kilos*	708,127	435,545	580,980	397,454	654,161
Arrivals in October:					
Congo sorts	209,002	355,970	175,101	199,664	487,104
Other sorts	9,596	26,841	52,709	19,505	54,535
Plantation sorts	105,545	32,452	47,943	46,016	13,117
Aggregating	1,032,270	850,808	856,661	662,639	1,208,917
Sales in October	463,451	272,600	257,887	197,808	546,813
Stocks, October 31	568,819	578,208	598,774	464,831	662,104
Arrivals since Jan. 1:					
Congo sorts	2,658,416	2,706,051	2,525,799	2,858,957	3,583,058
Other sorts	126,934	369,860	314,823	738,441	534,637
Plantation sorts	1,097,623	525,979	464,526	238,940	100,224
Aggregating	3,882,973	3,601,890	3,305,148	3,836,338	4,217,919
Sales since January 1	3,978,692	3,611,994	3,247,884	3,967,242	4,562,709

RUBBER ARRIVALS FROM THE CONGO.

OCTOBER 15.—By the steamer *Anversville:*

Bunge & Co.	(Société Générale Africane)	68,000	
"	(Chemins de fer Grands. Lacs)	2,400	
"		2,100	
Société Coloniale Anversoise	(Haut Congo)	980	
"	(Cie du Lomami)	7,100	
L. & W. Van de Velde	(Cie du Kasai)	96,500	
"	(Comfina)	19,000	
"	(Velde)	1,800	
"		3,500	
Charles Dethier	(American Congo Co.)	8,200	
Comp. d'Irebu		500	
Divers		3,500	213,580

NOVEMBER 5.—By the steamer *Leopoldville:*

Bunge & Co.	(Société Générale Africaine) *kilos*	43,200	
do	(Chemins de fer Grands. Lacs)	4,400	
do	(Comptoir Commercial Congolais)	15,600	
do	(Intertropical)	7,200	
do	(Cie du Kasai)	96,000	
Société Coloniale Anversoise	(Lomami)	13,800	
L. & W. Van de Velde	(Comfina)	8,800	
do		4,500	
Willaert Freres		3,000	196,500

Plantation Rubber from the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

[From January 1 to October 21, 1911 and 1912. Compiled by the Ceylon Chamber of Commerce.]

	1911.	1912.
To Great Britain ... *pounds*	2,371,465	5,595,634
To United States	1,436,403	3,145,895
To Belgium	544,157	838,322
To Australia	31,990	212,396
To Germany	32,881	140,424
To Austria	3,088	55,351
To Japan	40,762	41,263
To Canada	13,830	16,065
To Italy	4,035	5,909
To Russia	.....	2,288
To Holland	8,413	2,282
To France	117	2,017
To India	85	400
To Norway and Sweden	.....	39
To Africa	35	.....
	4,487,261	10,058,285

[Same period 1910—2,223,341 pounds; same 1909—982,680.]

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To	Singapore, Oct. 15.	Penang, Sept. 30.	Port Swettenham Sept. 15.	Total.
Great Britain..*pounds*	7,930,678	6,524,141	11,852,574	26,307,393
Continent	283,132	15,063	1,595,865	1,894,060
Japan	382,551	.....	.....	382,551
Australia	76,863	.....	.....	76,863
Ceylon	2,217	197,760	607,332	807,309
United States	2,118,789	933	2,081	2,121,803
Total	10,794,230	6,737,897	14,057,852	31,589,979
Same period, 1911	4,894,601	3,565,100	7,818,674	16,278,375
Same period, 1910	2,805,158	1,652,782	6,886,394	11,344,334
Same period, 1909	2,001,428	1,739,291	1,485,210	5,225,929

Rotterdam.

HAVELAAR & DE VRIES report [November 13]:

Yesterday's sale included 14½ tons *Hevea*, 11 tons *Ficus*, and 4 tons Ceara, which averaged slightly under valuations for the 16 tons sold. The whole quantity would have been disposed of but for the reserved attitude of sellers.

INDIA RUBBER WORLD

CAOUTCHOUC
HEVEA BRASILIENSIS
FOUNDED 1889
PACHOPSIS GUTTA
GUTTA-PERCHA

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SETTLING DISPUTES BY ARBITRATION.

THE administration of the law in this country has been for a long time something to make the patriot grieve. When President Taft stated (a remark that he has repeated in one form or another a number of times)—that "the law's delay amounts in many cases to a denial of justice," he described the situation with true Presidential moderation. The eternal evasion of punishment by the rich criminal, and the interminable avoidance of settlement in civil suits by those who have the price of a new appeal, have long since become a national disgrace.

For some years there has been a feeling among honest business men that some new method ought to be devised—some direct and satisfactory method by which the disputes that must inevitably arise in the course of business—even among those who are in the main well intentioned—could be settled. The New York Chamber of Commerce has taken cognizance of this demand, and in January, 1911, established a method of commercial arbitration under its auspices, and appointed a committee under whose direction such ordinary business controversies or disputes could be settled without litigation.

This action of the Chamber of Commerce has so much significance for all those interested in any branch of our commercial life, that it seems well worth while to reproduce a brief description of the plan, which appeared in a recent issue of the "Independent"—which will be found on another page.

The advantage of submitting to arbitration commercial disputes which might otherwise lead to expensive litigation, was illustrated in a case which was recently settled through reference to this committee on arbitration, and which is of interest to both buyers and sellers of crude rubber.

The case above referred to was submitted in consequence of a dispute as to the quality of a portion of a shipment of Plantation rubber on a delivery made by a rubber importer to his customer, and the question at issue was whether the rubber was of "fair average quality," as described in the contract. As the contract had this provision, "Disputes, if any, to be settled by arbitration by the New York Chamber of Commerce," each of the disputants selected an arbitrator to act for him, and the third arbitrator (who was required to be a member of the Chamber of Commerce) was an officer of one of the well-known rubber manufacturing companies in New York. The result of the arbitration, by unanimous vote of the arbitrators, was the approval of the rejection of the lot of rubber in question by the purchaser.

It is of interest to business men to know that there now exists a method by which commercial disputes of any nature may be adjusted, and which is available to any merchant, whether he be a member of the Chamber of Commerce or not.

Disputes are bound to arise in the rubber trade, as they do in every branch of commercial activity, and the rubber men will certainly find it greatly to their advantage to avail themselves of this method of settlement, which is so direct, expeditious, inexpensive, and so free from suspicion. At the last meeting of the Executive Committee of the Rubber Club of America, held early in December, a resolution was passed "that the Executive Committee approve of the plan of commercial arbitration as adopted by the New York Chamber of Commerce." This resolution of approval of the act of another body was a most unusual step for the Rubber Club to take, but it certainly is fully justified by the great importance of this subject to the rubber trade.

THE RIO DE JANEIRO 1913 EXPOSITION.

RIO DE JANEIRO, a community of a million and a quarter inhabitants, the finest city on the South American continent—and by some travelers called the most beautiful city in the world—is to have a great International Exposition next May. It will be held under the authority of the General Government and will be under Federal auspices and control. It will be held in substantial buildings erected for permanent use in the handsome park that surrounded the palace of the Emperor Dom Pedro, the palace itself being converted into a museum. This Rio de Janeiro enterprise will be (in the words of the act creating it) "an Exposition of large plantation products and the industry of vegetable extraction, viz., sugar, rubber and fibres." While it is primarily a Brazilian exhibition, exhibitors from the outside world will be warmly welcomed and their exhibits will be entered duty-free—duty of course to be paid on them if they are sold in that country after the conclusion of the show.

This will be the best opportunity that the American manufacturer ever had to show his wares in the great Republic of the South. The balance of trade between Brazil and the United States is all awry. According to the latest available statistics the value of the imports into the United States from Brazil amounts to $124,000,000 a year, which is over ⅓—or to be exact—36.2 per cent. of the total amount of Brazilian exports. But the proportion of Brazilian imports entering from the United States only amounts to 12.8 per cent., and as the total Brazilian imports are in the neighborhood of $200,000,000 that leaves the value of American goods sold to Brazilians at about $25,000,000 a year—or one-fifth of the amount of Brazilian goods sold to Americans. Obviously this is not as it should be, and the coming Exposition ought to offer a good chance to make a beginning, at least, toward evening up this marked inequality.

With the great industrial awakening now taking place in Brazil there should be an excellent market for mechanical rubber goods; and there is no reason why Brazilians should not use as many druggists' sundries, in proportion to population, as the people of the United States. The automobile, too, has made its way into all the Brazilian cities, and that should mean a constantly increasing number of American tires. The market for footwear is, of course, not so active in any of the tropical countries as in regions of plentiful snow, but even footwear in its lighter varieties ought to find a much larger sale in the great Empire of Brazil with its many thriving cities than is now the case. In any event, this would seem like a fine opportunity for the American manufacturer of rubber goods to show the South Americans what he has to offer.

DIGESTS OF THE RUBBER CONFERENCE PAPERS.

AT the Third International Rubber Conference held, in conjunction with the Rubber Exposition, in New York in September and October last, 18 papers were read on a great variety of topics—but all related to the rubber industry—by men of acknowledged authority in their particular field. We hope to publish these papers in full in future numbers of this journal, beginning with the February issue; but in a preliminary way, and as giving a sort of bird's-eye view of the whole subject matter of the Conference papers and discussions, we publish in this issue digests of these different papers.

These digests follow as closely as possible the thought of the author, but, of course, in the process of condensation—attempting to reproduce in 500 words a paper that in the original required 3,000—it is quite possible that full justice has not always been done the subject or the author. Whatever inadequacy, however, may be noted in these digests, will be atoned for, we trust, by the full publication of these papers in later issues.

PLANTATIONS IN BRAZIL.

AMONG the many interesting papers read at the Conference held in conjunction with the recent Rubber Exposition in New York—a digest of which appears in this issue—there was a particularly valuable paper on "The Present and Future of the Native *Hevea* Rubber Industry in Brazil," by Dr. Jaçques Huber, director of the government museum at Pará. He described in detail the present situation of the rubber industry in Brazil. He spoke of the great awakening that has recently taken place in that country as to the necessity of immediate activity, if the Brazilian superiority in the crude rubber market is to be preserved; and he reviewed the obstacles that the Brazilians must overcome if they are to retain their supremacy.

It is obvious from Dr. Huber's paper that rubber plantations in South America to be successful must be oper-

ated in a large way. It will hardly be possible under the conditions prevailing there, for men with small capital, whose operations must necessarily be confined to narrow limits, to hope for much success. As the chief problem of the Brazilian planter is the labor supply, any plantation venture in that part of the world necessitates sufficient capital to include a broad scheme of colonization; which means that labor must not only be provided with conditions of life that are sanitary, but with conditions that are agreeable and attractive. In other words, it must be made possible for the laborer to keep his health and also to preserve his contentment of mind. This requires scientific sanitation, medical supervision, a sufficient supply of good and wholesome food, and the establishment of such an environment that the laborer will be satisfied to stay and become permanently identified with the undertaking. These requirements call not only for skilful management, but obviously for an abundance of capital.

But with the present attitude of Brazil, with its willingness and eagerness to encourage foreign capital to embark on the opening up of plantations, with the government extending such a warm hand of welcome, it would certainly seem as if American capital would be attracted to Amazon plantations. According to the American Consul at Pará, some American capital has already been invested in plantations near that city. It is likely to be followed by more. Certainly the field holds out many substantial promises, and the risk is no greater than usually attends the entrance of capital into a new field.

CHARLES GOODYEAR'S SON.

IN the department in this publication entitled "The Editor's Book Table," where current books are reviewed from month to month, there will be found in this issue a short description of a book on ancient Greek architecture, called "Greek Refinements," written by Professor William Henry Goodyear, Curator of Fine Arts in the Brooklyn Institute Museum. Many people in the rubber trade are familiar with Professor Goodyear—at least by reputation—and know that he has written a number of notable books on ancient architecture and other topics of a kindred nature; but probably very few rubber men are aware that he is the son of Charles Goodyear. Such, however, is the case. But as Charles Goodyear devoted his life to that experimentation in the utilization of a practically useless product that laid the foundation for the great modern rubber industry, his son has devoted his life largely to architecture, and rather to the history and literature of architecture than to its practical application. The father's life was an intensely practical one, while the son's career has been devoted (to borrow a word from the title of his latest book) to the refinements of life—to its intellectual rather than to its industrial activities.

At first glance it might seem that it is a far cry from the elder Goodyear eternally hovering over the kitchen stove with his pan-full of compounded rubber to the younger Goodyear minutely examining the curvatures of ancient Greek temples and mediaeval churches. But, as a matter of fact, the son comes logically enough by his peculiar mental bias. The elder Goodyear was a many-sided man. He was not only an indomitable—almost fanatical—experimenter, but he was a religious enthusiast, an idealist, and full of the artistic temperament; and this temperament inherited by the son has had full opportunity for expression. While the father devoted his energies to benefiting the millions of humanity yet to come, the son has devoted his energies to interpreting the thought of those who dwelt upon the earth centuries ago. It entirely satisfies one's sense of the proprieties to have a distinguished father followed by a distinguished son; it is not necessary, or desirable, that the one should follow directly in the footsteps of the other. As long as the son of a father who has achieved worthily fills his own life with worthy achievements, it is enough.

THE LATEST RUBBER STATISTICS.

THE statistics given by Mr. Arthur Lampard, quoted elsewhere, show an estimated rubber production for 1912 of 104,700 tons and a consumption of 108,250 tons; the reduction in the visible supply confirming those figures.

His remarks on future production and consumption are equally interesting. He does not anticipate that at current prices there will be any notable increase in the production of wild rubber in 1913, while he expects plantation rubber will go up from 28,500 tons to 40,000 tons. Judging from American expectations and from the large increase in American consumption which has taken place this year, he expresses the conviction that the whole of the increase in sight could easily be absorbed by America alone, even if all the other countries of the world are going to hold aloof, which, of course, he observes, is inconceivable. He adds that

the figures quoted prove that the statistical position of rubber has never been stronger than today.

Coming a little ahead of the usual annual statistics and based on actual results as far as the end of October (with careful estimates for November and December), Mr. Lampard's statistics are of marked interest as indicating the prospects of the rubber market, and in particular his recognition of the importance of the American outlet.

SIMPLIFYING RUBBER NOMENCLATURE.

ONE of the most important problems before the rubber trade today is the simplification and standardization of the nomenclature of crude rubber varieties. Twenty years ago this problem did not exist, as the crude rubber that arrived at our ports came practically all from one source, and while there was some variety, to be sure, there was not enough to be especially confusing.

But all that is now changed. With the exploitation of many forest trees—hitherto untouched—for an additional wild rubber supply, and with the great development of rubber plantations in all parts of the tropical world, the variety of crude rubber now coming to our ports is very large and constantly increasing, and necessarily occasions much confusion.

This matter was the subject of no little discussion at the Rubber Conference held in New York last September, and a committee was appointed of eleven members—three of them appointed by the Rubber Club of America, and eight of them by the Conference—to see what measures could be taken to simplify and systematize the crude rubber names now in vogue. This committee represented in its membership American importers, the plantations of the Middle East, and of the Pacific, and the wild rubber interests of the Amazon. A number of meetings were held and tentative lists of names for the more important varieties of crude rubber were submitted.

With the ending of the Exposition and the conclusion of the Conference, the members of the committee—many of whom were from foreign countries—became widely scattered, but the American members, together with the representatives of the Rubber Club, have been going over these lists with most painstaking care, and THE INDIA RUBBER WORLD hopes very soon to be able to publish the result of these deliberations.

There will be no suggestion of finality about these lists, but they will no doubt constitute an excellent beginning in the solution of one of the most pressing problems in the rubber industry today.

THE BLOOMING OF SHOES.

IF there is anything that fills the rubber footwear manufacturer with keen regret that he did not embark upon some other calling, it is a "blooming" shoe, or even more, a boot that "blooms," because the boot is worse, inasmuch as there is more of it. Any light on the wherefore of blooming is welcome to anyone whose duties include the successful vulcanization of rubber goods. A superintendent relates in another column of this issue some of his experiences with footwear that bloomed. It will be found interesting to those who have had like experiences.

He found that in the same lot of footwear made from the same rubber, with the same compounds, and subjected to the same degree and duration of heat, some shoes were entirely free from bloom, others bloomed a little, and still others a great deal. But when he examined his crude rubber he found that while it had been taken from the same lot, there was in reality a marked lack of uniformity in the different sheets, and in some instances in different parts of the same sheet; the rubber as a whole being hard, but having certain soft spots. He then made a trial mixture, vulcanizing three batches at the same time, all being similar except that one contained nothing but hard crude rubber, while the second contained a combination of hard and soft, and the third was made up entirely of soft rubber. The result was perfect vulcanization where the hard rubber was used, a noticeable bloom where some soft rubber was used, and a pronounced blooming where the rubber was taken entirely from soft spots, which shows the necessity of examining lots of crude rubber carefully, and—where there is any lack of uniformity—of separating the lots according to their quality, so that the different qualities may be subjected to different vulcanizing conditions.

FREQUENT MENTION HAS BEEN MADE IN THESE columns of late of the great industrial awakening that is taking place in Brazil. In connection with this situation it will be of interest to the readers of THE INDIA RUBBER WORLD to learn that the editor, Mr. Henry C. Pearson, is now on his way to that country, having sailed on December 16. He will make a brief stay in Barbados, and will proceed thence to the great South American Republic, where he will be able to observe at close range the New Brazil. The result of his observations will appear from month to month in these columns.

Hoolihan on the "Case of Caasey."

"CAASEY," said Hoolihan, "is tha wan av ahl uthers that gives me a paain!"

"What has he done?" I inquired.

"Listen, me bye, av iver a mon was thrained an' given ivery chance thot mon was Caasey."

"You mean the hose inspector of that name?"

"LISTEN ME BYE."

"Av thot naame, an' maany uthers as well. But it wuz as Caasey yez knew him. Phwat the assoshiated Boord av Overwriters' done fer him couldn't be missured be words. To staart at the beginnin' we sint him down to the nagur rubber gathurers in Brazzil."

"What?"

"Shure thing, we pit an insphector on the ground so thot Paraa rubber shud be Paraa rubber an' not be mixed wid cowchew or Ballatha or anny av thim infarior gooms. We had a laabel to pit an ivery caake, an' charged thim tin cints a laabel, glory be!"

"Glory be indeed!" I gasped.

"Not only thot, we laabeled the barls of soolpfur, av whitening, an' the kigs av litharge, an' we pit insphectors in ivery mill thot made thim vaarious stuffs," said Hoolihan with huge satisfaction.

"It must have cost your association a pretty penny."

"Divil a cint. The wans inspicted paay the cost, an' paay for laabels too. We give our consint to ahl av thim to do business an' they paay us fur it. We saay Nicholos Suarez the Rubber King av the *Madeira* makes rale Paraa rubber, see our label an his biscuits, yez kin buy av him av yu plaze (tin cints a biscuit, an' $500 insphectors' expinse, ahl fer us).

"But, but what does your inspector on a rubber estate do?"

"Do, is ut? He shows thim nagurs how to do. He watches thim pit the cups an the threes. Thin he seals up the cans av milk an' allows thim to be oapened only in his prisince. He annylizes the palm nuts to see av they have the requisut propoartions av sillicate av oxigin, bicarbonate av elasticum, an' Lithium av Wangaroo. He tists the hate av the smoak wid a thermomater. He taakes an observaation av the direction av the wind, an' the amount av preciptous moisture in the air. Thin the nagur does the rist. Thin, and oanly thin we affix our laabel."

"Wonderful: what does the label say?"

"Just this!" was the prideful answer.

> Fine Para Rubber
> Prepared under Supervision of
> Overwriters' Laboratories, Inc.
> No. 13,333.

"What does that Inc. mean?" was my query.

"Incloosive to be sure. Includes inspiction for paay, laabel for paay, an' unlimited taxation an' misriprisintation."

"It certainly seems very thorough," said I hesitatingly.

"Not half as thorough as we plan," was the enthusiastic reply; "we were oanly laabelling 20,000,000 articles in connixion av fire risks an' we naded more scoape."

"But—"

"Niver mind the but, it's about Caasey I am talking. He wint through ahl av the schools av inspiction, wild rubber in Brazil, ahl av the compounds in th' vaarious mills, an' thin he inspicted the makin' av laabeled fire hoase in th' rubber facthries."

"Yes?"

"And phwat do yez think he done?"

"Give it up."

"After larnin' ahl he cud av compounds an' processes he trew up his job an' staarted a facthery av his own an' is makin' fire hoase."

"HE SHOWS THIM NAGURS HOW TO DO."

"And now he will have to be inspected and labelled himself," I laughed.

Hoolihan shook his head sadly.

"Thot's the divil av it," he said; "he won't lave one of us

"WE HAD A LAABEL TO PIT AN IVERY CAKE."

over th' treshoald av his mill. He says he intinds to run his oan business widout bein' bossed be self-elicted intherferers."

"What shall you do?"

"PARAA RUBBER SHUD BE PARAA RUBBER."

"Oah we are ahl roight; there's plenty av others that hav' no thrace ov Caasey's foightin' timpermint. We will go afthir thim.

The Kingston Rubber Brush Co., of Kingston, New York, has increased its capital stock by $150,000 to $300,000.

STATISTICS OF RUBBER EXPORTS.

While statistics of American rubber goods exports of earlier periods are of interest for purposes of comparison, the most recent figures are the most valuable as a guide to future prospects.

American exports of belting, hose and packing for the twelve months ending June, represented for 1910, $1,960,825; for 1911, $2,163,416; and for 1912, $2,315,424. That this increase is more than being maintained is shown by the figures for August, which show in 1912, $269,239, as compared with $191,637 for the previous year.

Rubber boots and shoes for the three fiscal years ending June 30, represented: 1910, $1,984,739; 1911, $2,219,430; 1912, $1,502,890. The returns for August alone show: 1911, $247,953; 1912, $196,415.

Automobile tires, which in the fiscal year 1911 represented $2,085,107, increased in 1912 to $2,657,809. That a still further increase is in prospect is shown by the figures of August, 1911 and 1912, respectively, $251,262 and $405,781.

"All other" tires show a falling off, but for the fiscal year 1912, and for the month of August separately, the respective figures being $546,833 in 1912 against $592,470 in 1911. The August returns are for 1912, $46,937 against $58,615 in 1911.

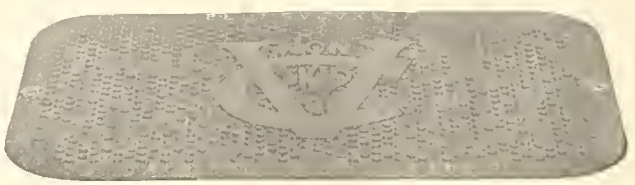
"All other" manufactures of rubber, being a general head, its results are subject to various influences. The figures for the last three fiscal years are for 1910, $5,115,331; 1911, $3,886,825 and 1912, $4,144,273. August alone shows a slight retrogression from the figures of 1911, the amounts being respectively, $310,941 and $343,336.

Thus the more important articles of export, mechanical goods and automobile tires, are in a sound statistical position. That there should have been a falling off in rubber shoes is largely due to the extent to which they are now being made in other countries.

In export trade there is an unlimited field if rightly taken in hand, with a due appreciation of its difficulties and of how to overcome them.

A NOVEL MAT.

The Pennsylvania Rubber Co., Jeannette, is making a mat of unique design for dealers and jobbers selling Vacuum Cup tires. The surface of the mat is composed of a multitude of



cup-shaped knobs, similar to those on the tire-tread, and in the center is the V. C. trade mark. This mat is made of high quality white rubber and is in great demand among the company's agents.

A NON-SKID IN MOVING PICTURES.

THE advertising department of The Diamond Rubber Co. has hit upon a very clever device for showing the superiority of the "Diamond Safety Tread" tire over the ordinary smooth tire. This is done by a set of moving-pictures which show a smooth pavement recently wet by the sprinkling wagon; an automobile equipped with smooth tread tires comes down the street and turns a corner at a considerable rate of speed. The result is that the car skids around like a healthy young couple on a well-waxed dancing floor. Then comes another car equipped with the "Diamond Safety" and turns the same corner at the same rate of speed—but without any skidding, which is a fine way to tell a long story in two or three seconds of time.

Digests of the Papers Read at the Rubber Conference Held in New York.

SEPTEMBER 23 TO OCTOBER 3, 1912.

DIGESTS of the 18 papers read at the recent Rubber Conference held in New York, in September and October, in connection with the Rubber Show, are given below and on succeeding pages. The work has been carefully done, but a digest is never quite adequate or satisfying. The papers will be published in full in subsequent issues of THE INDIA RUBBER WORLD, beginning with February.

THE PRESENT AND FUTURE OF THE NATIVE HEVEA RUBBER INDUSTRY. (*Abstract.*)

By Jacques Huber, Museu Goeldi, Pará.

THERE is an opinion common among people interested in plantation companies that Brazilian rubber will be entirely supplanted by the product of the Eastern plantations within the next ten years. But it is a case where the wish is father to the thought. There seems to be no necessity for the disappearance or the reduction of the Brazilian crop. On the contrary, there will be increased need for the Amazon crop of rubber—and especially for the hard-cure Pará. The advent of plantation rubber has helped the industry as a whole, assuring the manufacturer that there will be no shortage in the supply, and tending to the general lowering of prices.

Brazilian producing centers appreciate the competition of the plantation and are preparing themselves to improve their position by lowering the cost of production. On the other hand, the plantations doubtless appreciate that Brazilian rubber will be able to hold its position because of its superior qualities, particularly the superior qualities of the hard-cure smoked Pará, whose resistance to exterior influence—light and temperature—is so much greater than that of plantation rubber. As an illustration, the stock held by the Pará Syndicate, after being kept two years in more or less overheated stores has improved in quality, and it is probably true that where crude rubber has these resisting qualities the vulcanized product will also have them.

One argument often adduced in the attempt to prove that the native *Hevea* rubber will disappear, is the difficulty of gathering rubber from the scattered forest trees; but this condition has its advantages also. These forest trees, though scattered, are much older and larger than the plantation trees, so that the worker can collect and coagulate as much as 10 kilograms (22 pounds) of rubber in a day, where the plantation tapper gets only 2 kilograms. Moreover, the fact that the native trees are widely scattered protects them from the spread of fungus and other diseases. Another reason cited to prove the disappearance of *Hevea* rubber, is the exhaustion of native rubber districts. This is true in some districts in reference to *Castilloa*, but not true of *Hevea*. The shortage of labor has not made it possible to exhaust the *Hevea* trees.

A third proof cited that *Hevea* will disappear is the scarcity of labor. It is true that labor in Brazilian forests is six times as expensive as coolie labor on the Eastern plantations, and that is the principal problem that South Americans have to solve. It is cited as a proof of the impending ruin of the Amazon rubber industry that the output has been practically stationary for the last few years. This is owing chiefly to the deficient organization of the entire industry and a lack of the proper amount of capital for its development. Unfortunately, the profits of the industry have not in sufficient measure gone back into the improvement of the general conditions, but during the last few years the Government and leading citizens have awakened to the necessity of instituting reforms and introducing improvements on a very large scale. Some of these reforms briefly are as follows: First, an improvement in the means of communication, making the rivers more navigable and building railroads on the banks of rivers made unnavigable by rapids; second, better food supply—cheaper in price and more accessible. With this in view the Federal Government has planned cattle breeding on an extensive plan in the upper *Rio Branco* region. And third, sanitation and other measures protective of the laborers' health.

In addition there must be special protection for young *Hevea* trees and interplanting among the old trees of the forest. There are seldom more than 10 trees per hectare (about 2½ acres). This number could very easily be doubled. Tapping methods may also be improved, although it may not be possible to adopt those of the Eastern plantation. First, because the trees are already defaced by the native methods, and second, because it would be difficult to train the natives to adopt a new system. The method of preparing the rubber may likewise also be improved, although no change should be made until its superiority over the present effective smoking process should be fully proved.

Is it possible to operate a plantation successfully on the Amazon? is a question constantly asked. There are a few old plantations in the State of Pará, but these as a rule have not been very successful. There are some private plantations but their records are not accessible. The new plantations started under the State protective laws are still too young to serve as a criterion. After the enactment of State laws offering many advantages and encouragements to rubber growers there was a rush to obtain these subsidies, and the registration in the Agricultural Department in two years' time has reached the number of 8,000,000 *Hevea* trees to be planted within the next four years. Of these, about 350,000 had been planted at the end of 1911. Rubber plantations planned and operated on a large scale, by companies with sufficient capital, hold out considerable promise in the Amazon region, though plantations here cannot be operated exactly as in the Middle East, because the conditions—and particularly labor conditions are so different. In a general way, rubber planting on the Amazon must either be carried on by the actual occupants of the land or by companies abundantly financed, which can operate an efficient scheme of colonization together with the planting; and what is most needed to insure success is efficient management. This has been lacking to a considerable extent in earlier plantation experiments as it has been difficult to secure men who have had just the right experience. The evolution of the plantation on the Amazon will doubtless differ from the plantation development in the Middle East. It will probably be of slower growth, but the plantation on the Amazon will undoubtedly come as a necessary complement of the forest rubber extraction, and the whole industry will be placed on a more scientific, more economical and more stable foundation.

THE PLANTATION RUBBER INDUSTRY. (*Abstract.*)

By Cyril S. Baxendale.

IT is a remarkable fact that the profitable cultivation of rubber should have been so long open to doubt. It was in 1876—36 years ago—that H. A. Wickham smuggled 70,000 *Hevea* seeds out of Brazil to London. 2,800 plants were raised at Kew

Gardens, and in the same year shipped to Perideniya Gardens, Ceylon. In 1877 a case of 22 plants reached Singapore and were planted in the newly founded botanic gardens there. In the same year the first *Hevea* trees arrived in the Malay States. It may seem strange that these trees reached maturity many years before it was realized that they were capable of yielding a sufficient quantity to make regular tapping profitable. The explanation lies in the very poor methods of tapping pursued by the Malayan aboriginals. In 1888 H. N. Ridley was appointed director of the Singapore Botanic Gardens and immediately began experimental tapping. In 1891 the first sample of plantation Pará was sent to London and favorably reported upon. The first actual sale of Malayan rubber was in 1899, realizing 3*s*. 10*d*. a pound; the rubber was taken from trees 22 years old. The first rubber planting on a commercial scale began in 1895. The slow development of rubber plantations at the beginning was attributable to lack of interest on the part of capitalists. Finally European financiers became interested and by 1905—38,000 acres in Malaya had been planted to *Hevea*, and from that time on the average increase has been 70,000 acres per annum—the total acreage at the end of 1911 being 542,877.

Then came the boom of 1909 with much indiscriminate speculation, comparable only in English history with the South Sea Bubble of Queen Anne's time. But the legitimate rubber men kept their heads and while the bubble was much deflated it did not burst.

The great advantage of the Malay Peninsula for rubber-growing is its regular rainfall. The Peninsula does not exceed 170 miles in width and it is the meeting place of the Northeast monsoon of the China Sea and the Southwest monsoon of the Indian Ocean—both contributing liberally and regularly to the precipitation. But while there is an abundance of rainfall there are very few days in the year when it is too wet to work, and this, of course, gives the planters in the East a great advantage in a matter of collecting rubber over wild rubber gatherers on the Amazon, where for several months of the year tapping has to be altogether suspended.

Another advantage of the Peninsula lies in its superior healthfulness. This is attributable to the scientific investigations by famous medical experts looking to the discovery and removal of the causes of disease. The richness of the soil is an additional attraction, and to this might be added that the success of the industry is due—not a little—to the confidence inspired by an absolutely honest and conscientious public service. The Planters' Association of Malaya comprises 600 plantations with an invested capital of £50,000,000, and an actual value of several times that figure.

In the early days of rubber cultivation the prevailing method was that of interplanting *Hevea* trees through the old fields of coffee. Then new jungle tracts were cleared and rubber and cocoanuts were planted in alternate lines, but this necessitated the destruction of the cocoanut trees in a few years' time to give the rubber trees sufficient room. At the outset the *Hevea* seeds were obtained from original stock and were quite expensive. Now they are obtained from trees of all ages and the expense is much less. In the hilly districts ordinary surface drainage is required, but near the coast land must be selected that can be effectively drained and this often involves considerable expense. In clearing an area for rubber the drains are laid out, the jungle is cut down, and branches lopped to a level of about 4 feet. A few weeks later the area is burned; afterwards the unburned branches and small trees are piled up and a second fire started. This leaves some stumps and big trunks, but in three or four years' time these have rotted and can easily be removed. Planting is done from seed or from stumps taken from the nursery from 6 months to 2 years old. There has been much controversy as to whether it is desirable to let the grass grow or to cultivate some cover stock, but in the author's experience, clean weeding followed by digging and plowing is preferable to any cover crop.

The cost of production is an ever-interesting phase of rubber planting, and planters are twitted over the difference between recent actual costs and early estimated costs; but there are reasons for this. The boom of 1909 materially increased the cost of rubber production, as the ad valorem export duties naturally were higher; while managers and assistant managers and even the coolies all demanded a part of the great prosperity that had come upon the planter. Moreover, many of the trees tapped were young, which made the collection expensive. With the return to normal conditions and the maturing of the trees, rubber production has declined in cost, and will still further decline.

The question of close or wide planting has been much discussed. One rubber botanist maintains that the trees should be 40 feet apart, which would be only 27 trees to the acre. The author's experience is against any such wide planting. Insect and fungus diseases are easily kept under control. On the author's plantations the loss does not average 2 per cent. from these causes.

In regard to the labor problem, which is likely perhaps to present more difficulties in the future than it has in the past, there is one obvious phase, namely that the Indian laborers are more anxious for healthful conditions than for extremely large pay, and that they will avoid plantations reputed to be unhealthful, notwithstanding tempting wage rates. But the Chinese and Japanese laborers on the contrary, are willing to risk ill-health for better pay.

Some consideration has recently been given to the question of fertilizers in Ceylon, though little has been done in this direction in Malaya except where the soil is particularly rich in humus, where lime has been supplied to correct the acidity. The author believes that for some years to come, at least, systematic cultivation of the soil will prove more valuable than any sort of fertilizer.

Another question that is always uppermost is that of future supplies of rubber. The author has seen fields that produced from 800 to 900 pounds of rubber per acre, but this yield is abnormally high. In his opinion a first-class plantation may be expected to yield an average of 500 to 600 pounds per acre. His estimate of the total acreage now under cultivation (including the 500,000 acres in Malaya) is 1,000,000 acres. His estimate of the production of plantations for the year ending 1912 is from 25,000 to 30,000 tons. The annual increase will be fairly steady, and in about 1918 the annual production of plantation rubber should be 100,000 tons—or equal to the entire consumption of the world at present. The present outlook is that consumption will fully keep pace with production, so that there is no imminent struggle between plantation and wild rubber.

The future of the planter depends entirely upon the activity of the manufacturer, and it is reasonable to expect that there will be a constant demand for rubber in lines of manufacture already open, and that in addition many new uses will come into vogue. A well-managed, favorably-situated and mature plantation can at the present time, produce rubber with a handsome profit at 60 cents a pound. Planters can guarantee an enormously increased supply of rubber and will in future years be content with a much lower price than now prevails. What interests the planters is to know whether with a larger increase in their output there will come a glut in the market in a scramble to sell, or whether the manufacturers will be able to take care of this constantly increasing supply.

THE COMMERCIAL POSSIBILITIES OF SYNTHETIC RUBBER. (*Abstract.*)

By Lothar E. Weber.

THE possibility of converting isoprene into a rubber-like substance has been known for twenty years, but little progress has been made in developing this knowledge until quite recently, owing to the vast proportions of this problem. The synthesis of rubber, however, received a new im-

petus about three years ago when two German chemists, Hofmann and Harries, working independently, simultaneously discovered products that gave the chemical reaction of rubber and possessed certain physical resemblances to the natural product. The recent forming of stock companies to place synthetic rubber on the market has attracted much attention to the subject on the part of the press and the public generally. While the author greatly admires the fine work of the chemists in accomplishing the results attained, he deplores the attempt to make the public think that synthetic rubber is an immediate commercial probability.

He cites the comparison synthetic enthusiasts make between the success in synthetic indigo and the probable success in synthetic rubber. In his opinion, the two problems have little in common, as indigo is an article of absolutely definite characteristics and properties, and moreover, the investigator can tell in a few moments whether the product he has obtained is indigo or not, a condition totally differing from the conditions under which synthetic rubber is made. Synthetic rubber is obtained by the polymerization of isoprene. This the author defines as a process whereby a large number of small units combine to make a single large unit. It is essentially a process of agglomeration. The molecules of isoprene—at least a hundred of them—unite and polymerize into one single molecule of rubber, but the difficulty is that it is impossible to determine how many isoprene molecules are necessary to make one molecule of rubber, and equally impossible to obtain any uniformity of polymerization. The chemist cannot control the process. He says: "With the chemical methods available to-day, it would be absolutely impossible to make a product with an assured uniform degree of polymerization," and without this uniformity commercial synthetic rubber is an impossibility.

Synthetic enthusiasts also ignore a very important fact, that by 1916 the plantations will be producing at least 100,000 tons of rubber, and that in consequence the price of rubber will be much lower than at present. Plantation rubber is even now—according to report—being produced at 25 cents per pound. At any rate, the large dividends of many plantations show that much plantation rubber is now being produced at a comparatively low figure, so that even if synthetic rubber could now be marketed in large quantities at 50 cents a pound, it would soon come in competition with plantation rubber that could be produced even cheaper. Moreover, it will be quite possible for the plant physiologist to still further increase the production of rubber plantations just as he has increased the beet-sugar yield.

Synthetic indigo was able easily to overcome competition with the natural article, because natural indigo was produced under the crudest and most unintelligent methods. In rubber plantations the case is entirely different as the rubber planters are keenly alive to all the possibilities of scientific methods of cultivation, production and preparation. Briefly, the author's position is this: That with our present chemical methods it is impossible to assure a uniform synthetic product, and that within the next few years plantation rubber will be in a position to make a stubborn fight against any synthetic rubber product. He does not take the ground that synthetic rubber will never be a commercial possibility, but doubts whether anyone now in the rubber industry will live to see synthetic rubber in successful competition with the natural product.

THE TAPPING OF RUBBER TREES. (*Abstract.*)

By R. Fyffe.

THE operation called tapping is one of extreme importance and the present methods are susceptible of marked improvement. This subject did not receive the consideration in the London Conference of 1911 that its importance warrants.

After the close of that exposition the author toured through Ceylon, the Federated Malay States and Java, studying the preparation of rubber and methods of tapping. Subsequently, he made many tapping experiments and reached the conclusion that the best method was a combination of excision and incision.

Excision alone he believes detrimental to the tree, as the coolies in their endeavor to get the maximum latex almost inevitably cut too deep, thus injuring the lactiferous tubes close to the cambium. These deep wounds heal slowly, retard the growth of the tree and give access to fungus. He does not consider incision alone practical, but advocates a shallow excision combined with incision made by a fine push pricker. Where the points of the pricker are fine they may penetrate the cambium without injury. He does not advocate broad blunt teeth. He got satisfactory results from a push pricker with gramophone needles filed flat on two sides and fitted ⅛ inch apart into a small block of wood. He followed the half herring-bone system on about one-third of the tree's circumference.

NOTES ON THE ACCLIMATIZATION AND CULTIVATION OF THE GUAYULE (PARTHENIUM ARGENTATUM—GRAY). (*Abstract.*)

By Francis E. Lloyd,

MacDonald Professor of Botany, McGill University, Montreal.

IN connection with the general conditions affecting guayule cultivation, the results available to the author have been from plants grown at Cedros, Zacatecas, Mexico; Tucson, Arizona; Stockton and Austin, Texas; and Auburn, Alabama. These situations included the semi-arid Chihuahuan and Sonoran deserts, within the former of which the guayule has its natural habitat; the moister climates of Eastern Alabama (with a rainfall of 45 to 55 inches), and Eastern Texas.

Guayule is by no means uniform in structure within its natural area; the variations arising being due to differences in available moisture, this being in turn attributable to greater rainfall or to the character of the soil. These structural differences are those of relative thickness of the bark (or *cortex*), which is thinner in proportion to the greater amount of water available. Correlated differences are to be noted in the length of the annual accretions of stem.

In the easternmost region of the distribution area (the state of Nuevo Leon) the practical extraction of crude rubber is reduced, roughly speaking, to about 4 to 5 per cent. of the wild weight. This does not necessarily mean that the amount of rubber, in proportion to the volume of rubber-bearing tissues, is less than elsewhere, but that the volume of woody tissues is greater. Nevertheless such may be the case, and in view of what we know about the relation of water supply to the amount of rubber secreted, it is not considered improbable that the actual intracellular secretion in these Nuevo Leon plants is somewhat less than in dryer regions.

The well-known habitual differences between "Macho" and "Embra" guayule have been attributed to racial differences, but whether this is so or not, the practical distinction in Mexico is marked, the former being regarded as decidedly better in rubber content. The inferiority of the latter is due to the greater relative volume of the woody cylinder and the relatively greater number of smaller branches.

One of the principal differences in minor details is that the greater the water supply, up to the limit thus far observed, the greater is the volume and hardness of fibrous or woody tissues barren in rubber, the greater the irregularity of growth, and the larger the number of smaller twigs and leaves.

As to the tenure of life, a combination of conditions may prove fatal to plants when moved to another habitat, while they might successfully resist the influence of any one factor. Thus guayule can withstand cold better under arid, than moist, condi-

tions. The tenure of life in a new habitat depends, moreover, upon the ability of a plant to resist new enemies. Thus in Alabama, thrips and nematodes have been seen to affect guayule badly. In the semi-arid desert, on the contrary, no case of death has been noted during three years, save as the result of insufficient irrigation. It is deduced from this behavior that the resistance of an irrigated plant to drought is much less effective than that of one grown under usual conditions.

With respect to rate of growth it is estimated that the average dry weight of a plant would be 1 pound, and assuming 10,000 plants to the acre, a 2 per cent. rubber content would yield 200 pounds of rubber in two growth seasons, followed by six months of suppressed irrigation. At 60 cents per pound this gives a return of $120 per acre for two years, or $60 per acre per year, subject to the charging of the usual costs. Were the yield of rubber even 6 to 7 per cent., it would not compete with onions in irrigated land. It is assumed that it would not pay to grow the plants longer than two years.

The rate of growth in the moister climate of Auburn, Alabama, is less rapid than in the desert under irrigation. In the first season a height of 8 to 10 inches is attained, but the additional growth in the second is meagre. Thus only the rubber secretion of the first season has to be considered. This, it is added, is practically nil, the possibility of growing guayule in this region being excluded.

After dealing with the method and character of rubber secretion, the author draws the conclusion as inevitable that the determining factor in the cultivation of guayule is control of the water supply. In the presence of an abundance of water applied irregularly and at too frequent intervals, it will take more than three years for the maximum cell amount of rubber to be attained. A quantum approaching the maximum is attained, on the other hand, if plants which have been well irrigated for two seasons are then subjected to drought conditions for six to eight months.

LABORATORY ORGANIZATION IN THE RUBBER INDUSTRY. (*Abstract.*)

By Frederic Dannerth.

IN view of the necessity of arriving at positive data, successful corporations have arrangements with the managing director to purchase at the lowest possible market price the best raw materials for a given purpose; to criticize the manner in which the factory manager is making up these raw materials and help him to attain perfection; to help the salesmen when competitors are offering better quality for same or less money; and to deliver to the factory manager, heat, light and power at the lowest possible cost.

In factory management, as now carried out, all chemical problems are first presented to the supervising chemist of the works, who occupies a position parallel to that of the factory manager and the operating engineer; being wholly or partially employed by the particular corporation.

The duties of this department are: (1) To investigate all new processes; (2) to constantly improve existing ones; (3) to correct and explain irregularities of current operations; (4) to invent new and useful processes; (5) to determine the value and exact composition of all raw materials; (6) to determine the value and composition of competitors' products; (7) to advise correctly on "specification goods"; (8) to control different stages of many processes.

Co-operation with the laboratory by every department is thus necessary for the full use of the constructive forces at work.

The supervising chemist, whose value is in proportion to his far-seeing capacity, has five first assistants: the engineering, buyer's, factory, sales and research chemists. In the laboratory organization are included the abstracting of foreign and domestic technical literature and of patents; as well as a library of catalogs. Superintendents should present monthly to the supervising chemist reports of their own or their assistants' ideas, warranting investigation.

The engineering chemist's most important field of activity is the examination of materials used by the power plant; co-operating with the buyer's chemist, who is essentially an analyst; and whose duty it is to devise rational specifications on standard material. The factory chemist investigates problems arising in the factory, and looks after the writing of recipes to meet certain specifications. The sales chemist makes analyses of commercial rubber products offered by competing firms, and conducts the final tests on specification goods. The research chemist's duties include dealing with the periodical and patent literature of all countries, as well as the investigation of the latest advances in machinery for chemical processes, and the utilization of wastes. He should embody the varied talent and knowledge required in a wide field, and should have a properly equipped research laboratory with miniature rubber machinery. Together with the supervising chemist and the factory manager he forms the research committee, which meets regularly to consider all important investigations.

The supervising chemist has the supervision of the work of his five first assistants, and calls a weekly meeting of the chief chemists to discuss standard analytical methods and patents of interest to the rubber industry. A digest of this meeting should be forwarded to all the chemists of the company for comment and filing; while the supervising chairman has in his office a card index with condensed abstracts of relevant articles from chemical journals. The efficiency of the chemical department may be increased by periodic visits of the supervising chemist to the different laboratories of the company and to those of other industries, in order to incorporate in his organization the favorable developments made by them. Laboratory buildings should be roomy, well lighted and ventilated, likewise equipped with all the apparatus required for accurate and rapid work.

The central laboratory and office should have a file of chemical and engineering periodicals and standard works. All the laboratories should be in the same building, to facilitate library references and consultations by the individual chemists.

Another point of importance is the holding of periodical general meetings of the chemists to promote cordial co-operation and to discuss specific subjects; as well as the periodical exchange of chemists between the different laboratories, to broaden the experience of the individual chemist. Monthly reports should be made by each laboratory to the supervising chemist, explaining all difficulties encounted in the course of investigations and making suggestions for improvements in existing methods.

When a corporation has plants in different cities, the central laboratory should be connected with one of the large plants, so that mechanics may be available for construction work in the laboratory. Such an arrangement, moreover, allows of chemists asking advice of foremen and superintendents.

The rules to be posted in the laboratories should provide: For the verification of the accuracy of weighing and measuring apparatus; for standard solutions being checked by the head or one of the chief chemists; for all important investigations to be in duplicate and all clerical work and calculations to be checked; for the employment, even in the simplest determinations, of systems of weighing and manipulation, devised to prevent errors.

The form of organization of which the leading features have been described, must never take the semblance of dull routine; while the interest in the work can be decidedly promoted by having the chemist come into personal touch with the department for which he is doing work.

Scientific management resolves itself into buying the best material of a given grade at the lowest possible price and selling the finished product of a given quality at the lowest possible price. To accomplish this our manufacturers have drawn to their aid the services of men exercising the above functions.

FACTORY MANAGEMENT METHODS. (*Abstract.*)

By J. C. Jurgensen.

THE interest manifested lately in "scientific management" for factories has produced a large number of efficiency engineers, whose efforts are looked on with some skepticism by many manufacturers. Where they have failed, however, it has usually been owing to their method rather than to the principles involved. It is extremely difficult to lay down hard and fast rules for the efficient management of a factory. Even when the plant is thoroughly analyzed and investigated, the system must be fitted to each case. Whether the factory manager can himself apply it, depends upon his talent for investigation and administration. The human factor is the most serious problem he is called on to solve. Each employe, whatever his position, should have his duties thoroughly defined, and must be chosen with careful reference to them.

All orders for work emanating from the manager's office should be carefully planned and explicitly worded. Clearness should be insured by a system of checking before the final issue of the order. The indefinite order is the father of every bad habit in foremen and workmen, and leads to disorganization of plant and factory.

It is an important function of factory management to encourage general industrial education and vocational training, many experienced men being found willing to act as teachers of the young men in the service of the company.

Organization is a matter of fundamental importance, and the successful factory manager has some simple method or system for determining the responsibilities and authorities of all his subordinates. On his solution of these daily problems depends the success or failure of his management. The factory manager must know what he wants to accomplish and, having decided on the method to be used, must stick to it. Changes of plan and spasmodic efforts never lead to results. Repeated changes in methods create misunderstandings, insubordination and intrigues, while organization, although it cannot entirely prevent such conditions, will greatly minimize them.

The organization in which each department head is selected to perform the duties for which he is best fitted, has the elements of a perfectly co-ordinated factory, but to insure practical co-operation between the various heads, a supreme authority must be provided, in the form of the owner, a firm management committee, or the factory manager. The absence of such an authority leads to indecision and general disorder; divided authority always causing shirking of responsibility. A thoroughly competent assistant is recognized as the acting work manager when his superior is absent.

After an expert organizer has had an opportunity to analyze the nature of the business and to classify the work, a series of organization charts should be drawn up by him, showing graphically the departmental relationship, as well as the extent of departmental responsibility.

The cost system is another essential in factory management; showing plainly the well operated and improving departments and those badly run. It creates a more determined and careful management, but does not stop at executive organization; gauging the value and efficiency of every operative, every machine, and every operation. With proper use it can become not only historical, but prophetic. When this can be done the cost system is established. Its proper employment by an energetic factory manager enables him to analyze any part of the plant; at the same time setting standards of mill expenses and unit costs.

While the sales price of the product cannot be controlled by the factory, the cost of production can; the latter being the one vital element in the industrial world to-day. Even if incomplete, a cost system will be of use to the management. As every penny spent in the mill is part of the cost of the product, it is the function of the cost system to determine daily where each individual expenditure shall be charged.

A practicable system is best established by finding departmental totals for material, labor and mill expenses; then going after details. To begin with details and go up to totals is wrong. When the totals have been proven with the accountant's books, the factory manager can divide them as required; each cost item being checked with the total. Thus the modern factory manager, in his fight for better managment and methods, must install a practical expense control system.

PROBLEMS IN VACUUM DRYING. (*Abstract.*)

By J. P. Devine.

THE author's connection with the rubber industry dates from ten years back, when he sought to interest manufacturers in this country in a new method of drying rubber. He found that they were satisfied with the then existing method, and did not hesitate to express their opinion that any shortening of the drying process would sacrifice the quality of the rubber and jeopardize standards established during the course of years.

At the outset of his investigations, the author found that little, if any, advancement or improvement had been made up to that time. His opinion was thus confirmed of the value of the Passburg Vacuum Drying Process (originated and designed by Emil Passburg and William Strohn of Berlin), for economically and thoroughly removing moisture, particularly for the removal of the final traces, as is necessary with rubber and rubber compounding materials.

This new process was introduced in Germany by Messrs. Passburg and Strohn and in this country by the author, and has proved of great benefit to the rubber industry.

For years rubber was dried by any convenient method, not involving capital expenditure, such as a boiler room. Subsequent improvements included the adoption of drying lofts, where the sheeted rubber was hung on racks, the heat being distributed by coils, or hot air circulated by fans or blowers. Little regard was paid to the temperature or duration of the drying process. The fallacy of the claims sometimes made in favor of these old systems is proved by the use of the vacuum apparatus, and by the superior quality of the rubber dried by that system.

The improvements introduced from time to time only served to reduce the effects of high temperatures, with a consequent prolongation of the drying period. Heat and oxygen, however, are the two insidious enemies of rubber, always present in hot air drying. They are eliminated by the vacuum apparatus.

Another objection to the hot air system of drying is the contraction of the rubber and the hardening of the surface, which prevents the elimination of the last moisture within the rubber, except by a prolongation of the drying period. The vacuum process and apparatus alone afford the proper conditions for the rapid, uniform and thorough drying of rubber at a low temperature and without oxidation, independently of climatic conditions.

While under atmospheric conditions, rapid boiling can only take place at 100° C. or 212° F., and the drying time is extended as the temperature decreases—under vacuum, the boiling point is greatly decreased as the barometric reading is approached. Thus at a vacuum of 29″, water boils at 25° C. or 77° F. Rubber dried in the vacuum chamber, while the first free water is being removed, need not be heated practically above the boiling point of water at that particular vacuum. The supply of the heating medium—steam or hot water—is regulated and is entirely shut off before the final drying. The last traces of moisture are therefore drawn off by the latent heat in the dryer, accelerated by the high vacuum. In a properly constructed vacuum chamber, with the condenser and pump properly balanced, the application of well known physical laws absolutely prevents any over-heating if reasonable care be taken in its operation.

By reason of the absence of oxygen, oxidation cannot take place. The rubber not being overheated, nor impaired by oxida-

tion, has greater elasticity and tensile strength, enabling the manufacturer to obtain the greatest yield when being made into the final product.

As different grades of rubber must be subjected to varying temperatures, the temperature of the heating medium is easily regulated without overheating or materially affecting the time of drying, so that the vacuum process offers many advantages over the old method of drying rubber, whether it be fine Pará or Pontianak.

Owing to the drying period only taking a few hours, varying according to grade of rubber, the crude rubber can be washed, dried and pressed in a fraction of a day. Consequently, there is no deterioration between drying and using.

With an average establishment of today, with a consumption of two tons, if the old hot air method is used and six weeks consumed in drying the washed and sheeted rubber, there would be 72 tons of rubber hanging in the drying lofts, representing an idle investment of $144,000 on raw material, besides insurance, factory space, etc. The same quantity of rubber could be more thoroughly and permanently dried by one or two vacuum chambers in a day of ten hours, thus working up the requirements of each day's output, with an initial cost of installationn less than that of the old-fashioned drying rooms for the same quantity. Besides paying for itself the vacuum chamber gives an otherwise unattainable flexibility to the factory for its daily production. A vacuum drying chamber having a capacity of two tons of dry sheeted rubber every ten hours, occupies a space 8½ ft. high, 15 ft. wide x 9 ft. long, its auxiliaries, the condenser and pump, being conveniently located in any place in the factory near the dryer.

While not more than one-third of the heat units are utilized by any hot air system—by the vacuum process practically every heat unit is transmitted to and comes in direct contact with the material being dried. The apparatus itself is practically indestructible and only requires one operator. There is a considerable saving of fuel and the time of drying is shortened from weeks to hours, combined with higher efficiency. The condenser connected with the vacuum chamber (as well as the vacuum pump) should be of the proper capacity for condensing the vapors given out during drying; while the necessary heating surface must be balanced in order to transmit a certain temperature, and if the condenser is burdened with a much larger quantity of vapor than it is calculated to cool, the result is detrimental, both to the product and the working of the pump.

Basing his view on the foregoing and other facts quoted, the author submits the opinion that it is wrong to subject apparatus to work for which it is not intended, and attribute the unsatisfactory results to the principles of drying under vacuum, viz.: rapidly and thoroughly at a low temperature.

While the use of the vacuum drying process was first adopted by manufacturers to dry washed rubber, much thought has of recent years been given to the preparation of crude rubber on the plantation. This fact is especially noticeable in the quality of the rubber reaching the market from the Malaysian, Straits Settlements and Congo Plantations, where this process has been installed and found of great value. This is somewhat reflected in the moisture content of plantation rubber, which reaches the market with a low percentage of moisture, as compared with 15 per cent. or more in Upriver Pará. Planters will understand in the future that the price is based on actual rubber, and that they will serve their purpose by adopting the very latest method for the treatment of the raw material, so as to free it from impurities and let it contain a minimum percentage of moisture.

This improvement in quality of the raw material will not cause the discontinuance of the process of drying at the factory, but will restrict its use to the removal of the final percentage of moisture only, thus simplifying factory operation.

The results of scientific and research work in the laboratory have materially contributed to the advancement of the industry, and its further progress can and will be accomplished by a closer and more intimate relationship between the manufacturer or producer and the appliance manufacturer. The author asks in conclusion why users and makers of machinery should not recognize their mutual obligations to co-operate, so that a maximum productiveness by newer and better methods may be secured.

LITHOPONE AND OXIDE OF ZINC IN THE RUBBER INDUSTRY. (*Abstract.*)

By G. C. Stone and Gilbert Rigg.

THE zinc oxide of commerce is a white amorphous powder, the purity of which depends on the character of the ore from which it is produced. With the exception of those from Franklin Furnace, New Jersey, zinc ores contain considerable lead and usually cadmium. Their presence, when the object is to make a white product, is inadmissible, while their absence insures regularity in the composition of oxide of good color. For example, the oxide made by the New Jersey Zinc Co. contains upwards of 99 per cent. zinc oxide.

Zinc oxide is made by two processes, the direct or American, and the indirect or French. The first drives off the zinc from the ore by the action of carbon at a high temperature, the zinc vapor being burned direct to oxide. In the second, metallic zinc or spelter is first produced by smelting, this metal being then burned to oxide. The latter is the more costly and the products of the two differ in certain material points.

Purity is the first essential of a zinc oxide for rubber purposes, while uniformity of composition is likewise very desirable for arriving at a good result. The authors believe that users of oxide should confine their analytical work to testing for adulteration and suitability for a particular purpose by a practical laboratory compounding test, rather than spend much time and effort in attempting to determine the zinc contents of the oxide.

Commercial zinc oxide consists of extremely minute particles, forming more or less coherent aggregates resembling a slightly elastic sponge entangling considerable air.

It is necessary to distinguish clearly between the coherence of an oxide and the true specific gravity, these two properties being sometimes confounded under the term "density." The determination of the actual specific gravity requires considerable care, as the oxide tends to retain its entangled air, a good vacuum pump being used to insure that the air has been completely expelled.

While screening is often useful for breaking up aggregates, this method is, according to the view of the authors, useless for sizing oxide of zinc, owing to its extreme fineness. This can best be done in a bolting machine. Revolving screens without heaters tend to form balls, while shaking screens have a like tendency.

Oxide of zinc, the use of which is rapidly increasing, is one of the most important ingredients of manufactured rubber. It is remarkably constant in chemical composition and physical properties, and is also rarely adulterated.

LITHOPONE.

Lithopone is an amorphous white pigment obtained by mixing solutions of barium sulphide and zinc sulphate, which causes a transfer of the acids and produces an intimate mixture of zinc sulphide and barium sulphate. In properly made lithopone every particle of the barium sulphate appears coated with zinc sulphide; the opacity being much higher than that of a mixture of the dry salts in the same proportion. It is largely used in the manufacture of rubber goods, but in the opinion of the authors, oxide of zinc is preferable for giving strength and resilience in the product.

The authors add that a good sample of lithopone should contain not less than 28 per cent. of zinc sulphide. It should be a good white, be smooth and free from coarse particles and have good binding power.

A NEW RULE OF VULCANIZATION. (*Abstract.*)

By A. O. Bourn, Providence, R. I.

THE rate at which the combination of rubber and sulphur increases or decreases with each increase or decrease of temperature, is a point naturally calling for investigation, a knowledge of which would be of great value to manufacturers, and would seem to be the foundation of a careful study of the subject of vulcanization.

To ascertain this ratio of increase or decrease, a large number of experiments were made previous to 1903, with the same compound and samples uniform in thickness in most well known processes of vulcanizing.

The experiments referred to were first made with a compound of 12 pounds dry fine Pará rubber, 6 pounds litharge, 6 pounds whiting and 6 ounces of sulphur, giving a proportion of about 3 per cent. of the latter. When these samples were submitted to the ordinary dry heat air process, physical vulcanizing effects were obtained approximately as follows:

15 seconds	at 337° F.	13 minutes	at 260° F.
23 "	" 326° "	26½ "	" 249° "
35 "	" 315° "	53 "	" 238° "
1 minute	" 304° "	105 "	" 227° "
2 "	" 293° "	210 "	" 216° "
3½ "	" 282° "	420 "	" 205° "
7 "	" 271° "	840 "	" 194° "

These results seem to establish the rule *that for each increase in temperature of about* 11° *F. during the vulcanizing operation, the velocity of vulcanization is doubled, and that with each decrease in temperature of about* 11° *F. the time required for vulcanization is doubled.*

Above 304° the rate of increase is different, there being a marked change in the physical constitution of sulphur; while below 194° the *air process* does not produce good results in vulcanization. In other processes down to 161°, there was no difficulty in effecting vulcanization.

The temperature above 304° showed following results: 325° F, 26 seconds; 350° F, 13 seconds; 375° F, 6 seconds; 400° F, 3 seconds. These and other experiments led to the view that a properly compounded rubber not only vulcanizes at all temperatures, but that vulcanization commences immediately upon the compounding.

In 1904, experiments were made with a view of testing the truth of the proposition that vulcanization proceeds at all temperatures. Accordingly samples of Pará rubber compounded with from five to seven per cent. of sulphur and fifty per cent. of litharge, were subjected to treatment at temperatures varying from 161° F. to 194° F. in a bath of metal, which fuses at about 150° F. The results confirmed the general rule obtained in the preceding experiments, with the exception that the time required for doubling the velocity of combination was somewhat greater for an increase of 11° F. in the temperature.

The results of embedding samples of the same compound in a ball of metal, and others in a jar of flowers of sulphur, showed that in seven months the former were thoroughly vulcanized, while in four months the latter were not fully so, but on being exposed to the air became strong and elastic. Samples of both are still available in a state of perfect preservation. The samples had been placed in a room with the average temperature of 110° to 115° F.

In February, 1912, another series of experiments was commenced on a line with those of 1904. Similar samples of a similar rubber compound and samples of four different grades of rubber shoe compounds, were placed in a ball of fusible metal, in a well-corked jar of sulphur, and in two tight jars; one containing a mixture of one part by weight of sulphur with five parts of litharge, and the other containing a mixture of equal parts by weight of sulphur, litharge and "Green Seal" French zinc. Samples of pure, fine Pará rubber, free from compounds or mastication, were placed in each jar.

Of the samples enclosed in fusible metal only one compound was properly vulcanized. All the others were vulcanized very perceptibly less than those embedded in sulphur, sulphur and litharge, or in sulphur, litharge and zinc. The action of litharge and sulphur, as compared with the action of sulphur alone, was very marked; the vulcanization of all the samples being carried much further than in the case of either of the other experiments.

An important deduction to be made from the new law of vulcanization and the experiments made in accordance with it, is, that the melting of sulphur has not the slightest effect in changing the rate of vulcanization. Whatever may be the time required to vulcanize a rubber compound at 227° F. it will vulcanize in one-half that time at 238° F, and in one-quarter the time at 249° F.

Moreover, vulcanization of rubber properly compounded proceeds at all temperatures, whether high or low. At high temperatures, the compound may be vulcanized in one second or less, and at low temperatures the vulcanization may proceed so slowly as to escape attention. Samples of these experiments can be examined at the Bourn factory laboratory, at Providence, by any one wishing to do so.

A BRIEF HISTORY OF FIRE HOSE SPECIFICATIONS IN THE UNITED STATES. (*Abstract.*)

By E. A. Barrier, of the Factory Mutual Laboratories.

AMONG the more important events which led to the development of the present Underwriters' Specifications for hose was the fact that previous to 1890 it was a matter of common occurrence for length after length to burst at pressures well under 100 pounds.

Steps in the direction of the needed improvement were first undertaken by Mr. John R. Freeman, then connected with the Inspection Department of the Factory Mutual Fire Insurance Companies, and now one of the foremost hydraulic engineers in the country, as well as president of several of the individual mutual companies. In experiments conducted in 1888, Mr. Freeman had found that with poor hose a pressure of 95 pounds would be required at the hydrant to produce a good fire stream, while the pressure needed with good hose would be about 73 pounds; 200 feet of hose being used in a line.

After a large number of tests and conferences the first set of Underwriters' Hose Specifications was published in July, 1896.

The clause requiring 40 per cent. of pure Pará gave rise to more discussion than any other in these specifications, but at the time and for several years after "Pure Pará" was understood to mean "Fine Pará." The whole idea was to obtain a list of manufacturers whose product could be recommended to mills insured in the Factory Mutual Companies. Any manufacturer desirous of being upon the approved list could send in samples for testing, and if they were found to conform with the specifications, his name was placed on the list without charge.

No changes were made until 1900, and they were then of no great importance. Meanwhile the National Fire Protection Association had been founded and the Underwriters' Laboratories established. In 1899, the National Fire Protection Association had adopted a set of specifications for hose, which were sufficiently different from the Factory Mutual Specifications of 1896 to cause some confusion among manufacturers. Seeing the de-

sirability of uniform specifications, a "National Standard" was adopted in May, 1902, in which only two important changes were made from the old specifications. One item, regarding the stretch of the rubber lining to five times its original length (which had appeared in the N. F. P. A. specifications) was omitted, and another item requiring a test of 200 pounds on each 50 ft. length, not originally in the Mutual specifications, was added. Since that time, the specifications of both organizations have been essentially the same, although their ideas regarding method of enforcement have differed widely.

The years up to 1911 were occupied with continual tests, during the progress of which, the paper states, evidence was accumulated that most manufacturers of hose were not turning out a product made in accordance with the specifications. The number and character of the analyses and tests gradually changed.

In 1906 the system of "Label Service" was developed by the Underwriters' Laboratories of Chicago, according to which an inspector would be stationed at the factory, and inspect every length of hose sent out; a label stating that the hose had been manufactured under the supervision of the laboratory, to which samples could at any time be sent for more detailed tests. Owing to several objectionable features which it was found impossible to have removed, in spite of a number of conferences, the "Label Service" has never been adopted by the Mutual companies.

Owing to the opposition of manufacturers, and their objections to using the labels, all those on the "Approved List" of the Chicago laboratories were dropped during 1909 and 1910. In the early part of 1911, however, two of them submitted samples to the Underwriters' Laboratories, which were approved, and adopted the "Label Service." Later in the year another manufacturer followed. At the present time, it is added, these three are the only ones using the labels. According to the system as developed, the rubber from the beginning of the manufacturing operations, until the hose is completed, is either in the inspector's presence, or under lock; the key being in his possession.

After a long series of conferences between the National Fire Protection Association and the manufacturers, a set of specifications was drawn up, which at the time was mutually satisfactory, and allowed a much lower grade of rubber than the present specifications. Owing to a misunderstanding as to their application these specifications were subsequently cancelled, when a much more stringent set was proposed at the annual meeting of the National Fire Protection Association in May, 1911 and formally adopted in May, 1912.

Meanwhile, the accumulated experience of the Factory Mutual Laboratories during the last five years, has shown, it is remarked, that much more stringent and definite requirements regarding rubber lining would have to be included in the specifications. A new set was drawn up in the fall of 1910, at the same time that the more definite specifications, already mentioned, were being prepared by the Underwriters' Laboratories for the annual meeting of the National Fire Protection Association of May, 1911. Owing to there being some differences between the two, a specification was finally drawn up satisfactory to both associations. This was formally adopted by the Factory Mutual Companies in December, 1911, and by the National Fire Protection Association in May, 1912.

Owing to various delays the Mutual companies have not yet put these new specifications into effect, but in the near future the manufacturers of Underwriters' hose will be notified that after a certain date, hose must be made in accordance with the new specifications; with which some manufacturers have voluntarily expressed their hearty concurrence.

The most important change made by the new specifications is a definite call for 40 per cent. "Fine Pará" instead of "Pure Pará." Tests are specified which the compound must meet, including acetone extract, free and total sulphurs, alcoholic potash extract, tensile strength, elongation and the so-called "permanent set."

Including this description of the work of the Factory Mutual Companies, which has apparently led to a settlement of the questions at issue, it is remarked that their only object is to make it possible for their members to obtain good hose. The work of testing and inspection is done without charge to the manufacturers and it has always been the intention to treat them fairly and to co-operate with them as far as they would allow.

NOTES ON TENSION TESTS OF RUBBER.

(Abstract.)

By P. L. Wormley, U. S. Bureau of Standards.

THAT the time is now ripe for co-operation between manufacturers and consumers, with a view to uniformity in tests and specifications for goods intended for the same purpose, is shown by the wonderful development of the rubber industry. In the same way uniformity of method is likewise essential for comparing the work of different laboratories; the standardization of specifications and testing methods being of substantial benefit to manufacturers, consumers and the public at large.

In each case, the refinement of the methods used should be determined by the nature of the material tested. In this respect rubber constitutes a most interesting field, uniformity in methods being more desirable than extreme accuracy in measurements; while the adoption of uniform testing methods would serve to prevent misunderstandings between manufacturers and consumers, arising from specifications being indefinite.

Opinions differ as to the relative merits of ring and straight test-pieces, the former involving several lengthy operations for their preparations, while the latter are instantly cut out by a single stroke of the die. The ring lends itself to the automatic measurement of elongation, having advantages over straight specimens. When, however, the strength of the rubber varies the ring gives a smaller ultimate elongation than a straight testing-piece. This difference is not always found, but the author's tests on twenty different compounds show a general tendency towards higher values for straight specimens.

With a view to the encouragement of the testing of rubber goods, the Bureau of Standards has constructed machines combining the greatest simplicity with a reasonable degree of accuracy. For determining tensile strength and elongation, they use an ordinary twin spring dynamometer, attached to the upper end of a metal column, a device being used for preventing recoil by holding the springs under the maximum tension. Two years of continuous service have proved the accuracy of these dynamometers.

As already mentioned, the measurement of elongation at rupture is less simple in the case of a straight test piece than with a ring, but a little practice obviates this difficulty.

Owing to the author's experience of the time consumed in testing the recovery after extension, he constructed an apparatus for testing six specimens at once.

Of the tensile machines seen in operation by the author, or studied from illustrations, some appear better adapted to experimental or research work than to routine testing, this being partly due to their delicate or expensive construction, and their slower operation.

It would be difficult to obtain by autographic means tension or hysteresis curves for straight test pieces, but another slow, yet otherwise satisfactory method exists of securing curves, that is, by means of a narrow flexible scale of paper or tracing cloth, attached to the test piece by a small spring wire clip. From this scale, one operator reads the elongation at convenient intervals. With a little practice this process becomes exceedingly simple, the curves given clearly showing the characteristics of different rubbers.

The tension test, which is the most widely applicable for soft rubber products, is used to determine strength, ultimate elongation, and elasticity or recovery. The results of tests are influenced by:

1. Shape and size of test pieces.
2. Method of preparing and measuring same.
3. Design of grip.
4. Direction in which test pieces cut (in straight specimens).
5. Temperature.
6. Previous stretching.
7. Time allowed after extension and release before measuring set.
8. Speed at which rubber is stretched.

Other important considerations affecting test pieces are: Preparation and measurement; design of grip; direction of cutting; temperature; influence of previous stretching on strength and elongation; increase of ultimate elongation and strength.

An objection to the practice of attempting measuring and remarking specimens immediately after release, is the influence thus exercised on the second set by the few seconds interval which necessarily takes place.

The author's aim has been to deal with uniform methods of testing, no attempt having been made to treat the general subject of physical testing in an exhaustive manner.

TESTING OF AIR BRAKE HOSE AND ACTUAL SERVICE. (*Abstract.*)

By G. E. Bishop.

THE above subject is treated by the author in two sections—air brake hose and steam heat hose. In the former two sizes are considered—1⅛ in. x 22 in. and 1⅜ in. x 22 in. The first of these is for use in passenger service and the second on freight cars only, the hose being specified to stand a bursting pressure of 500 pounds per square inch for 10 minutes. At 200 pounds pressure it must not expand in diameter more than one-quarter inch, or change more than one-quarter inch in length. It has also to stand a friction test of such a nature that with a weight of 25 pounds suspended from the end, the separation would be uniform and regular; the average speed not exceeding 6 inches in ten minutes; as well as a stretch test, between marks two inches long on a piece half an inch wide. This is quickly stretched until the marks are 10 inches apart and released; then re-marked as at first and again stretched to 10 inches; remaining ten minutes without breaking. After release the distance between the marks must not show a permanent set of more than one-quarter inch.

Several interesting tables are appended to the paper, showing in the first place the performance of 1⅛ in. air hose during the year from November, 1911, to November, 1912. The table includes the number of hose removed for all causes, classified under the general causes for removal and the life of the hose. The total number of hose purchased of each of the eight makes used during a period of three years is also shown as an indication of the proportion of the different makes of hose in service. This point is illustrated by the numbers of each make inspected and rejected.

A large portion of the hose was removed on account of being damaged in service; this being largely attributed to the automatic connector, which increased the chafing and cutting of the hose. The results given by the eight makes are criticized in detail.

Another table deals with similar particulars as to the 1⅜ in. air hose, the two tables constituting a detailed history of the performances of the two sizes of air-hose during the twelve months ending November, 1912.

In the second part of the subject, steam heat hose 1⅜ in. x 24 in. is dealt with, used on passenger cars, locomotives and tenders, with an automatic connector, as referred to under the discussion of air hose. The tests include the elongation and ultimate tensile strength of a piece of the inner tube. A friction test provides for the pull at which the duck will start to unwind, while the sample is likewise subjected to saturated steam at a pressure of 45 pounds per square inch for a period of forty-eight hours. After cooling, the tests are repeated, when the stretch test must not show a deterioration of more than 30 per cent. and the tensile friction not more than 20 per cent. Inspection of the hose after removal from the digester must not disclose swelling, blisters or loosening of inner tube.

A performance table records the results on the same principle as those shown for air hose.

In conclusion, the fact is referred to that purchasing under proper specifications has decreased consumption of hose per car per year from 4.3 pieces to 2.5 pieces.

It is thought that better steam hose can be procured by increasing the friction and stretch test. A specification is now being tried with the requirements, after the digester test, increased to what they were before that test.

RAILROAD AIR BRAKE HOSE. (*Abstract.*)

By J. S. Sheafe.

WHILE the requirements prescribed by the Master Car Builders' Association are intended to insure uniformity of standard in railroad equipment, the air brake hose now being manufactured does not comply with those requirements in other than the physical tests.

The M. C. B. specifications prohibit the use of rubber substitutes. Neither pure rubber nor a fair grade of rubber can be used at the price paid.

Air brake hose to-day are poorer than formerly, for which both the railroads and manufacturers may be blamed; the former for continually hammering down the price asked for an honest article, and the latter for consenting to attempt the manufacture of an article at a price below that which they know can be fairly met. The quality of air hose must be improved by the co-operation of manufacturer and consumers.

Air hose is sold as low as 30 cents a foot and as high as 50 cents, there being thus a difference of 66 per cent. How much can be expected of a quality costing the minimum? The cost of replacing poor hose would make up for the extra price of a good quality.

The largest number of failures has resulted from outside injury, not attributable to inherent weakness of the hose.

There can be no doubt of the deterioration of the average air hose within six months of manufacture. The making of hose to wear well, is the most important part of the manufacturers' problem. Rubber manufacturers could make a lasting hose by compounding a tube and cover with just as much or little flexibility as would be necessary for long life. If the manufacturers will produce a hose with an inner tube and cover able to withstand the action of time and weather for 36 months at a commensurate price, the whole situation will be greatly improved.

CONTRACTS. (*Abstract.*)

By Arthur W. Stedman.

COMMON law presupposes that, in making a contract, both parties have agreed upon the same thing. A contract should be so drawn as to be enforcible by law, and should embody a consideration, whether in the form of some actual object or service, or under the guise of "one dollar and other good and valuable consideration."

The chief points to be defined are: First, an agreement as to what is being purchased; second, an expressed or understood standard of quality, and third, delivery at a certain time and

place. The point at which the seller's responsibility ends and that of the buyer commences, should also be defined, as well as the mode of settlement.

Since all contracts are not carried out, it is a wise precaution to stipulate the course to be pursued, in the event of violation by one or other of the parties.

Rubber purchases include two forms: "spot" and import transactions. In the former the chief risk is a difference between the samples and the bulk of actual rubber, at New York, London, Liverpool, Antwerp or other central points. Forward rubber contracts, on the other hand, are based on standard classifications, in accordance with which the importers agree to make certain deliveries, in New York or at the mills. Such business whether for early or deferred delivery needs the safeguard of a contract, protecting alike buyer and seller.

The principal features of the Standard Rubber Contracts for forward orders, adopted by Liverpool and London, include detailed provisions as to the three points of Tendering, Inspection and Arbitration. In addition to these, the question of the shrinkage is a serious one for manufacturers. It has a parallel in the case of wool, where in some cases the importers guarantee a maximum rate of loss. The silk trade affords an instance of the moisture being adjusted. The importance of this question to the rubber industry is indicated by the quicker time in which rubber now reaches New York, and the larger percentage of moisture it now contains, than was formerly the case.

Attention has been paid in Europe to the question of standard grades of plantation rubber, to which planters would conform. Forward orders extending over 1913 have largely been for well-known grades of plantation rubber; the more general adoption of this system having been suggested. The Silk Association of America, among others, has given attention to the question of forward contracts.

The chief points to be covered in arrangements regarding standard rubber contracts would be as follows:

1. The seller draws up, signs and sends a contract to the buyer, stating conditions of sale. Formerly, silence on the part of the buyer was taken to mean acceptance of the contract, but it was found that misunderstanding resulted, and now it is the uniform custom for the seller to send to the buyer two signed contracts, one of which he keeps and one of which he returns with his acceptance written thereon.

2. Any objection to the terms expressed in this contract must be made immediately upon receipt, and any changes must be in writing, signed by both parties.

3. Provisions should be made for delays in transportation. If the rubber is shipped by a steamer due to arrive at port of destination within the contract period, buyer must accept delayed delivery upon receipt of proof of sailing and cause for delay.

4. If any part of the rubber is lost at sea, contract to be voided for that portion.

5. The rubber becomes the purchaser's property as soon as it leaves the seller's hands, the buyer paying the freight and cartage.

6. Seller's responsibility for goods in transit ceases when they pass into the hands of the transporting company. Stealage or other loss while en route is at the buyer's risk.

7. If shipment is questioned as to quality, and if bought by sample, this is compared, and in case of dispute (to be decided by arbitration), the losing party to pay the costs of arbitration.

8. The buyer is not allowed to select the good and reject the bad from any lot; he must take all or none.

9. If the seller fails to make delivery on or before the last week-day of the month specified, and no proof is offered that the delay was from causes beyond seller's legal control, the buyer can enter the open market and purchase, charging any loss to the seller.

The fair-minded seller means to deliver what he has bargained to supply, and the honest buyer means to accept and pay for what he agrees upon. It only remains therefore, to find and agree upon fair and equitable terms and conditions which will prevail and become known the world over, as the usual basis upon which rubber is bought and sold.

FARMING BY DYNAMITE. (*Abstract.*)

By Harold Hamel Smith, Editor of "Tropical Life."

WHILE the author had long suspected the possibilities of explosives in connection with agriculture, it is only within the last year that he has been able to demonstrate how very useful dynamite (and the other "ites") can prove for that purpose, when used with discretion, by natives or Europeans. Any race, sufficiently intelligent to tap rubber trees, could, in his opinion, be trained to handle these explosives, under the same class of white direction as with rubber tapping.

For twenty or thirty years past, farmers in the western states of America have regularly blasted their ground, and thereby obtained bumper crops, while leading journals have opened their columns to a discussion of the matter.

Dynamite, or another explosive if more suitable, can be advantageously used in agricultural industries for the following purposes:

1. To break up hard or virgin soil, particularly the under crust, which no ordinary plough could penetrate.

2. To blast out boulders, rocks and tree stumps, leaving the ground in a state to be easily and properly ploughed.

3. To clean the soil of pests, and destroy ants' nests or rabbit warrens, and to regenerate and aerate hard or worn out soils generally, such as West Indian soil which is not ploughed, but only hoed; the hard-pan sub-soil being left till it becomes waterlogged and dangerous.

4. For throwing up soil for drains, especially deep gullies, to be removed by hand plough.

5. For making holes for tree planting, and loosening the soil for fence post holes.

6. For well-boring, or well torpedoing, the latter being for the purpose of increasing the flow from an artesian well.

Doubtless other uses will be found for explosives in connection with estates, the author referring to their use for removing masses of rock or soil for making estate roads. The latter, it is added, is too big and dangerous a work for the average planter, and should not be carried out without consulting an expert. The use of explosives in connection with mining is referred to as a separate branch of the subject.

While explosives advantageously supplement ploughing, they do not obviate the necessity of the latter. As the "Queensland Agricultural Journal" remarks, the plough must be used just as ever; the only difference being that dynamite expends its disintegrating force in the sub-soil, which is never touched by the plough, so that one is not merely planting the crops in the same soil year after year. By the use of dynamite the crops are enabled to draw up their nutriment from below, the clay strata being broken up and the accumulated and stagnant water being allowed to pass through. At the same time myriads of harmful lives are destroyed.

Another point of importance is the need of a regular adequate supply of water at all times, if good crops are looked for, in order to enable the plant food to nourish the trees or plants. This point is one of the advantages of farming by dynamite. This last named principle, as the "World's Work," of London, lately wrote, "has gripped the United States and is speeding through Canada like a prairie fire."

The Queensland "Agricultural Journal" has recently published various practical details as to the system. The "Times of Ceylon" has also dealt with the matter, with special reference to the trial of the plan by a Kelani Valley rubber planter. The editor of "Grenier's Rubber News," of Kuala Lumpur, lately wrote that the consensus of opinion, at least among planters of the Federated Malay States, is that clean clearing, which means the removal of

all stumps of timber, is of paramount importance, for the expeditious and economical accomplishment of which work there is in dynamite an adequate material. According to the "Home and Colonial Mail" experiments are becoming quite popular in South Africa of ploughing by dynamite.

All the leading papers in the rubber producing world, as well as those devoted to planting interests elsewhere, recommend attention to the use of dynamite for estate work. Its employment especially appeals to the author, in connection with Latin America where the transport of even the lightest make of ploughs is difficult, costly and often impossible. In fighting locusts and various other pests, organized explosions tend to their reduction at all stages, whether in the soil or as grubs flying over it.

The author quotes a letter to the "Times of Ceylon" from Kalkudah in the Eastern Province of the island, referring to the advantages of using dynamite for breaking through the slabs of coral which run from the coast to one and a half miles inland. This coral runs from 2 to 9 feet below the surface, and measures in some places from 18 to 24 inches in thickness.

In conclusion the author remarks that there is no doubt explosives have not only come to stay as a necessary auxiliary to modern agricultural science, but that their use will extend on all sides until they occupy a prominent position in rubber planting and other branches.

POSSIBLE RUBBER PRODUCERS IN THE TEMPERATE ZONE. (*Abstract.*)

By Charles P. Fox.

WHILE the production of rubber in the temperate zone has been regarded as possible, its probabilities are remote and dependent on many conditions. Some of these are: Demand; cost of production; grade of product; influence of supplies of natural and plantation rubber; and the ever recurring spectre of synthetic rubber.

From his investigations extending over fifteen years, the author has found several rubber producing plants suitable for the various sections of the temperate zone. Among foreign plants were *Atractylis and Eucommia*, the most interesting specimen being the *Eucommia ulmoides*, or "Chinese Rubber Tree," said to be hardy in New England. This source of rubber was found only suitable for ornamental forestry. Of native plants, those of possible value as rubber producers are members of the *Asclepiadaceae, Apocynaceae* and *Compositae* families.

Of the true milkweeds, only one is of any importance, *Asclepias Cornuti*, which is very abundant and contains a quantity of milky juice producing 3 per cent. of fair grade rubber. The cost of collecting the latex is, however, prohibitory. The common Indian hemp, *Apocynum Cannabium* is less abundant than milkweed and produces less latex, but the quality of the rubber is better. The third native group named, that of the *Compositae*, include *Souchus* or Sow-thistle, producing an excellent grade of rubber, which is the subject of a German patent of 1885. It grows on a dry barren soil.

Two species of wild lettuce, *Lactuca Canadensis* and *Lactuca virosa*, both produce a thick latex containing rubber. Another promising plant of the arid region is "Strockle's Rubber Bush," a robust member of the *Compositae* family.

As to the arid section of the Temperate Zone, it is amply provided with guayule (*Parthenium Argentatum*) pingue, greasewood and *Candelillia*. It is stated that since the first of these can be successfully grown in Mexico, it should thrive equally well in the Southwest of the United States. Pingue (*Actinella Richardsonii*), with less rubber than guayule, has superior advantages in other respects.

Nevada greasewood contains rubber, as shown by Ellis and Warner's patents of 1902. A large amount of this plant is reported to be available.

In North Mexico and the Big Bend country of Texas there is an immense growth of *Candelillia*, producing rubber and wax, the latter being used in making hard rubber.

Some 15 years ago rubber growing was attempted with *Ficus elastica* in Key West, Florida, but proved a failure, the conditions being too dry and the soil shallow.

The same tree has grown to a large size in the deep, fertile and moist soil near Miami. Rubber as good as the Mexican "Amate" rubber has been grown on a small scale at Palm Beach, Florida, with its large available area of soil suitable in character, seems to offer specially good prospects for rubber cultivation.

While the other plants named are of interest from a botanical point of view, the author considers that only two, guayule and pingue, contain enough rubber to insure profitable working. It is for experimental stations to continue the work of developing the others.

THE PLASTOMETER, A RUBBER TESTING INSTRUMENT (*Abstract*).

By B. Denver Coppage (Wilmington, Del.)

THIS instrument, designed for the use of its manufacturers, the Pussy and Jones Co. of Wilmington, Delaware, is intended to define the plasticity or density of the rubber covered rolls used in paper manufacture. These rolls have to be selected suitable to the paper to be made.

Since the adoption of this instrument there is no uncertainty as to the conformity in plasticity of the rolls with the samples chosen. Plasticity also indirectly indicates elasticity, softness and hardness, density, resilience, etc.

In the plastometer a weight is supported upon a sphere, the penetration of which into the material at the expiration of one minute can be determined. For instance, most grades of commercial rubber may be tested with a hardened steel ball ¼ inch in diameter and a weight of one kilogram. The penetration or indentation of such a ball is indicated to 1/100 of a millimeter. The softer materials would require a larger ball or less weights, or both. The harder materials would require a smaller ball or more weight, or both. Certain very hard materials would possibly require a longer application of the weight than one minute, while certain very soft materials would require less than a minute to obtain satisfactory indications.

The possibility is discussed of utilizing the plastometer for establishing a standard scale of qualities for rubber and for the determination of raw rubber values. The plastometer is used by many leading rubber manufacturers in this country, and by users of paper making machinery at home and abroad. It has so far been developed by a buyer of rubber, while its further development for the benefit of that trade will undoubtedly depend upon the engineers and chemists directly connected therewith.

THE VARIOUS MANIHOTS PRODUCING RUBBER IN THE CENTRAL STATES OF BRAZIL (*Abstract*).

By Dr. J. Santiago Cardwell-Quinn.

DR. CARDWELL-QUINN has contributed an interesting and exhaustive treatise on this subject, but he was not able to submit it in time to be read at the conference; and in fact it was not received by the secretary of the conference until a few days ago, and too late to make it possible to present an adequate abstract of it at this time. It will be reproduced in full in a later issue, and will prove a valuable contribution of the literature of the *Manihots*.

Gutta Percha in Kaiser Wilhelm Land.

NEW GUINEA, the vast island immediately to the north of Australia, is like ancient Gaul, divided into three parts. The western part belongs to Holland, the southern portion to England, and the northeast to Germany (Kaiser Wilhelm Land).

Special attention was directed to the latter by the expedition in 1907-9, organized by the "Kolonial Wirthschaftliches Komitee" (Colonial Economic Committee), the report of which has appeared, after having been for a long time in preparation. It has been compiled by Dr. R. Schlechter, the botanist, who was in charge of the expedition.

The following were the objects of the expedition:

1. Determination of the quantities of gutta percha and rubber worth gathering.
2. Gathering of these crude materials.
3. Instruction of natives as to their gathering.
4. Preparation for and development of gutta percha and rubber cultivation.

The necessary funds were provided by the German Colonial Company, the Colonial Administration, and by the German rubber manufacturing industry.

The expedition reached Kaiser Wilhelm Land on March 12, 1907. From that time until February, 1909, the party remained in the central part of Kaiser Wilhelm Land. They then passed several months in the Waria valley; later on visiting the west-

MAKING CHANNELS ON TRUNK OF A GUTTA PERCHA TREE WITH HOLLOW CHISEL.

ern part of the protectorate and leaving New Guinea late in the year. The results of the expedition are classified into the following heads: gutta percha, rubber, other useful plants; botanical and geographical points.

GUTTA PERCHA.

As far as positively known, there are in the Protectorate of New Guinea, two principal varieties of *Palaquium*, which produce a marketable gutta percha. The first of these, which may

COLLECTING GUTTA PERCHA MILK.

be designated red gutta percha, has been designated by Dr. Schlechter as *Palaquium Supfianum*. The second, as yet undescribed, differs from the first by the baldness of its leaves. This description it is proposed to call *Palaquium Warburgianum*.

Palaquium Supfianum is a tree which attains the height of 100 to 130 feet. The diameter of the trunk approaches 6 feet. The *Palaquium Warburgianum* is very similar to the first-named variety, but grows more quickly and has a greater diameter. Regarding the habitat of the *Palaquium Supfianum*, the expedition found it in almost every region visited, chiefly at an altitude from 300 to 2,500 feet above sea level. It apparently prefers hilly locations, but is also sometimes found in low situations. It favors well drained land, and seems to avoid all places where there is stagnant ground water.

TAPPING.

With a view to defining the best method of tapping, Dr. Schlechter made trials of all the known methods. These were made of horizontal cuts, oblique and vertical cuts, and long and short incisions of various lengths, partly upon trees standing in the forest and partly on those already felled. From these various trials it was seen that the quantity of gutta percha gathered did not pay for the amount of work involved. The extent of these trials led Dr. Schlechter to the conclusion that under the circumstances, the ring methods employed in the Dutch Indies, particularly Sumatra and Borneo, were the only profitable ones, much greater quantity of gutta percha being obtained than by any others.

As soon as a gutta percha tree is found which appears worth tapping, and before the tree is felled, it is estimated in what direction it will probably fall. The forest is partially cleared on the side in question, short trunks of trees being laid crosswise, in order to prevent the tree from falling directly on the ground. The short trunks placed crosswise allow of the more convenient use of the cups placed beneath for collecting the milk, and allow of the rings being brought around the whole

of the trunk, a larger quantity of milk being thus obtained. As soon as the tree has been felled, the rings are cut at distances of about 12 inches apart, around the whole of the trunk.

For the making of these grooved rings, a gutta percha knife

COAGULATING GUTTA PERCHA MILK BY BOILING.

was used by the expedition, such as was already in use by Malay tappers in Borneo and Sumatra. These knives had in general the form of a hollow chisel.

The grooves cut out had at the upper edge a width of about an inch, and were cut deep enough to reach the cambium layers. Otherwise a limited yield of milk would result.

GATHERING.

While some of the workers were engaged in making the rings on the trees, others were placing under each ring one or two receptacles into which the gutta percha dropped, so far as it had not begun to coagulate in the grooves. For convenience and economy, these receptacles were made on the spot from palm leaves, or other leaves of leathery texture. As soon as the milk ceased to fall, which usually took place in 15 to 20 minutes, the contents of the receptacles were emptied into large vessels, to be boiled, coagulated and pressed into gutta percha. When water was available it was found desirable to add some to the milk, as the latter was thereby to some extent washed,

KNEADING AND PRESSING GUTTA PERCHA CAKES.

and the particles of resin could thus be removed in the watery residue. The milk coagulated in boiling in about ten minutes.

COAGULATION.

After trying various methods of coagulation, Dr. Schlechter was obliged to revert to the plan of boiling already in general use in Borneo and Sumatra, as being the only system adapted for forest purposes.

TIME OF TAPPING.

The time of tapping was investigated on various occasions. Trees tapped on the day of felling did not show any noticeable difference as compared with those tapped immediately after being cut down. Even after three days the milk flowed well, but it had begun to thicken and coagulation had evidently commenced. A week after felling, the yield was very small, as the bulk of the milk had coagulated. Trees tapped in the morning gave better results than those tapped in the afternoon.

The observation of a number of trees extending over several months, indicated that after heavy rainfall, gutta percha milk flowed much more thinly than after the lapse of several warm days without rain.

AGES OF GUTTA PERCHA TREES.

Owing to the fact that trees exposed to light and air often form more than one ring a year, while those in dark locations form less than that average, Dr. Schlechter remarks that rings do not indicate with certainty the age of gutta percha trees. He adds that it is unadvisable to tap young trees. He has usu-

RUBBER READY FOR SHIPMENT (ABOUT 4 LBS. DAY'S WORK FOR 6 NATIVES).

ally tapped only such trees as have at a height of 40 inches a diameter of at least 12 inches. In many cases, however, the yield was small.

PROGRESS OF GUTTA PERCHA GATHERING.

The gathering of New Guinea gutta percha has been considerably developed, owing to the energy of the German government, and is being carried on by natives, under the guidance of Malay experts, brought for that purpose from Sumatra. Being forced to earn so as to pay their "cottage tax," these natives have overcome their natural indolence. Gathering gutta percha being an occupation which brings them in money, they have every inducement to follow it. The government buys all the gutta percha the natives bring in at a price equaling about 11 cents per pound.

ADVISABILITY OF GOVERNMENT PLANTATIONS.

From the results of the expedition, Dr. Schlechter advises the German Colonial Government, following the example of England, Holland and France, to establish gutta percha plantations in New Guinea, the climate of which is more suitable for the purpose than that of the other German colonies. These plantations, when found to be profitable, might serve as a plant-

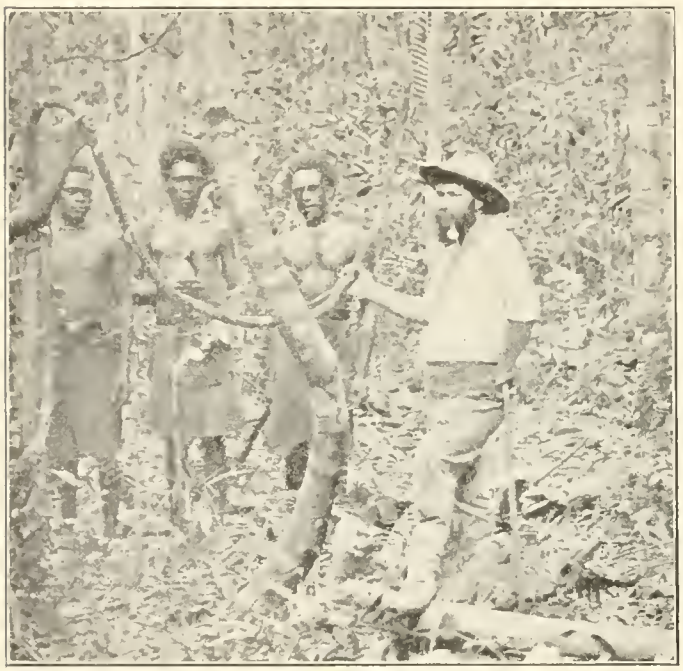
ing school for private undertakings, being thus in a position to always supply the requisite quantity of seeds at the right time.

STORAGE AND SHIPMENT.

On the coast there had been erected a special storage warehouse with a cemented basin large enough to hold about 4 tons of gutta percha. After being prepared in the forest, it was brought to the coast in bags by the first opportunity, being kept cool and shaded from the sun's rays. On reaching the coast it was stored in the above-mentioned basin and kept under water up to the time of shipment, the basin being boarded over in order to be kept in darkness. Ample ventilation was, however, provided.

NEW GUINEA'S RUBBER VINES.

Dr. Schlechter discovered six rubber vines, of which only four have been technically described, belonging to the *Apocynaceae*. The most important of these is the *Parameria Wariana*, of the Waria territory, which is very long and often as thick as a man's arm. It often climbs into the tops of the highest trees, from which it spreads over several others. The branches are very



PRIMEVAL FOREST ON THE UPPER MOROBE RIVER, IN WHICH THE *Parameria Wariana* VINE IS FOUND.

slim and have a large quantity of leaves. Besides these four *Apocynaceae* there are two *Ficus* vines in Kaiser Wilhelm Land: *Ficus Hypaphaca*, and *Ficus Supfiana*. In the annexed illustration is shown a forest on the upper Morobe river, in which the *Parameria Wariana* rubber vine is found.

The report is supplemented by some effective illustrations, a few of which are herewith reproduced, showing the various stages in the gathering and preparation of gutta percha in Kaiser Wilhelm Land.

RUBBER PROSPECTS IN PORTUGUESE EAST AFRICA.

THERE is every reason to believe that rubber will soon become an exceedingly important industry in Portuguese East Africa. The rubber forests are extensive, and the *Landolphia* vines from which the rubber is extracted are profuse. With organization and working capital there is no reason why the export of rubber should not jump within two years to over 500 tons annually. While the percentage of rubber to waste in the vines is small as compared, for instance, with the output of latex from a young Ceara tree, the abundance of the vine and its remarkable powers of recuperation are factors which more than make up for the low percentage of rubber to waste.

THE WORLD'S PRODUCTION AND CONSUMPTION OF RUBBER.

In July last, it will be recalled, Mr. Arthur Lampard, chairman of the Rubber Plantations Investment Trust, estimated the current year's production as about 91,000 tons and the consumption as about 103,000 tons. Closer data now available enabled him at the December meeting of the United Serdang Rubber Plantations to revise his estimates, which now stand respectively at 104,700 and 108,250 tons.

Details of the estimates are as follows:

PRODUCTION, 1912.	July Estimate. Tons.	December Estimate. Tons.
South America (East Coast)	39,000	40,700
South America (West Coast)	.....	2,000
Central America and Mexico	5,000	5,000
Africa	15,000	15,000
Assam, Rangoon and Borneo	2,500	2,500
Guayule and Jelutong rubber	.....	10,000
Plantation	28,500	28,500
All other sources	1,000	1,000
Total tons	91,000	104,700

CONSUMPTION, 1912.	July Estimate. Tons.	December Estimate. Tons.
America	47,500	48,000
Great Britain	15,000	17,250
Germany	15,000	16,000
France	10,000	10,000
Russia	7,000	7,000
Belgium	1,500	2,000
Other countries	7,000	8,000
Total tons	103,000	108,250

The increase in figure of production is in great part only apparent, chiefly arising from guayule, and jelutong rubber having been omitted in the July estimate. With that rectification the quantities would stand thus:

	July Estimate. Tons.	December Estimate. Tons.
Production	101,000	104,700
Consumption	103,000	108,250
Excess of consumption over production	2,000	3,550

Increased consumption is thus shown; the excess of consumption naturally finding its level in the position of the visible supply, which illustrates Mr. Lampard's figures. On November 1, 1911 it stood at 11,104 tons and on November 1, 1912, at 8,818 tons; the reduction having been 2,286 tons in the twelve months. By December 1 it had been further reduced to 7,832 tons, the falling off being 3,272 tons; this figure practically corresponding with the estimate of an excess of consumption in 1912 over production of 3,550 tons.

These figures bear out Mr. Lampard's contention, that consumption is going ahead quicker than production.

DIVIDENDS PAID BY THE HIGHLANDS AND LOWLANDS CO.

The Highlands and Lowlands Para Rubber Co., Ltd., whose plantation is in the Federated Malay States paid a dividend of 50 per cent. during 1910, and interim dividends of 22½ per cent.; with a final dividend of 15 per cent., making 37½ per cent. in 1911. It also paid two interim dividends in July and October of 1912—aggregating 15 per cent.

The Rubber Industry in Hawaii.

SEEING the favorable results of recent analyses of Hawaii rubber at New York, interest attaches to a special detailed report on the subject of the Hawaiian rubber industry, by Mr. E. V. Wilcox, Special Agent in Charge at the Hawaii Agricultural Experiment Station, Honolulu. The report covers the ground very thoroughly, dealing with cultivation, methods of tapping, the questions of rainfall and altitude, the most effective measures for combatting the ravages of pests and a comparison of *Hevea* and Ceará as desirable trees for the Hawaiian Islands. It begins with a description of the area now under cultivation.

AREA NOW UNDER CULTIVATION.

There are at present about 1,500 acres under rubber, and as further plantings are contemplated, there is a possibility of this

FOUR YEAR OLD CEARA TREES.

acreage being considerably enlarged. At the present there are in all about 1,200 acres planted in Ceara, and 300 in *Hevea*. Organized planting dates from the year 1905, though rubber trees as old as 20 years are to be found in the territory.

Five companies operate the principal part of the industry, with the following planted holdings:

	Established.	Capital.	Rubber acreage planted (approximately).
Nahiku Rubber Co.....	1905	$150,000	480
Hawaii American Co.....	1905	50,000	245
Koolan Rubber Co.....	1906	30,000	275
Nahiku Sugar Co.....	1906	.....	250
Pacific Development Co..	1907	80,000	250
Total	....	.....	1,500

The Pacific Development Co. contemplate ultimately increasing their planted acreage to 600 acres.

In addition to these large companies there are about a dozen small plantings, aggregating about 50 acres, so that the total area specifically devoted to rubber is about 1,550 acres

The rubber companies of Hawaii have so far been operating with local capital, and have been trying to demonstrate the rubber possibilities of the territory. At present there are too few trees of tapping age to allow of a definite statement of cost or profit. The results of the tappings at the experimental station, and of those made as trials by the managers of the different plantations, agree to such an extent, that as long as the market price is from 75c. to $1 per pound, satisfactory results may be anticipated from plantings of Ceara rubber in Hawaii.

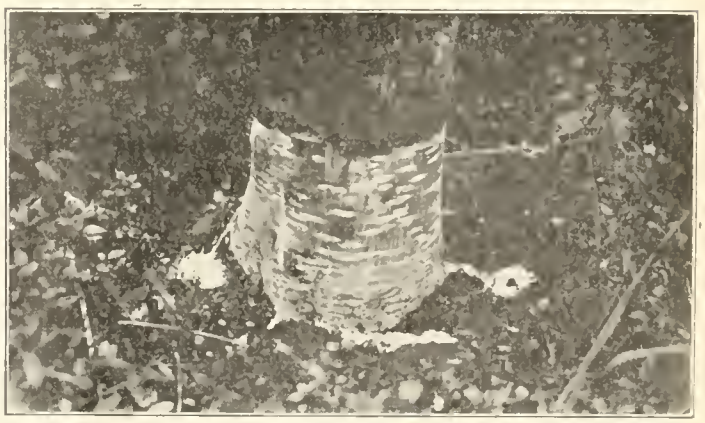
BENEFITS OF CULTIVATION.

It was at first thought that rubber trees would grow sufficiently well without cultivation, but it was soon found that the cost of cultivation was made up for by the more rapid growth of the trees. Cultivated trees at two or three years of age are, on an average, larger than uncultivated trees at five or six years of age. By the adoption of a suitable method of cultivation, at least two years could be cut off the period of waiting for trees to come to maturity. Cultivating the trees seems a necessity under Hawaiian conditions. The unusually rough nature of the land, and the tangle of shrubby undergrowth rendered horse cultivation out of the question, while the cost of hand-cultivation promised to be extremely high. Recourse was had to chemical spraying for destroying the weeds. Sulphate of iron was fairly satisfactory, but arsenite of soda gave much better results and has been generally applied. The cost of spraying is from $1.25 to $2 per acre. As soon as the woody growth is killed, the soil can be readily tilled; the tillage and the action of the sun bringing about the oxidation of the soil, thus greatly improving its physical and chemical properties.

TAPPING.

Tapping experiments were begun on trees at two years of age and have been continued. During the present season about 50,000 trees are being tapped, and from these a considerable amount of rubber will be extracted. Of the various methods used, the half herring-bone system is perhaps the most promising. On account of the Ceara dropping its leaves annually, it seems desirable in Hawaii to allow the trees complete rest from February to May.

Of the various receptacles for catching the latex, the ordinary Japanese tea cup has given the most satisfaction. The flow of latex is best from daylight to ten o'clock, the cost of tapping depending largely upon the experience of the worker. After a few weeks' experience, a man can readily tap twice as many trees as at first. The oldest trees experimented upon are about five years old. From such trees it is possible to obtain a pound of dry rubber for each 100 trees at a single tapping, and at present price of labor, a pound of rubber seems obtainable at a cost of 50 cents. This can probably be reduced as the men acquire greater experience.



TAPPING METHOD.

RAINFALL.

In the regions where rubber is chiefly grown in Hawaii (the Nahiku district of Maui and the Puna district of Hawaii), the rainfall is rather high (100 to 200 inches a year). Most of the land is exceedingly porous, particularly in Puna, where the

soil is underlaid with a peculiar broken lava. Thus even the heaviest falls do not produce running streams of water.

ALTITUDE.

The Hawaiian rubber plantations are situated from near sea level to the height of about 1,400 feet. Rubber plantations are mostly on the windward side of the islands, where the rainfall is much higher than on the leeward side. Ceara rubber appears to thrive well at the highest level at which it has been planted, but *Hevea* seems to be more susceptible to the lower temperatures of the higher altitudes.

INTERPLANTING.

On the Maunawili ranch, the cultivated area, of which is largely devoted to coffee, several thousand Ceara trees have been planted at regular intervals among the coffee.

PESTS.

No serious pests have been encountered in Hawaii. Seedlings are sometimes attacked by cut-worms, but these pests can be controlled by the use of poisoned bait or by sections of bamboo stems being placed around each young plant. The ravages of tree rats have been controlled, as a result of the thorough cleaning up accomplished by spraying. There is a tendency for a shot-hole fungus to become troublesome on *Hevea* leaves.

CEARA VS. *HEVEA*.

The first plantings of rubber were almost exclusively Ceara, this species having given satisfaction in Ceylon as to growth. With the increased planting of *Hevea* in the Orient, a livelier interest was manifested in Hawaii regarding that variety, and all the plantations put out experimental plantings of that kind. It was thought that its large yield would make up for its slowness of growth. *Hevea* has, however, grown so slowly that the tendency is at present again in favor of Ceara. In addition to the ordinary Ceara (*Manihot Glaziovii*) experimental plantings have been made of *M. Dichotoma* and other species of this genus.

CEARA RUBBER.

Rubber experts who have examined the samples submitted of Ceara rubber from young Hawaiian trees, have never made the value more than 10 cents below that of the finest plantation Pará from Ceylon. The fact that Ceara has come largely from wild trees and has been collected by careless methods, has placed it in a position below its real value, on account of the unfavorable impression created by its appearance. Practical tests show it is slightly inferior in tensile strength to the best plantation Pará, and that it is a little high in resin contents. These defects may be partially due to the Hawaiian trees being young, which would render them likely to contain more resin than should be found in the latex of older trees. Even prepared without special care, Ceara rubber keeps in good condition for two years or more, without losing its tensile strength or developing especially disagreeable odors.

For some time past it has been felt that a combination of all the rubber interests in the island of Maui would be a decided advantage, and a strenuous effort is being made to bring about such a combination. Three of the largest companies have combined to the extent of employing the same manager for the three concerns. Whether or not a combination is made, it is certain that there will be one factory, and that the Hawaiian rubber which comes on the market in the future, will be of uniform quality and standard. The methods thus far used in preparing the rubber do not involve the use of any chemical, either in tapping, coagulating or washing. It has been found possible, by observing care, and by washing in water and passing through simple rollers, to obtain a clear rubber of firm consistency and good light color.

The manager referred to as being in charge of three companies is Mr. Wilbur A. Anderson, general manager of the Nahiku Rubber Co., Limited; Hawaiian-American Rubber Co., Limited, and Koolan Rubber Co., Limited. He is also superintendent of the Rubber Sub-station, United States Experimental Station, Honolulu, and was commissioner to the recent exposition. To his courtesy THE INDIA RUBBER WORLD is indebted for Mr. Wilcox's report, the leading points of which have been reproduced above.

THE WAY IT IS COLLECTED FROM BASE OF TREE.

AFTER GOING THROUGH WASHING MACHINE.

READY FOR SHIPMENT TO NEW YORK.

The New York analysis of Ceara rubber grown in Hawaii, referred to above was as follows:

Loss in Washing and Drying.	Tensile Strength.	Stretch.	Resin.
1⅝%	1710	15¼"	3.98%
⅔%	1660	15"	4.00%
1%	1660	15"	2.12%

Messrs. Alexander & Baldwin, Limited, of 82 Wall street, are the New York agents of the three companies under the management of Mr. Anderson.

RUBBER VS. LUXURIES.

THE value of crude rubber imported into the United States during the year 1912 is estimated at $100,000,000—a very large sum, but only slightly in excess of the value of the importations of two classes of goods that are most distinctly luxuries. The Bureau of Commerce and Labor estimates that for the year just passed the importation of diamonds and other precious stones will equal between $40,000,000 and $50,000,000, while the value of the importation of laces and embroideries will equal the same amount; the two together will be close to $90,000,000, and possibly $100,000,000, showing that crude rubber, which has long since become one of the necessaries of life, holds a position of about equal importance, in American consumption, with earrings, brooches and millinery.

STATE OF PARA STATISTICS.

THE annual "Relatorio" submitted to the Governor of Pará by Dr. José Antonio Picanço Diniz, contains a large number of interesting statistical returns, embracing results for the world, for various countries, for the Valley of the Amazon and for the State of Pará.

In a table (reproduced as Table A) of the world's production for seventeen years, there is shown an increase of annual quantity from 34,277 tons in 1893 to 88,000 in 1911, or a gain of about 160 per cent. The rate of increase in Amazonian rubber was from 20,700 tons in the former year to 42,820 in the latter, being at the rate of about 110 per cent.

TABLE A. WORLD'S PRODUCTION OF RUBBER (IN TONS). (PARA GOVERNMENT ESTIMATE.)

YEAR.	Amazonia.	Africa, Central America and Malaysia.	India Plantation).	
1895	20,700	13,577	.....	34,277
1896	21,550	16,175	.....	37,725
1897	22,650	17,240	.....	39,890
1898	21,900	23,359	1	45,260
1899	25,100	24,686	4	49,790
1900	26,750	27,177	4	53,931
1901	30,300	21,547	5	51,852
1902	28,700	23,638	8	52,306
1903	31,100	24,827	21	55,948
1904	30,000	32,080	43	62,123
1905	33,900	35,428	179	69,507
1906	35,250	32,022	646	67,918
1907	37,300	30,171	1,175	68,646
1908	38,850	26,061	2,120	67,031
1909	39,150	26,522	3,700	69,372
1910	38,150	23,747	8,103	70,000
1911	42,820	32,980	12,200	88,000

Consumption is shown in another table to have increased in the aggregate in about the same proportion as production—from 33,952 tons in 1895 to 88,000 in 1911. The latter amount is shown separately for 1911 at 46,000 tons for Europe and 42,000 for America, compared with 16,908 tons and 17,044 tons, respectively, for 1895.

Special interest attaches to the analysis of the 42,820 tons shown as the production for 1911 of Amazonian rubber. This figure is dissected as follows:

TABLE B. PRODUCTION FOR CALENDAR YEAR 1911.

	Tons.
Federal Territory	10,580
State of Amazonas	10,420
State of Pará	10,300
Republic of Bolivia	2,950
Republic of Peru	2,490
State of Matto Grosso	2,100
Republic of Venezuela	50
Republic of Colombia	30
*States of Ceara Bahia Maranhao	3,900
Total	42,820

*Also including Maniçoba, Mangabeira and Soria.

Another table dealing with the year ending June 30, 1912, gives a dissection of the total shipments from different ports to the various destinations. Summarized, it shows following results:

TABLE C. EXPORTS FOR YEAR ENDING JUNE 30.

Shipments from—	1910-11. Tons.	1911-12. Tons.	Shipped to—	1910-11. Tons.	1911-12. Tons.
Pará	14,972	21,577	New York	13,596	20,613
Manaos	16,142	16,664	Liverpool	16,522	15,529
Iquitos	2,372	2,498	Hamburg	777	690
Itaquatiara	108	166	Havre	2,615	3,914
			Antwerp	84	155
Total	33,594	40,905	Vigo	.....	4
			Total	33,594	40,905

This last table, dissecting the shipments to June 30 last, shows that America took 20,613 tons of Amazonian rubber, as compared with 13,596 tons for the last fiscal year. The above figures are those of the Pará authorities. Those of the American Department of Commerce and Labor for the last six years show:

RUBBER IMPORTS FROM BRAZIL (FISCAL YEARS).

	Pounds.
1907	40,286,751
1908	32,645,173
1909	43,993,670
1910	39,510,920
1911	31,020,764
1912	46,762,744

While naturally dealing with the various questions from the point of view of the state of Pará, the important position of that state as a source of supply adds importance to the statistical information given.

AMERICAN RUBBER GOODS IN BRAZIL.

As many people in the rubber trade know, there is to be a notable exposition in Rio de Janeiro next May and June. This exposition will be open—not only to Brazilian exhibitors—but to foreigners as well, and in order to encourage foreign entries the Government will allow all exhibits to enter free of import duty—duties to be paid only where foreign exhibitors sell their products after the exhibition is over.

Probably some American manufacturers will avail themselves of this opportunity to show their product in this progressive part of the world, and those who do not feel like going to the expense of making such exhibits can arrange to have their factory and its products shown to the Brazilians through the medium of moving pictures. Those who visited the recent Rubber Show at the Grand Central Palace, New York, will recall how popular the moving pictures of South American scenes proved to be. They were given four times a day and the auditorium was almost always crowded. Those moving pictures were under the direction of Mr. D. M. Hazlett. He is going to have a moving picture exhibit in connection with the Rio de Janeiro show and intends to devote a considerable part of it to the products of American mills. Any manufacturer who is interested in having his wares displayed in this way can get all the particulars from Mr. Hazlett. His address is 3680 Folsom avenue, St. Louis, Mo.

REDUCTION OF BRAZILIAN EXPORT DUTY ON RUBBER.

As indicated by the summary of the new Brazilian legislation in the June issue (page 427) of THE INDIA RUBBER WORLD, the Federal Government was authorized to negotiate with the states of Pará, Amazonas and Matto Grosso for the gradual reduction of the present duties, until a maximum diminution of 50 per cent. had been effected. It is reported that from January 1, 1913, there will be a reduction of 5 per cent. in the duty on shipments from Pará and Amazonas, in accordance with a recent arrangement between the central government and the two last named states.

RUBBER GOODS EXPORTS TO BRAZIL.

By the courtesy of the Department of Commerce and Labor, advance figures have been received of the rubber goods exports to Brazil for the year ended June 30, 1912.

Comparing the figures with those of 1909 and 1911, the following results are shown:

	1909.	1911.	1912.
Belting, hose and packing	$25,310	$34,442	$40,777
Boots and shoes	23,746	35,548	41,036
Automobile tires	.....	10,112	24,952
All other tires	.....	7,767	11,273
All other manufactures	35,406	62,596	81,203
	$84,462	$150,465	$199,241

An increase of almost 150% within three year is decidedly encouraging.

The Editor's Book Table.

THE TESTING OF MECHANICAL RUBBER GOODS. CIRCULAR No. 38 of the Bureau of Standards. Washington, 1912. [Paper, 38 pages.]

THIS valuable pamphlet combines a number of known facts with interesting details of the system of rubber testing in use at the Bureau of Standards. It is divided into four parts: Introductory (embracing crude rubber, rubber substitutes and reclaimed rubber); manufacture of mechanical rubber goods; physical testing of rubber; and the chemistry of rubber.

Chief interest, from the point of view of the subject treated, attaches to the third section, dealing with the tension, friction, hydraulic pressure and steaming tests most commonly employed. The descriptions are copiously supplemented by illustrations and diagrams.

In dealing with the fourth section, it is remarked that it is only recently that we have known very much of the chemical nature of rubber. The synthesis of rubber, acetone extraction, vulcanization and the determination of the amount of rubber in a vulcanized compound are successively dealt with.

In conclusion, it is stated that the methods of analysis in use at the Bureau of Standards are now in course of thorough testing and revision. It is hoped within a comparatively short time to publish the results of the work.

Reference is made to various standard works and publications dealing with the subject, including the INDIA RUBBER WORLD and the volume on "Crude Rubber and Compounding Ingredients," by H. C. Pearson.

GREEK REFINEMENTS. BY WILLIAM HENRY GOODYEAR, M.A. Yale University Press, New Haven, Connecticut. [Quarto, 227 pp., board covers.]

It is safe to say that all rubber men—at least those in the Eastern section of our country—whose outlook is not bounded by the four walls of their factory or storehouse, who keep abreast with the intellectual life of the age, know—by reputation at least—Professor William Henry Goodyear, the scholarly curator of Fine Arts, at the Brooklyn Institute of Arts and Sciences. But probably there are many rubber men who are

THE THESEUM AT ATHENS.

not aware that Professor Goodyear is the son of Charles Goodyear. The beginnings of the rubber industry in Charles Goodyear's day—though of tremendous prospective importance, were so small in actual commercial production as compared with the vast proportions of the industry today—that Charles Goodyear, in the minds of most rubber men seems like a figure in the distant past; but, as a matter of fact, his death occurred only a half century ago, and his son is not only still living among us, but is adding distinction to the great name he inherited.

Charles Goodyear, though his life was devoted to scientific achievements, was a man of genuinely artistic temperament. That was shown in many of the devices he invented, and the famous exhibitions that he gave abroad, and also to a considerable extent by the excellent drawings that he made of his own inventions. His son has held a distinguished position for over 40 years, in the world of art—particularly in that department of art devoted to architecture. His accomplishments in his chosen

THE MAISON CARREE AT NIMES.

field have been recognized by the leading architectural societies of Europe, and he has been made an honorary member of the Architectural Associations of Rome, Venice, Milan, and Edinburgh, and of the British Society of Architects. He is also the author of many accepted works on the history of architectural art, among them, "Roman and Mediaeval Art," and "Renaissance and Modern Art." The latest contribution from his pen—which is just from the press—is a beautiful volume entitled, "Greek Refinements." It is a book of 227 pages containing a large number of illustrations of ancient Greek temples—some of the illustrations being full page size. Both cuts and text are printed on a heavy paper of fine quality, and the book is bound in buckram covers lettered in gold.

Professor Goodyear first became interested in the Greek refinements (which is another name for various curvatures— perpendicular and horizontal—and other departures from the strictly normal in architecture) over 40 years ago, when in the years 1869 and 1870 he made an exhaustive study of the monuments, the cathedral and other notable architectural objects in Pisa. He wrote an article on this subject entitled "The Lost Art," for "Scribner's Monthly," in the early 70's, but owing to other demands upon his time he made no further literary contributions on this topic for over 20 years—until 1895. Since that time he has devoted a great deal of attention to these peculiarities in the ancient Greek temples, and also in cathedrals and other specimens of mediaeval architecture, and the first result of these years of study and observation of this fascinating phase of early architecture is the book just published which will be followed later, undoubtedly, by a book on the refinements of mediaeval architecture.

This book will be found interesting—not only by professional architects, but by all those to whom art in any of its phases makes an appeal, and also by those who are interested in history —the most absorbing chapters of which were written by the ancient Greeks with their wonderful literature and their unsurpassed and enduring architecture.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

BUSINESS generally is about the same as was reported last month. The close of the year naturally tends to slow down certain lines, but this is more than made up by increased activity in others. The mechanical branches suffer most at this season, because of the nearly universal custom of purchasing agents to defer buying as far as possible until after the opening of the New Year. Toys, druggists' goods and similar lines are still going with their accustomed regularity, and clothing seems to be as much called-for as ever. Notwithstanding the weather, or perhaps because of it, the tire business flourishes. The one branch which is suffering most is the rubber footwear trade, which is quiet because of absence of snow.

* * *

The Monatiquot Rubber Works Co. is installing a third engine at its plant in South Braintree, Massachusetts—this one of 450 horse power. It is also erecting another brick building, which will accommodate a double line of shafting to work a dozen new mills which will be installed. This company owns a tract of about 112 acres between the Monatiquot River and a branch of the N. Y., N. H. & H. R. R. and also about 25 acres on the gentle slope of a hill the other side of the river. Under the planning of landscape architects this latter tract is to be laid out in streets, all of which will bear appropriate Indian names, Squantum, Samoset, Massassoit, etc. Small lots will be offered at such terms that employes can be enabled to build, and thus form a little community under the finest auspices of health, comfort and rural beauty.

As is the custom of this company at Thanksgiving, turkeys were given to all the married employes both at the factory and at the office. The single men received cigars and the girls boxes of candy. The good feeling between employer and employe at this establishment is noticeable in the *esprit de corps* manifest in all departments.

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The Boston Continuation School has as its pupils a fine lot of young shoe clerks, who are learning much about their business. Last month a practical lesson was given them of how a rubber overshoe was made. Miss Elizabeth A. King, one of the star rubber makers at the Converse Rubber Shoe Co.'s factory at Malden, brought to the school the various parts which go to make a storm overshoe. The manufacture of the sheeting and the cutting and coating of the various pieces was explained, and a rubber shoe made slowly, to show every detail. Then Miss King made another while the students held watches to time the work. The process of vulcanizing and varnishing completed the lesson.

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The Maynard Shoe Co., Claremont, New Hampshire, which has manufactured McKay sewed rubber-soled shoes for some ten or fifteen years, and cemented tennis shoes for a shorter period, has sold all its rubber machinery to the W. C. Coleman Co., of this city, which will probably dismantle the factory where these goods are made. The factory has been sold to the Sullivan Machinery Co., which will utilize it in extending their business. It is reported that the tennis goods end of the Maynard Shoe Co. will be transferred to the Beacon Falls (Connecticut) Rubber Shoe Co., and that the rubber heel business will be discontinued. The Maynard Shoe Co. will, however, continue to manufacture leather shoes for the jobbing trade.

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Work is proceeding right along on the new power plant of the Boston Woven Hose and Rubber Co. at Cambridge. Two units were put in commission on Saturday, December 21, and were found ready for the task set out for them. The whole plant will not be ready before the first of March. The new brass finishing department is now in full running order. Other important improvements are under way, all of which is a proof of the prosperity of the company, and the continued demand for its many branches of product.

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The two buildings on Atlantic Avenue adjoining that in which the Elastic Tip Co. has its office were badly damaged—in fact almost entirely destroyed—by fire early last month, and at one time it seemed certain that the flames would spread to No. 370, but by arduous work this was prevented. Nevertheless the company sustained considerable damage by water, which, however, did not materially interfere with their business.

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The Enterprise Rubber Co. has a prominent store on Federal street in this city, which is passed by thousands every hour of the business day. There are two very large windows of plate glass, and these are not only attractively arranged, but they are filled with most seasonable displays. During the football season the gridiron is reproduced and rubber toy animals are used to personate the players. In the hunting season camp scenes are arranged to advertise clothing, hunting footwear, etc. If the day be rainy the windows, or at least one of them, is sure to contain a display of waterproof coats, etc., while a fall of snow is a practically automatic order for the window dresser to arrange a display of Candee footwear. Undoubtedly this timeliness brings in a large amount of retail trade. At present writing the windows present a true Christmas appearance, and toys of red rubber are prominently displayed in a holly-decorated setting.

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Speaking of window displays reminds me that recently there was on exhibition in the window of the Goodyear Rubber House on Boylston street, a splendid portrait in oil of Charles Goodyear which was painted by Miss Frances Chamberlin, a portrait painter of more than local celebrity. Miss Chamberlin is the niece of Mr. Robert Josselyn, the proprietor of the Goodyear Rubber House which was established thirty-two years ago, and which occupied one store on School street for three decades, moving to Boylston street only about a year ago, owing to the southward march of Boston's retail centre.

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The Eastern Rubber Co., wholesale dealers in rubber clothing and footwear having outgrown their recent quarters, have moved to 72 High street where they now occupy two large floors for stock shipping and offices. They have been working at a disadvantage owing to the increase of their business, as they could not secure additional room at the Purchase street building where their store was, and had to use a floor on Congress street for their surplus stock. The new location enables them to carry on all the details of their business under one roof.

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Richmond L. Chipman's usually pleasant and smiling face is more so than ever just now, as he informs his friends that Richmond L. Chipman, Jr., joined the family December 14, 1912 and is already making a noise in the world. Chipman *père* says that he is going to teach the young scion to chew rubber, so that by the time he is five years old he will be an expert in all varieties of crude gum, and by the time he graduates from college he will be a full-fledged crude rubber man.

While this is the first boy in the Chipman household, he is not the first child. Mr. Chipman has two charming daughters, and he is a most artistic and expert amateur photographer. Recently the kodak people asked for specimens of amateur photographic work. About 18,000 samples were sent and only 1,200 of these

were chosen, and among these was one of Mr. Chipman's photos of his younger daughter. This picture occupies a place of honor in the Kodak exhibition now being shown in the large cities of the United States. Mr. Chipman's picture of his elder daughter was similarly honored in the previous Kodak exhibition.

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The Boston Belting Co. state that their business at Chicago has so outgrown the quarters occupied in that city as to necessitate a removal, and that the new location is at 172 West Randolph street, where with more room and increased facilities the company is much better enabled to serve its customers.

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The well known rubber footwear firm of William F. Mayo & Co., of this city, has changed over into a corporation, named the William F. Mayo Co. This was recently incorporated under the laws of Massachusetts, with a capital stock of $150,000. This in no wise changes the personnel of the concern, the three partners owning all the stock and continuing as before. William F. Mayo is president, and his sons, Geo. H. Mayo and William H. Mayo are respectively secretary and treasurer.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

THE Goodyear Tire and Rubber Co. has invented a rim gauge through L. A. Falor, of the motorcycle tire department, and is supplying the trade on application. With this gauge the dealer can tell in a moment the most suitable-sized tire for any given rim. One simply inserts into the rim the correct gauge length and reads on the proper section of the gauge the exact size to be used. The tire size is printed boldly on the section fitting the rim.

The new offices of the Goodyear Tire and Rubber Co. were formally opened by a banquet December 7. Fully 700 persons attended the banquet and dance in the new office dining room. F. A. Seiberling, president of the company, was toastmaster. After the banquet, a dance followed until midnight. In a short address, Mr. Seiberling thanked his employes for their loyalty in helping to build up the great industry. He called attention to the fact that the office force of the Goodyear company in 1899 consisted of but seven people, while at present it consists of 700.

The company has made it possible for the employes from now on to secure meals at the restaurant of the plant. A souvenir program of the occasion consisting of a booklet, well illustrated, giving an interesting account of the remarkable growth of the Goodyear company was given to each person attending. Mr. Seiberling attributes the success of the company to a great extent to the loyalty and industry of the many, who, in subordinate offices have done their part.

In the combined offices of the new and old plants there are 57,000 feet of floor space. Although at the time the new office building was planned, it was believed to be ample for years to come, yet at present nearly every nook and cranny has been occupied.

The gross amount of business done for the fiscal year now ending was $25,232,207.03. The first year's gross business of the company, summarized under date of September 1, 1899, was $527,080.66.

The first Goodyear office force, back in 1898, upon the organization of the company, consisted of two persons. They were Miss Clara Bingham, still with the Goodyear in a position of trust and responsibility, and Miss Cleveland, now the wife of Dr. Henninger, this city. They came as stenographers. In January, 1899, came W. E. Palmer, now assistant treasurer of the company. Mr. Palmer's duties included those of bookkeeper, timekeeper and bill clerk. Walter Sheill, who later left the company's employ, was collector. C. W. Seiberling, now vice-president, was purchasing agent and sales manager. F. A. Seiberling, now president, was general manager of the company. C. W. Seiberling, and J. A. Burrows, now of Denver, were the sales force. Thus in the first year the entire managerial, office and sales force totaled seven persons. In the factory less than 100 persons were employed at first. There were but two classes of products, bicycle tires and solid carriage tires.

At the recent annual meeting the old board of directors were re-elected, as follows: F. A. Seiberling, Chas. W. Seiberling, H. B. Manton, J. P. Loomis, P. W. Litchfield, G. M. Stadelman and F. H. Adams. Officers were elected as follows: F. A. Seiberling, president; C. W. Seiberling, vice-president; F. H. Adams, treasurer; W. E. Palmer, assistant treasurer; G. M. Stadelman, secretary, and P. W. Litchfield, factory manager.

Frank Seiberling, president of the Goodyear Tire and Rubber Co., has given a contract to construct houses on land which he has purchased in the vicinity of the company's plant. It is the plan at the present time to start the foundations as soon as the weather will permit and have a large number ready for occupancy early in the summer. In the entire lot there will be 500 new homes. These will be sold to employes of the company at cost. It is not the plan of the company to make anything on the proposition but to bring within reach of all its employes homes at reasonable prices. The houses will be modern in all respects, and will add greatly to the appearance of fast growing East Akron.

Count de Almeida of Rio Janeiro, Brazil, representing the Federation of Brazilian Chambers of Commerce, with his son, paid the Akron rubber factories a visit during the first part of December. He was a guest of the Akron Chamber of Commerce and entertained at the Portage Hotel. He says, "Akron is a prosperous city, with big factories and beautiful homes. We often hear of Akron in Brazil, and I was much interested in your great rubber plants." He visited each of the rubber factories and had a conference with each of them relative to Brazilian rubber. He believes that the automobile industry is yet in its infancy and that Brazil will furnish the world with rubber. Count de Almeida is about 50 years old, is a most genial gentleman and is a heavy land owner in Brazil. He speaks several languages, and outside his own language is most at home in French and Spanish. His main purpose in coming to the United States was to study our commercial conditions and to bring closer together the commercial relations between the States and Brazil.

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Clifford B. Myers, former manager of the Diamond Rubber Company's branch at Cleveland, Ohio, has been appointed general manager of the Swinehart Tire & Rubber Co. Mr. Myers was born in Akron and has had quite a number of years' experience in the rubber business.

* * *

Following the general decline of the stocks throughout the country, the stock of the various rubber plants in this city showed a decline of a few points, but within a few days most of them revived to almost their original quotations.

The Marathon Tire and Rubber Co. expects to start its plant and manufacture tires the first of the year.

The B. F. Goodrich Co. has remodeled the immense electric sign which was over the Diamond Rubber Co. buildings and it now reads "The B. F. Goodrich Company, Everything in Rubber."

The Stein Double Clincher Tire and Rubber Co. is being reorganized, details of which are not at present ready for publication.

The Rubber City Machine Co. has increased its capital stock from $10,000 to $30,000. The board of directors is as follows: E. W. Romwebber, Geo. Porter, T. E. Welton, Chas. Henninger, Richard Haag, Chas. Bertsch, and J. H. Romwebber. The officers of the company are as follows: E. W. Romwebber, president; Geo. Porter, vice-president and superintendent; T. E.

Welton, general manager and secretary; and J. H. Romwebber, treasurer.

The Adamson Machine Co. will occupy its new addition shortly after the first of the year.

The Miller Rubber Co. at its annual meeting the latter part of November re-elected the same officers, viz.: Jacob Pfeiffer, president; C. T. Grant, vice-president; F. B. Theiss, treasurer and William Pfeiffer, secretary and assistant treasurer. The board of directors at their meeting December 18, declared the regular quarterly dividend of 2½ per cent. to be paid January 20 on stock of record of January 1, 1913.

THE RUBBER TRADE IN CHICAGO.

(By a Resident Correspondent.)

CHICAGO veterans in all lines of the rubber goods trade learned, long ago, to discount most of the rumors concerning big alleged movements in the way of combinations, new factories, reorganizations, etc. Still, rumors, and rumors of rumors portentious in proportions, continue to be originated and to spread. In fact, in no other lines of business in Chicago do stories of alleged great movements of one kind and another attach to the trade and form the basis of gossip and discussion as they do in the various departments of rubber manufacture and dealings. The prompt denial by President B. G. Work, of the B. F. Goodrich Co., that his concern was about to combine with the United States Rubber, puts a quick end to one of the most interesting rumors of the month.

However, no statement from anybody has caused the rumor that the United States Rubber Co. is to build a new one million dollar plant somewhere in the west to cease to be circulated. It continues to spread among the Chicago rubber men. It is not unlikely that the condition of affairs in connection with this particular movement, is the result largely of the fact that Chicago has no large rubber manufacturing works, and of the hope that, if the story be true, the new million dollar concern will be located here. Against such a supposition, however, the fact is urged that possibilities of labor troubles always exist in greater or less degree in Chicago; and as a result it would be likely that any enterprise of the proportions suggested might seek a location elsewhere.

At the same time it is not an occasion for satisfaction to local rubber dealers or to the people of Chicago generally that the city must draw on places of much smaller size for supplies of mechanical rubber goods. While Chicago is credited with using more automobiles in proportion to population than any other place in the world, the auto makers and owners, must secure their tires from the factories of smaller towns. These conditions have had their influence in increasing the interest in the rumor of the possibility of the erection here of an immense rubber manufacturing plant.

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The month has seen no special changes in the tone of various branches of the rubber business in Chicago. Demands have continued strong and prices are being maintained. General business is showing satisfactory improvement. The hesitancy occasioned by the National political campaign has become a matter of the past. The prospects for 1913 become more and more a certainty. This condition applies to the entire territory covered by the business of the Chicago rubber men. George F. Switzer, who has just returned from a very extensive trip to the Pacific Coast States and the Vancouver section, reports that business in all quarters is in a most satisfactory condition. He calls attention to the prospects based on the arrangements for opening the Panama Canal, and the increased business likely to develop as the result of the San Francisco Exposition. People in the East, he says, do not realize the extent to which the entire country is to be benefited by the Canal opening and the Exposition.

An interesting illustration of the manner and degree in which various large branches of business are correlated, is shown in the late reports of the Allis-Chalmers Company, which turns out so immense an amount of machinery for crushing stones, etc. The stone crushing business, of course, depends to a large degree on certain articles of mechanical rubber for successful working processes. The immense quantity of the stone crushing machinery now being manufactured in response to demands, results in great increase in the business of the Chicago rubber men whose wares are required in connection with such machinery.

Reports of increased business in the lead and zinc mining country and in some portions of the copper mining sections are followed by increased demand for mechanical rubber goods required for mining operations. Great paper mills continue to be running full time and with full crews, and their calls for rubber goods have an influence in increasing the volume of Chicago trade.

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The increased cost of the crude materials used in the manufacture of practically all kinds of rubber goods, particularly cotton duck, is regarded by Chicago experts as sufficient justification for putting up rates on the finished product. It is understood that the officers of the large manufacturing corporations are consultory with their leading representatives in Chicago, with a view to obtaining their opinions concerning the proposed movement. It appears to be expected generally in the trade that arrangements for increased prices will be made early in the coming year.

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Several of the more important Chicago headquarters are arranging for increased facilities for future business, both in the way of enlarged quarters and extension of territory. M. S. Curwen, Chicago manager for the Boston Belting Co., is busy arranging to move into new headquarters, at 172 West Randolph street. Mr. Curwen's present quarters are very extensive, but those into which he will go, as soon as arrangements can be completed, are much larger and will be one of the most attractive places of business in the city. His company has decided, also to take advantage of the increased business on the Pacific Coast, and has secured much larger quarters in San Francisco than those at present occupied.

* * *

While the so-called hard rubber goods in the preparation of which no rubber whatever is used, continue in increasing demand for certain mechanical purposes, the real hard rubber business does not seem to be affected thereby. Local representatives of the leading hard rubber manufactories continue to report excellent business. Probably no other line of rubber goods is affected to so great degree by the demands of the holiday season as those sold by druggists. In this line, the volume of trade is exceptionally large.

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C. W. Lynde, formerly connected with W. D. Allen, Chicago, and later with Pacific Coast Rubber Co. and the Gorham-Revere Rubber Co., has entered the service of the Boston Belting Co., and will have charge of the company's business in Portland, Ore. Mr. Lynde has a remarkably wide acquaintance among the men interested in the rubber goods trade, East and West. His connection with the Pacific Coast Rubber Co. gave him an intimate acquaintance with the conditions of the trade in the section where he is to assume the duties of his new and responsible position.

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When arrangements were made for building the magnificent new station of the Northwestern Railroad Co., on West Madison street, the McIlroy Belting & Hose Co. was one of the concerns forced to move away from that section. The company's works were established in Harvey, with a Chicago office located

at 138 North La Salle street. R. T. Whelply, the Chicago representative of the McIlroy concern, reports that business has increased very largely since the change in location and that the prospects for the coming year are excellent.

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A few years ago, the eelskin seamless, solid woven, cotton belting now so much in demand in this country could be obtained only from England. With the high rate of duties on such material, this sort of belting was very expensive. Now the Boston Belting Co., through its Chicago agency, is furnishing the Middle West, the Northwest and the West with a full line of the materials. Experiments and tests of most severe nature have resulted in agreement on the part of experts that the product of the Boston concern is fully equal to the imported article. This belting is the first of the kind made in the United States.

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An indication of increasing activity on the part of some of the railroad companies is seen in the fact that they are buying more freely in the line of rubber goods than heretofore for some time. The fact that it is necessary to equip many cars idle heretofore, in connection with the movement of the crops, is an explanation of the increasing demand for the output of the mechanical rubber factories for use on cars.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

THE ideal weather that has predominated over the Central States during the past thirty days has been beneficial to the rubber trade in this section. The tire manufacturers report business booming, and indications that there will be no let up in activity, while in the other lines, such as the rubber clothing, golf balls and rubber toys the season has been more active than anticipated.

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Local dealers of adjustable calks and rubber hoof-pads and horseshoes are much interested in the civil anti-trust suit filed by the government in Detroit, December 12, against the Master Horseshoers' National Protective Association and a number of other large manufacturers of horseshoes and calks. Hulbert Marshall, of this city, secretary of the International Union of Journeymen Horseshoers, commented on the action of the government as follows: "The men of our union, numbering 15,000, are employed by the master horseshoers. Why the Association of Master Horseshoers and the manufacturers should be charged with being a horseshoers' trust, I can not understand, for it always seemed to me that they were within the law. I know that the horseshoers did try through agreements with the manufacturers to confine the sale of calks, or toes, and horseshoe pads to horseshoers, but the plan never worked out, and I or anyone else could buy all of these things we wanted. The manufacturers sent out agents who would sell to anybody. A man would buy shoe toes or pads, take them to a shop, and then want his horse shod for fifty cents. Naturally the horseshoers objected and wanted to handle these things themselves, but they never succeeded in confining the sale only to horseshoers."

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To many a poor family Christmas would be of only passing moment, while many poor little tots in Cincinnati would not know the joys of a visit from Santa Claus, if it were not for the activities of W. G. Brown, head of the firm of W. G. Brown & Co., rubber brokers. Mr. Brown has been connected with the Citizens' Santa Claus Committee since its inception, and each year it falls to his lot to be the executive head of that committee. This year a determined effort was made by Mr. Brown and his committee to bring Santa Claus into the lives of 10,000 children. Arrangements were made to distribute Christmas baskets containing dolls, toys, candy, nuts and fruits.

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The Victor Rubber Co., of Springfield, Ohio, filed with the Secretary of State notice of an increase in its capital stock from $60,000 to $150,000.

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The Schaeffer Rubber Co., retail dealers in rubber clothing and rubber sundries, have entered into a lease for a term of eight years, for the storeroom now occupied by them at 116 East Fourth avenue. The lease calls for close to $50,000 as rental for the term.

* * *

J. S. Sackett has placed on the market here a new device, invented by himself, for clamping patches applied to inner tubes. Simplicity is its feature, together with the element of convenience, for the reason that there is no further need of using the foot as a means of pressure while patches are in process of drying. The clamp can easily be packed in any tool chest.

* * *

Not to be outdone by its competitors in this territory, The United States Tire Co. has just completed and is now occupying its own building in Cincinnati. The building is located at 1121 and 1123 Race street, is of re-inforced concrete and terra cotta, three stories in height, and is one of the ornamental structures in the automobile and tire district of the city. The two

NEW U. S. TIRE CO.'S STORE AT CINCINNATI.

upper floors are used as stock rooms, while the first floor is occupied by offices, and is equipped with every modern office environment. From the Cincinnati branch the company covers part of Ohio, Kentucky and Tennessee, having branches under the supervision of the Cincinnati branch in Louisville, Ky., and Dayton, Ohio. R. P. Motte, who for a number of years was connected with Morgan & Wright—before the consolidation—has been selected to head the Cincinnati branch.

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Fred A. Geier, vice-president of the Cincinnati Rubber Mfg. Co., was one of the principal speakers at the banquet following the annual meeting of the Society for the Promotion of Industrial Education, which was held in Philadelphia early in December. Mr. Geier's subject was "What the Manufacturer Can Do to Get Team Play Between the Schoolmaster and the Layman."

* * *

Coughlin & Davis, dealers in auto supplies and rubber accessories, are about to engage in extensive exportations to the nearer points in South America. The firm has been feeling its way to trade relations for some time, and is the first concern in the city, handling such a line, which is going after foreign business.

* * *

The local branch of the Goodyear Tire and Rubber Co. made the best of a record made by one of the Goodyear Non Skid tires, owned by R. Parker Smith, of Fort Wayne. Mr. Smith stated that he has obtained 17,000 miles out of a Goodyear tire and expected to get 20,000.

* * *

The plant and assets of the Ohio Motor Car Company, which was placed in the hands of a receiver on petition of the Diamond Rubber Company several months ago, have been sold to the Northway Motor Co., which has just been incorporated with a capital stock of $600,000 for the purpose of taking over the plant of the former company.

* * *

Local retail dealers in rubber sundries and rubber toys are heralding the movement toward a "safe and sane" Christmas, which has been endorsed by local civic organizations. The movement started is opposed to costly gifts for Christmas, and as presents for children it is urged that toys of an indestructible nature be given as well as harmless. This is a boom for dealers of rubber toys, who for several years have been conducting an advertising campaign to promote the sale of these toys, especially for the smaller children, and it now looks as though their efforts will be rewarded, for dealers report a surprisingly large increase in sales of rubber toys this year over previous years.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

THE status of the rubber industry has not experienced any appreciable change during the past month. All engaged in the business report that the year has been somewhat ahead of the previous one. Indeed the western coast market has grown very considerably and if there were no more houses here than there were ten or twelve years ago, each house would report a substantial increase in business. But the business is now divided between some twenty houses instead of eight or ten. With the increase of business there has been an even greater increase in the number of establishments to take care of it, and this has gradually worked a change in the methods. Even big houses find that they have to look closely to the matter of expenses in order to show a satisfactory profit, and the expense end of the business is more closely attended to now than ever before.

Rents are high in San Francisco and the merchants are insisting that in many cases they are too high. A local rubber merchant found that in Chicago rents in fine sections of the city are no higher than in this city and yet the field there is far greater than here. Outside of the tire industry, which is very active on this coast, the field is limited in comparison with the eastern markets. Of course, owing to the distance between commercial centers, traveling expenses are bound to be higher here and these cannot be very materially reduced, but the feeling is so strong against high rentals that many removals to new locations have resulted, and this is bringing the property owners to realize the fact that it is inadvisable to ask exorbitant prices. As the city has grown following the 1906 fire new buildings have been continually erected, and gradually the rentals in some localities are getting down to a reasonable basis.

* * *

The death of "Tom" Rollins last month comes as a sad bit of news to his many friends in the rubber trade. He has been for several years manager of the branch of the Fisk Rubber Co. located on Golden Gate avenue and was a man held in high esteem and respect by the entire trade.

* * *

W. D. Rigdon, coast manager of the Gorham Revere Rubber Co., with offices on Fremont street; H. S. Sachs, president of the Artgravers Co. of New York; E. H. Farrish, formerly vice-president of the Gorham Rubber Co., and E. S. Vandinwagen and F. C. Cooley, both with the rubber company, have purchased 140 acres of the Fairoaks region, near Sacramento, and each of them will immediately start to improve and develop his portion for country residence purposes. The deal involved $20,000. The Trainor-Desmond Co., which negotiated the sale, has contracted to plant the property to 3,500 trees, leaving space on each tract for bungalows. The varieties of trees to be planted are oranges, lemons, almonds, olives and French prunes. Most of the purchasers intend to build immediately.

* * *

The Goodyear Rubber Co. is rushing work on its new factory on Second and Natoma streets, so that they will be able to move from the temporary quarters which have been found inadequate to the growing demands of the company's business. The new building is of reinforced concrete, two stories in height with basement, and will have a frontage on Natoma street of 145 feet. It is being equipped with every modern facility and within a few weeks the shop will be able to take up its new quarters in one of the finest factories of its kind in the West.

* * *

Arthur Hamlin, who represents the Gorham-Revere Rubber Co. in the Northwest, is now in San Francisco on a flying visit. He looks after the firm's branch stores in Portland, Seattle, Tacoma and Spokane and says that the stores under his supervision are ahead of the business done last year.

* * *

A. H. Gregory, manager of the coast branch of the New York Belting & Packing Co., has returned to this city after visiting the head offices and branches in the East. He finds that his people are very well satisfied with the results for the year and he also notes that most merchants with whom he talked do not apprehend any trouble from the change in political control.

* * *

A. W. Warren, secretary and general manager of the Hodgman Rubber Co. of New York, has been visiting in San Francisco for a few days and will return to New York by way of Portland and Seattle.

Henry D. McCoy, manager of the Chanslor & Lyons Co. of this city, states that his company has secured the agency for the Lee automobile tires made by J. Elwood Lee, and will distribute them through the firm's stores in this city, Los Angeles, Portland, Seattle, Spokane and Fresno. This is the first time that these tires have been represented on the coast.

E. L. Rettig, Pacific Coast manager for the Federal Tire Co., has opened a branch store and shop on Golden Gate avenue.

J. M. Gilbert, general sales manager of the United States Tire Co., accompanied by J. D. Anderson of the corporation, both of New York, have been recent visitors in San Francisco on their tour of inspection of the coast. They report themselves as favorably impressed with conditions here and have decided to increase working facilities and to open new branches.

D. W. McElligott, San Francisco manager for the Halliwell Co., an automobile supply house, has recently taken on a new line, the Jackson-Eno rubber tire specialties

W. D. Newerf, Pacific Coast agent for the Miller tires, has returned from his recent visit to the factory at Akron.

The Panama Rubber Co. has been incorporated at Los Angeles with a capital stock of $1,000,000 by W. H. Newerf, W. E. McCune, A. S. Heilbron, and J. G. Seymour.

The Alcorn Rubber Co. has been incorporated at Los Angeles with capital stock of $20,000. J. A. Alcorn, C. F. Wickland and G. Baker are among the stockholders.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

AN appalling accident occurred about the middle of December in one of the rubber factories of this city. The details are altogether too shocking to be given, but it might serve a good purpose to give simply the essential facts, to show all rubber manufacturers (together, of course, with other manufacturers) the necessity of guarding elevator shafts so completely that accidents of this sort would be impossible. In this particular mill the company had put a safety gate across the opening in the elevator shaft to keep employes from falling down, but this gate was only about shoulder high, so it was possible for an employe to put his head over and look down the shaft. This is precisely what a 15-year-old boy did at just the moment that the elevator was descending above him. He was struck and beheaded as if by a guillotine.

Fire did damage to the plant of the Empire Rubber Manufacturing Co. last week to the amount of $10,000, fully covered by insurance. The blaze started in the enamel and storage department and the firemen had a hard battle for some hours.

The cause of the fire is unknown, but the opinion was advanced by several employes of the plant that the blaze was due to electricity from the friction of machinery. The fire occurred in the afternoon and the employes fought the blaze pending the arrival of the city fire department apparatus.

The officers of the plant stated that the fire would not in any way hinder the operation of the plant, which is running day and night, as it has been all season.

According to an amended certificate filed in the office of the Secretary of State of New Jersey the General Rubber Co. of Newark has increased its capital stock from five to ten million dollars.

REVISION OF PLANTATION SALARIES.

With lower prices for rubber, the question of the salaries paid by plantation companies for white supervision has been attracting attention. The expenditure of plantation companies may be divided into labor, white supervision and home administration. In dealing with this subject, the "Financial Times" of London lately remarked that the high prices at one time ruling for rubber allowed the payment by producing companies, of high salaries to men with limited tropical experience, and none whatever of rubber cultivation. It is suggested that the plantation companies will find compensation for lower prices not only by increasing outputs, but by a reduction of the current expenses for supervision.

OBITUARY RECORD.

SUDDEN DEATH OF JOSEPH N. SMITH.

MR. JOSEPH N. SMITH, president of the Boston Woven Hose & Rubber Co., died very suddenly at his Beacon street home in Boston, about 11:30 on the evening of December 18. Throughout the day Mr. Smith had been at his office attending to business with nothing to show that he was not in his usual good health except a slight indisposition ascribed by himself and his family to a temporary attack of indigestion. In the evening he attended the opera but complained of feeling worse, and for that reason left before the performance was finished. On returning to his home he retired immediately, dropping into an entirely natural slumber almost at once. About 11:30 Mrs. Smith was awakened by an unusual noise only to find that Mr. Smith had already passed away.

Mr. Smith was born January 12, 1840, in what is now Peabody, but was at that time a part of the town of Danvers. In early business life he was a successful shoe manufacturer, later becoming identified with other large interests, and upon the reorganization of the Boston Woven Hose & Rubber Co., in 1899, was elected a director and president of the corporation. These offices he had held continuously from that time up to his death.

The offices and all departments of the factory were closed Saturday, December 21, as a mark of respect.

THE DEATH OF JOHN H. GREACEN.

John Henry Greacen, at one time an officer of the International Rubber Co., and son of the late John Greacen, died on November 29, on board his private yacht, "The London," at Savannah, Georgia, in his 56th year. The body was forwarded to Glen Ridge, New Jersey, for interment.

UNITED STATES RUBBER CO.'S ISSUES.

TRANSACTIONS on the New York Stock Exchange for four weeks, ending November 23:

COMMON STOCK, $25,000,000.

[The treasury of a subsidiary company holds $1,334,000.]

Last Dividend, October 31, 1912—1%.

Week November 30	Sales	43,705 shares	High	66	Low	57⅜
Week December 7	Sales	39,200 shares	High	67⅞	Low	61¾
Week December 14	Sales	17,050 shares	High	63¾	Low	60¾
Week December 21	Sales	16,450 shares	High	67½	Low	61¾
Week December 28	Sales	8,690 shares	High	65½	Low	61⅜

For the year—High, 67⅞, May 21; Low, 45¼, February 1.
Last year—High, 48½; Low, 30½.

FIRST PREFERRED STOCK, $39,824,400.

Last Dividend, October 31, 1912—2%.

Week November 30	Sales	1,013 shares	High	109¼	Low	108½
Week December 7	Sales	1,245 shares	High	108⅞	Low	106½
Week December 14	Sales	3,400 shares	High	107½	Low	106
Week December 21	Sales	1,850 shares	High	108¼	Low	107
Week December 28	Sales	700 shares	High	107	Low	107

For the year—High, 116, May 20; Low, 105⅝, July 25.
Last year—High, 115½; Low, 104.

SECOND PREFERRED STOCK, $9,965,000.

Last Dividend, October 31, 1912—1½%.

Week November 30	Sales	900 shares	High	80½	Low	80
Week December 7	Sales	300 shares	High	75	Low	75
Week December 14	Sales	600 shares	High	79⅝	Low	78
Week December 21	Sales	2,100 shares	High	80¼	Low	79¼
Week December 28	Sales	300 shares	High	79	Low	79

For the year—High, 85½, May 21; Low, 75, January 23.
Last year—High, 79; Low, 66.

SIX PER CENT. TRUST GOLD BONDS, $18,000,000.

Outstanding of the 1908 issue of $20,000,000.

Week November 30	Sales	7 bonds	High	103⅜	Low	103¼
Week December 7	Sales	25 bonds	High	103⅝	Low	103
Week December 14	Sales	21 bonds	High	103	Low	102½
Week December 21	Sales	26 bonds	High	103	Low	102⅝
Week December 28	Sales	14 bonds	High	103	Low	102½

For the year High, 105, February 24; Low, 102½, December 28.
Last year—High, 105; Low, 101¾.

The India-Rubber Trade in Great Britain.

By Our Regular Correspondent.

IN the June issue, 1912, of THE INDIA RUBBER WORLD, we reported the action of the North British Rubber Co. v. Willows; this being for the value of dirigible balloon fabric supplied. The fabric proved faulty and useless for its purpose after a few months, and the defendant counterclaimed for damages. At the trial Mr. Justice Scrutton gave judgment in favor of the North British Co., and the defendant appealed. The appeal came on for hearing on November 25, before the Master of the Rolls, and Lord Justices Farwell and Hamilton. The appeal was dismissed; the Master of the Rolls in delivering judgment, laid stress on the scientific evidence and said that Mr. Justice Scrutton was clearly entitled to the view that the duration of life of such an envelope was a matter of speculation and uncertainty.

IN THE COURTS.

Mr. O'Gorman (for the defendant) had given it as his opinion that the life of such fabric was two years, but he had declined to say that it was unfit for use when it left the North British works in October, 1910. It had been suggested that the judge had put the expert evidence on one side, and had relied only on the report of the Advisory Committee on Aeronautics. Mr. O'Gorman, however, had said that they were at a speculative stage on this matter of duration of life, and the judge was not bound to accept the opinion of an expert when such opinion was purely speculative, and not based on the experimental proof which an expert witness should give, if his opinion was to be regarded as final.

With this judgment in existence there is hardly likely to be a similar action, until the experiments which are now in hand both in England and Germany on balloon and aeroplane fabrics, have produced evidence which can be quoted as authoritative. It is important also for expert witnesses to note, that they are expected to back their opinions by experimental evidence.

The case in which Mr. E. E. Buckleton sued Messrs. Heilbut, Symons & Co., for the return of money invested in a rubber plantation was won by Mr. Buckleton at the Liverpool assizes, and also in the Court of Appeal. The defendants, however, took it to the House of Lords; the final result being that they have won and Mr. Buckleton has been deprived of the satisfaction he had previously experienced, and at the same time of course is more out of pocket.

There does not seem any falling off in the demand for reclaimed rubber; the various producing works reporting themselves as fully employed. The largest works (the North Western Co. of Liverpool) has decided, I hear, upon practically doubling their plant in the near future. It is clear from this, that the certain prospect of cheaper raw rubber from the increased plantation output in forthcoming years, does not cause any apprehension as to a serious curtailment of the reclaimers' business. On the contrary, the view appears to be held, that cheaper rubber will result in increased use, and therefore larger stocks of waste to come upon the market.

RUBBER SCRAP NOTES.

The Rubber Regenerating Co., of Trafford Park, Manchester, are again making additions to their works, and have recently purchased further land. The average grade of the reclaimed rubber now produced in England, is higher than was the case ten or twenty years ago, though a demand still continues for 4d. per pound qualities. Indeed there is a market for stuff at 3d. per pound; this lowest quality coming from abroad. The Mersey Reclaiming Co., of Stockport, one of the newer concerns, reports a gratifying increase in their sales and may now be considered firmly established.

The firm of T. Hallas & Co. have removed from their Todmorden works to new premises at Woodley, near Stockport. The factory, which was formerly a wool washing mill, is conveniently situated for carrying on the business; which includes substitute making and heel pads. Mr. Harris, who was formerly with Messrs. G. H. Scott & Co., of New Mills, was the manager at the Todmorden works, but has now left the company.

Scrap rubber collectors complain that the market values of old rubber are now so widely known through the increased circulation of rubber technical literature, that it is a difficult matter to pick up a bargain. In regard to published quotations, sellers of old rubber are too apt to ignore the fact that quotations refer to goods delivered at specified places. When a man has had to travel to a country town on hearing that old rubber is for sale, and finds only four or five tires, he is naturally disinclined to pay the full price quoted for tires delivered in London. The present price for motor tire covers is 38s. per hundredweight, which is about 4s. per hundredweight less than a year ago. Red inner tubes fetch 9d. per pound.

This substance (formerly called Parkesione, after the name of its inventor) will come up for discussion before the Departmental Committee, appointed by the government to enquire into the conditions of manufacture, use and storage of celluloid. Some discussion will probably arise as to the difference, if any, which exists between the various bodies, including celluloid and xylonite, which are all camphor-containing cellulose nitrate plastics. Under the circumstances, a few facts concerning xylonite may be appropriate.

XYLONITE.

At the time in 1868, when Parkes, owing to want of capital, had suspended his manufacture of Parkesine, Daniel Spill, who had been associated with him, effected an improvement, or at any rate an alteration, in the process of manufacture, and patented his cotton xyloidin or xylonite. Further patents were taken out in 1875, after the manufacture had been commenced by Daniel Spill & Co. In 1877 this firm was taken over by a new company, called the British Xylonite Co., of which more anon.

The Spill patents in America were exploited by a Mr. Brown, and a company called the American Xylonite Co. was started in 1881 at Adams, Mass. Litigation, however, arose with the owners of other plastic patents, and in 1890 the company was absorbed by the Celluloid Co., ceasing its separate existence. The works of the British Xylonite Co. are situated at Hale End, near Epping Forest, on the outskirts of London, and also on the Essex coast; the operations being for reasons of safety carried on at the two localities. The buildings at the works are laid out in separate blocks and are of an artistic character; separated by beds of flowers. They are under Government regulation and inspection as if the business formed a branch of the explosives manufacture. The nitrating process, which is the more dangerous part of the manufacture, is carried out at the coast works, the material being made up into combs, tooth brushes, knife handles, etc., etc., at the Hale End Works. From statistics which are immediately available, it appears that Great Britain exported in 1910 celluloid and xylonite goods to the value of £167,000. The imports of celluloid for the same year are given as of the value of £450,000, no mention being made of xylonite.

JOTTINGS.

The Lancashire Motor Transport Co., Ltd., whose prospectus appeared some months ago, and which was destined to revolutionize goods traffic between large Lancashire towns, has come to an untimely end, and is being wound up in bankruptcy. Its career has been unsuccessful.

Mr. Brown, late manager of the Droylsden factory of the Gorton Rubber Co., Ltd., resigned that position in order to take up the management of a new motor tire factory in Australia.

The Werneth Rubber Co., of Gee Cross, Hyde, near Manchester, is making good progress under the management of Mr. Saunders, a former manager of the Gorton Rubber Co. As reported in these notes some time back, these works were put up to auction, as Mr. Salmon, the proprietor, wished to retire from business. As the reserve was not reached, the property was withdrawn, but was subsequently sold privately. The head office is at Burton-on-Trent. Recent developments in the business include railway buffers and small motor tires.

The Synthetic Products Co., Ltd., are at present engaged in negotiating for a site for their works, in which the manufacture of acetone will be carried on. As was stated in the prospectus, the synthetic rubber manufacture will remain a matter for future development. In connection with this I may mention that Professor Perkin is billed to read a paper on synthetic rubber before the Royal Society London, shortly.

GERMAN EXPORTS OF ASBESTOS MANUFACTURES.

ACCORDING to official statistics, the total value of German exports of asbestos manufactures equalled in 1910 $1,060,250, and in 1911, $1,231,500. The latter figure included the following items:

Asbestos paint and colors, etc.	$ 3,250
Asbestos paper and board	453,000
Asbestos yarns and cords	107,500
Asbestos fabrics, etc	174,500
Asbestos and rubber fabrics	280,500
Insulating materials	212,750
Total	$1,231,500

American exports of asbestos manufactures, which appeared in separate form for the first time, in the annual return to June 30 last, represented $520,894 for the fiscal year 1911-12.

GERMAN RUBBER COMPANIES' DIVIDENDS 1910-1911.

The dividends paid by 18 leading German rubber companies for the business year of 1910-1911 were as follows:

	Per Cent.		Per Cent.
2 companies, between	3 and 4	2 companies, between	9 and 10
2 " "	4 and 5	1 " "	10 and 12
2 " "	5 and 7	1 " "	12 and 15
5 " "	7 and 8	1 " "	20 and 25
1 " "	8 and 9	1 " "	25 and 30

Eight companies worked at a loss. The results obtained by the rubber industry, separately from those of the leather branch, have this year formed a special feature of the returns.

THE EUROPEAN RUBBER INDUSTRY AND THE BALKAN WAR.

While European business in general with the Balkan states has suffered from the consequences of the hostilities, the rubber industry has apparently gained by the complications. Several firms are reputed to have had large orders from the Greek medical authorities. The orders of the Turkish government have included large quantities of hospital supplies and surgical appliances, in which rubber has a prominent part.

"It's an ill wind that blows nobody good."

SILVER JUBILEE OF DIRECTOR HERBST.

Herr Edgar Herbst, of the Austrian-American Rubber Manufacturing Co., Vienna, recently celebrated the twenty-fifth anniversary of his becoming director, with a seat at the board. Born in 1855, he took up laboratory work in 1876 at Carlsruhe, under Professor Engler. He then went to the Von Oehler Chemical Factory at Offenbach. Through the publication by him of a work on the "Chemistry of Rubber," he was invited to Vienna to assume the post which he has now filled during twenty-five years. He is a well-known authority on both the theory and practice of rubber manufacture, having given special attention to the synthesis of rubber. In addition he is known as the editor of the "Rubber Industry Calendar and Annual."

TIRE NOTES FROM FOREIGN LANDS.

Portugal's imports of bicycles increased from $500,000 in 1910 to $650,000 in 1911. During the latter year 208 motorcycles, valued at $24,000, were likewise imported.

A contract for 750 sets of taxi tires has been recently closed by Backdahl & Co., Stockholm, with the United States Tire Co. Experiments had led to the adoption in the Scandinavian countries of American tires, notwithstanding their cost being higher than that of the domestic product.

Herr Wilhelm H. Bartels has resigned the management of the firm of Alfred Teves, Frankfurt, to take up, among other matters, the exclusive sale of the "Garuda" propeller for aerial navigation, motor cars and steam vessels.

Among notable English exhibits at the recent London show were those of the Connolly and Avon tires. The former concern was associated from the start with the development of the rubber tire, to which their experience as wheel manufacturers also contributed, particularly in devising the most durable and non-skidding patterns.

The Avon India Rubber Co., Ltd., has brought out a special tire with an extra thickness of rubber on the surface of the tread.

Among the features of the recent London show, were the pneumatic and solid tires of the Midland Rubber Co., Ltd., of Birmingham. They made a special display of their "Ajax" pneumatic tire, which carries with it a 3,000 mile minimum guarantee. Solid rubber tires of this company's make carrying a 10,000 mile guarantee have been supplied to the London General Omnibus Co. and the National Steam Car Co., besides other public motor enterprises.

NEW RUBBER WORKS IN IRELAND AND SCOTLAND.

According to English reports, a company is being formed called the "Irish Rubber Co." to manufacture tires and other rubber goods in Ireland. The influence of local directors is being exercised to bring the factory to Dublin, but Wexford has also been under consideration. The promoters are said to have obtained the support of 500 cycle agents in Ireland.

It is reported that a large Scottish rubber manufacturing firm is about to establish at Newburgh, Scotland, a factory for ladies' waterproof garments.

CALMON AUSTRIAN WORKS INCORPORATED.

The Calmon Asbestos and Rubber Works of Hirschstetten, Austria, have been converted into a limited company; the business managers being Imperial Councillor Hugo Goldschmidt and Herr Marcel Herczeg, of Vienna. It is announced that the capital of the company is the equivalent of $422,046.

NOTHING NEW AT PARIS AERONAUTIC SHOW.

At the recent Aeronautic Salon held in Paris there appeared to to be nothing particularly new in the line of rubber manufacture. There was a good display of pneumatic tires, shock absorbers and rubberized fabrics, but practically nothing that was not shown at the exhibition a year ago.

JAPANESE RUBBER PLANTATIONS IN MALAY PENINSULA AND SUMATRA.

By Our Regular Correspondent.

REFERRING to particulars lately sent of Japanese rubber growing in the Malay Peninsula (published in the INDIA RUBBER WORLD of December, p. 155), the total acreages rented and cultivated by 87 plantations have since increased respectively, to 85,069 and 16,455 acres.

STATE OF JOHORE.

Out of the above-named 85,069 acres, Johore has 79,010; divided as follows:

Along the River Johore in eastern part of state	45,860
West coast	30,870
Along railway	1,300
Other locations	980
Total	79,010

As previous report showed, Johore has in number one-half of the Japanese plantations on the peninsula and is encouraging

MALAYAN WORKERS CLEARING WEEDS UNDER DIRECTION OF JAPANESE MANAGER.

rubber planting. The government is facilitating planting operations by allowing planters time for payment of ground rent and survey fees. The ground rent, moreover, is lower than in other Malay states. Leases are for ever, while in other states they run for 99 years and in Dutch India for 75 years. Owing to the competition for riverside plantations, many of the Japanese plantations are inland. Most of the latter are still in the preparatory stages of wood-cutting and weeding, but some have been cultivating Pará trees for several years, and are in a few cases tapping.

STATE OF NEGRI SEMBILAN.

The total acreage rented in this state by Japanese rubber plantations is now 3,010, as compared with 2,845 by last report. Near Seremban, the capital, many of them are being gradually developed. One plantation of 160 acres, with 8 and 9-year-old Pará trees, has been acquired for $300,000 by an English firm which intends cultivating it in conjunction with Japanese planters. On four-fifths of the acreage wood-cutting and the removal of weeds are being carried on.

STATE OF SELANGOR.

Latest particulars show the area of Japanese plantations as 1292 acres, mostly cultivated and reaching maturity; thus showing a reduction on the average of 1420 previously reported. Owing to the competition of British investors, Japanese capitalists are at a disadvantage; so they are seeking locations along the railways to the south; thus avoiding Kuala Lumpur, the center of the British plantations.

KEDAH, PERAK AND SINGAPORE.

A Japanese residing at Penang has a plantation of 450 acres in Kedah. Many Japanese investigated, but did not start operations.

Three plantations in the State of Perak have 1,055 acres in all, while three Singapore planters have 250 acres between them.

ANTICIPATED YIELD FROM JAPANESE PLANTATIONS.

The total Japanese acreage is 85,069, which is estimated as about 9 per cent. of the total Malayan acreage. When these plantations come to tap Pará rubber later, their yield will be an appreciable factor in the market. At the rate of 130 trees to the acre, the 85,069 acres, on the basis of 1½ pounds per tree per year, would represent a yield of 16,588,455 pounds.

Two-thirds of these planters are small investors, to whom planting is an additional occupation, and who cannot get along without making profits for several years. They hope to get funds from the "Mujinko," a lottery association (described by the INDIA RUBBER WORLD, April, 1912, page 339). If they cannot cultivate their own plantations, these small investors will sell out to other planters or amalgamate with them.

SUMATRA.

In 1911, the total investment in Japanese rubber plantations in Sumatra was estimated at about $400,000 and the plantation area 140,000 acres. Among these plantations is one of two acres planted with rubber trees and cocoanut palms, owned by a German who had married a rich Japanese woman. The latter had engaged about 60 Japanese workers, 16 of whom are still employed, and who superintend the labor of Malayan and Japanese hands.

Owing to their unfitness for tropical life, and their inability to stand heat, Japanese usually fall ill soon after their arrival in Sumatra. Though not fitted to act as workers, there is ample room for their services in directing Malayan and Javanese laborers, or in tapping, gathering, and coagulating.

JAPANESE RUBBER PLANTERS' ASSOCIATION.

This association was established on August 15, 1912, at the Sekidenkwan Hotel, Singapore. It has 38 members, mostly large Japanese planters located along the River Johore; their purpose being mutual protection and development.

It is proposed to issue a monthly bulletin and to hold organized consultations with members as to rubber plantations.

Following is the list of the officials: President, Sinzo Suzuki; vice-president, Masaji Inoue; committee, O. Watanabe; S. Kawakami; M. Yoshida; K. Yamakawa; Y. Goto, and M. Sasaki.

Headquarters of the company are at the above-named hotel, the name of which means "Japanese Hotel."

JAPANESE LABORERS FOR MALAYA.

The efforts made by private enterprise to employ Japanese labor in rubber plantations at the south of the Malay Peninsula are being followed up by organized steps in other directions. According to the "Japan Mail," the "Toyo Imin Kaisha" (Oriental Emigration Company) recently obtained permission to send Japanese laborers to Malaya, and a party of 150 men was shortly to leave Japan.

In view of the hygienic situation in Johore being unsatisfactory, attention has been given to the question of better conditions in other parts of the Peninsula. These have been found to exist in the northern portion of Perak, and a contract has been made with an English plantation owner for the despatch of a small number of Japanese on probation to that district.

Under the conditions of employment, the Japanese undertake nine hours' daily labor for the equivalent of 40 to 45 cents gold.

Getting Balata by Destroying the Trees.

IN a recent issue of THE INDIA RUBBER WORLD our British Guiana correspondent stated that a proposal recently ventilated, that instead of balata trees being partially bled and kept alive for future bleedings, they should be cut down entirely and every ounce of balata extracted, occasioned much surprise in the colony. He went on to say that on calmer consideration, however, many people were beginning to think that there was a good deal in the suggestion and he quotes a prominent member of the British Guiana Balata Association as follows:

"It is understood that the balata tree on being cut down yields 30 lbs. to 40 lbs. of milk, whereas under the present system the quantity obtained by a good bleeder is only some 5 lbs. By periodical bleeding, therefore, it would take 30 years to get a result obtainable immediately by cutting down the tree, and I venture to say that there is hardly anyone in the colony who will contradict the statement that at the end of 30 years the trees will be dead. The cost of periodical bleedings must necessarily be very much greater than the cost of cutting down trees, and, the question comes to be whether is it better to bleed entirely a tree at once or allow it to remain till it dies within a period of 30 years?"

TAPPING BALATA, BRITISH GUIANA.

As a matter of fact, this proposal is not of recent origin. The process of extracting the latex from the balata tree by the destruction of the tree and the removal of all the bark was given a thorough test some 15 years ago and the results, according to those who made the experiment, were very highly satisfactory. Three Americans went into this enterprise in Venezuela in 1896. They put up a plant at a cost of about $25,000, with an average production of over 500 pounds of gum per day. They reported that the average balata tree in Venezuela furnished 1230 pounds of bark, that it required 30 trees to produce one ton of gum, the average extraction being about 66 pounds of gum for each tree. This, however, was from trees which had been previously tapped and from which 10 to 16 pounds of gum had already been taken, their estimate being that from trees that never had been tapped, from 80 to 120 pounds of gum could be secured, while by the tapping method not more than 8 to 16 pounds of gum could be secured. (It is quite likely that these figures are more than tinged with a promoter's natural optimism.)

They claimed a number of distinct advantages for this process. The first was the large amount of gum that could be secured at one time, as compared with periodical bleeding. Another advantage was the fact that the work could go on regardless of the season, which would not be true under the ordinary process of bleeding. The third

was that the gum was much more pure and free from sand and dust and bark. They reported that it cost them to produce the gum less than 8 cents a pound.

Through some dissension in the management the enterprise seems to have been abandoned and not since resumed, but the success, or at least the reputed success, of this early undertaking would at least seem to afford considerable encouragement for further experimentation in this direction.

NOTES FROM BRITISH GUIANA.

From our Regular Correspondent.

THE report on the forests of the easily accessible portions of the colony, by C. Wilgress Anderson, Forestry Officer, is now being published. The general report and Series 1 have been issued, and others are to follow in due course. It cannot be said that the general report offers quite that amount of assistance upon matters connected with the balata industry, that have long been calling for settlement, that was expected. Mr. Anderson opens that section of his report dealing with the balata resources of the colony, by pointing out that "the collecting of balata has within the last four years been most extensively carried on, so much so as to have now become the foremost forest industry, but judged by the value of the exports, the third most important one of the colony."

Mr. Anderson does not appear to have any original information to give us respecting the yield of the tree, but points out the well known fact that the flow of latex is best in the dry seasons, and that "in very dry seasons many of the trees do not flow at all." He proceeds to quote Jenman, to whom we owe the great amount of our existing knowledge of the bullet tree, and whose advice, if followed, would have enabled us to have a promising rubber industry at the present time, instead of the one of meagre proportions we now boast of. Mr. John Ogilvie's estimates for the Rupununi District are also quoted, and Mr. Anderson says that these estimates "are in close accord with respect to the average yield, which works out at four lbs. of balata per tree on the first occasion of tapping. This I consider may be accepted as a reliable estimate, for apart from being based on data obtained by highly observant and experienced individuals, I am well aware that collectors are generally quite content if they get as much as a gallon of milk for an average good-sized tree, tapped in the usual way for the first time. On subsequent tappings the yields are said to be less." This is not an important contribution to the available knowledge on the subject.

Mr. Anderson discusses also the question of felling the trees, which was alluded to in a recent letter, but here again he adds nothing new that will lead to a settlement of the question. For the most part his figures are quoted from previous authorities, which have already been referred to by those taking part in the controversy. Jenman said, and his remarks are quoted by Mr. Anderson, that "a young tree, a foot in diameter, felled, will give a gallon. A gallon of balata milk weighs over 10 lbs., collectors say 10½ lbs. Two samples I collected weighed 10.033 lbs. During the rainy season collectors estimate the yield per gallon at from 4 to 5 lbs. of pure balata and in the closing parts of the year 5 to 6 lbs. Average balata milk loses less than half its weight in drying."

Mr. Anderson points out that in Venezuela the felling method of collecting the milk is invariably practised, but that "this method, although at first used in British Guiana, is now against the law, as it also is in Dutch Guiana." He tells us that the felling method involves a comparatively small extra amount of labor, "and that the returns immediately obtained are far in excess of those obtained by the method of tapping the trees while standing," but he does not tell us how much they are in excess. He tells us, however, that "the felling method is undoubtedly a most wasteful one, as the forests are denuded of valuable trees," but again he gives us no figures, going on to say: "Unfortunately there are no reliable data available as to the yields obtained on the successive tappings made after the tree has first been bled, the class of men employed as bleeders and the conditions under which the work is being carried on being such as to render it difficult, if not impracticable to obtain such data. Yet the indisputable fact remains that the tracts of Crown lands on which the balata trees were first tapped a quarter of a century ago are still being worked and continue to yield supplies of balata. That this is the case I can testify from personal experience, for balata is still being obtained from certain tracts on Canje creek surveyed by me in February, 1889, on which most of the trees had at that date been already tapped." These remarks cannot be said to help on the controversy one way or the other as to the desirability of allowing licensees to fell trees.

The report is equally lacking in original information in respect to the age and growth of the trees, which bear an intimate relationship to the felling problem. Mr. Anderson informs us that the bullet tree is considered to be of very slow growth, but so far little is known with regard to the time it takes for a tree to grow sufficiently large to be fit for tapping, much less how long it takes to reach maturity. He informs us, however, that a balata tree planted in the Botanical Gardens in Georgetown, in 1880, has a trunk 48 inches in girth and branching 8 feet from the ground, being over all about 50 feet in height. He proceeds: "It has been reported by an officer of this department that on certain properties on the Canje creek, bullet trees of not more than ten inches in girth are to be found growing on beds originally laid out and cultivated by the Dutch, which probably have been abandoned for at least 80 years and are now recovered with forest growth. The trees in this case are said to be growing tall and straight. Further investigation on these lands may help to throw some more light on this subject."

Inasmuch as Mr. Anderson has been engaged since 1908 getting data for this report, and the Acting Governor has told us that it will be the standard authority upon Colony timbers for 25 years, it may be regarded as disappointing to be told that further investigation is needed to throw further light upon the subject of the balata resources of the colony when it is most needed. In fairness to Mr. Anderson, however, it has to be admitted that he is engaged in a herculean task. It is quite impossible for one Forestry Officer to investigate the resources of a forest area of 83,000 acres and supply us with any important data. What is needed is a thoroughly well equipped Forestry Department, and the creation of such a branch of government activity would appear to be well justified by the growth of the balata and other forestry resources. It will be recollected that the government's proposal to tax forest industries by means of the export duty was justified on the ground of its growing demands upon the revenue, and that this view was confuted by the Balata Committee, which pointed out that the industry's contributions to the revenue were greatly in excess of the amount spent upon it. The creation of a Forestry Department, it would appear, ought to be one of the first acts of the constructive Administration that is just opening.

Mr. Anderson enters into considerable detail concerning tapping regulations and tapping methods, but they are probably familiar to readers of the INDIA RUBBER WORLD. The balata wood is described in the report "as a well-known marketable one of considerable value. It is a very hard, heavy, dense wood of a moderately fine grain, and varying in color from a reddish tinge to a dark red. Because of its color it was a few years ago put on the English market under the name of 'beefwood.' The weight per cubic foot is 55 to 68 lbs.; the largest logs being 80 feet long, and squaring over 40 inches." The restriction as to the felling of the trees, however, prohibits its exportation as timber. Mr. Anderson points out that there are many large logs lying waste, particularly in the forests of the North Western District,

where many trees were illegally felled as recently as a few years ago, but the difficulties of transportation prohibit its exportation. It will be remembered that one of the claims of those who wish to have the restriction as to felling removed, is that after the balata has been extracted a marketable wood remains. Mr. Anderson's information appears to throw some doubt upon this claim. It will not be sustained until means of transportation are improved.

Mr. Anderson's report is more informative when he comes to discuss the distribution of trees. He says that they are to be found growing in most parts of the colony, being widely dispersed throughout the forests of the savannah lands, but on the slightly elevated lands and hilly country they usually occur in communities, varying in number from a few to thirty or more trees, which are irregularly distributed within definite forest areas, or in belts of varying extent, known locally as "bullet tree reefs," in which these communities occur more or less concentrated. "Hence the trees are more plentiful in the depths of the forests than near the rivers. During my inspections, and on the many previous occasions on which I have traversed the balata forests, I have never found any land which the bullet trees occupy to the entire exclusion of all others, but I have come on particular forest areas or zones in which this tree was among the most prevailing species of forest trees." The distribution, says Mr. Anderson, is "not a question of soil, but may be due to situation with regard to access of light; but evidence so far collected is not sufficiently convincing on this point of the problem." He proceeds to the local distribution of balata trees in the easily accessible forests. In subsequent reports doubtless the result of his researches will be more fully amplified.

Mr. Anderson also supplies some interesting information concerning the *Sapium* rubber tree, for details of which he refers us to the Imperial Institute's "Bulletin" and the Department of Science and Agriculture's "Rubber and Balata in British Guiana." He says these trees are to be found scattered about the forests of the colony generally, but more particularly in those bordering the banks of the rivers or streams of the North West District, the Pomeroon, and the lower Essequibo rivers. "Estimates made in certain localities in the upper Amakura-Barima District, where these trees are reported to grow most plentifully, indicate that in certain localities they only number about 30 to the square mile." Mr. Anderson reports that the tree reaches at maturity an average girth of 60 inches and a height of about 60 feet, but that they occasionally attain much greater dimensions. The trees occur mostly in the western part of the colony, on the upper Amakura River, Barima River from Morawhanna upwards and its tributaries, the Barama and the Waini rivers, the upper Pomeroon and the lower Essequibo River, but that in the forests on the Demerara, Berbice, Canje, and Corentyne rivers they are either very scarce or not found at all.

Mr. Anderson says that there is reason to believe that at present the name *Sapium Jenmani* is applied generally to rubber-producing *Sapiums* and other *Sapiums*, such as *Sapium Hemsleyanum, Huber,* growing on the coast lands or in the forests and also known by the name of "Mabua," yielding a latex of a more or less sticky nature, and of no value. The Hya-hya, two species, also yield a copious flow of latex, which when dry forms a hard substance. Mr. Anderson says that the milk of this tree has been stated to be drinkable, but he does not recommend it. The latex of these trees, also the balata (bully) tree, *Sapotacae ficus*, is of no commercial value.

It will be remembered that among the proposals of the Balata Committee was the improvement of means of communication by means of wireless telegraphy. The Chamber of Commerce has now received proposals from the Anglo-French Wireless Company, Limited, which it has sent on to the Government, offering to erect and install seven stations at Georgetown, Zisingaatugalso Pass (on the Brazilian Boundary), Morawhanna, Bartica, Wismar, Omai (for the Potaro District), and Arnida Post (for the Rupununi District), at a cost between $10,000 and $15,000 erected. This estimate coincides with the estimate made a year ago by John Alsing, assistant government electrician. The Council of the Chamber of Commerce hopes that the scheme may have the favorable consideration of the Government.

Mr. Edward Edwards, local attorney for Ed. Maurer & Co., New York has been appointed to act as attorney of the Amsterdam Balata Co.

The exports of Balata to November 7, were 460,648 lbs., as compared with 833,022 lbs. to November 7, 1911.

THE AMERICAN-MEXICAN RUBBER AND COFFEE CO.

We published the notice in our December number of the incorporation in New York State of the American-Mexican Rubber & Coffee Corporation with its principal office at Ithaca. A request sent the secretary of the company for some information regarding its operations elicits the following interesting paragraphs:

"The corporation owns about 17,000 acres of valuable land about 30 miles north of Tapachula, State of Chiapas, Mexico, and near the Huixtla Station. We have about 2,800 acres of land in coffee consisting of 1,000,000 trees, ages from one to fourteen years—about 1,400 acres in bearing from which was sold last year over 1,100,000 lbs. of coffee. We also have about 2,500 acres in rubber containing over 950,000 trees, averaging from one to seven years. We expect to begin tapping next year, although a few of the trees are old enough to tap this fall.

"We own our own electric light plant which furnishes light and power for the plantation; also our own telephone system with over thirty miles of telephone wire connecting the different sections. The Pan-American Railway crosses the property affording prompt shipments. The majority of the directors and stockholders of this corporation are also interested in the Mexican Coffee Co., which is incorporated under the laws of New York State, for $100,000 owning 3,000 acres adjoining the property of our new corporation, and which has paid 10 per cent. dividends since its incorporation."

ENGLISH AUTOMOBILE IMPORTS AND EXPORTS.

For the nine months ending September 30, 1912, English imports of motor cars and parts equaled $27,263,425, against $22,825,965 for the corresponding period of 1911. Exports for the same periods represented $12,662,685, as compared with $10,633,010 in 1911. Development is thus shown in both directions; England importing to double the extent of the automobile exports.

These figures referring to automobiles in general, and thus including the high priced French machines, it is of interest to note the statement in the "Carriage Monthly," that the English imports of American automobiles during the first half of last year, represented 3,327 cars of the average value of about $1,000. It is added that:

"The low-priced American car has made the automobile a possibility for a large number of Englishmen, who could not have afforded to pay the price of the higher priced English cars, and has taught the British public to appreciate a vehicle that is reliable and economical in operation, even though some of the refinements to which they had become accustomed may be wanting."

British makers having specialized in cars at $2,000 and upwards, there is said to be at present apparently little prospect of American cars of that type obtaining a substantial footing in the English market.

THE NEW SUPERINTENDENT OF SINGAPORE BOTANIC GARDENS.

It is announced that Mr. J. H. Buckill, hitherto attached to the Indian Botanical Service, has been appointed by the British Colonial Secretary to replace Mr. H. M. Ridley as superintendent of the Singapore Botanic Gardens.

Some Rubber Planting Notes.

STATISTICS OF LEADING PLANTATION COMPANIES.

FIGURES of leading plantation companies for the entire year 1911 as compared with the first nine months of 1912 show following results:

	Year 1911. lbs.	9 months, 1912. lbs.
Highlands & Lowlands Pará Rubber Co..	633,024	618,180
Anglo-Malay Rubber Co.....	780,972	608,090
Linggi Plantations 1,064,500		776,000
London Asiatic Rubber & Produce Co..	352,688	472,400
Grand Central (Ceylon).....	406,061	389,960
Damansara (Selangor) Rubber Co.....	383,745	385,340
Lanadron Rubber Estates.....	375,846	392,990
Kapar Pará Rubber Co.....	330,861	369,360
Seafield Rubber Co.....	308,461	332,650
Sungei-Kapar Rubber Co.....	338,480	325,200
Gula Kalumping Rubber Estates.....	243,040	315,900
Pataling Rubber Estates Syndicate....	333,044	315,480
Consolidated Malay Rubber Estates...	401,897	314,810
Seremban Rubber Estate.....	363,344	305,810
Batu Caves Rubber Co.....	261,605	261,200
Total for year 1911.....6,577,568		
Total for 9 months, 1912.....		6,183,370

Thus the output of 15 leading companies reported for the first nine months of 1912 was nearly as large as it had been for the entire year 1911.

LATEST CROP REPORTS.

The cabled reports of the larger companies to November 30 show a continued increase as compared with last year. Thus the Anglo-Malay reports 813,649 pounds as compared with 692,786; while the London Asiatic does still better with 624,581 pounds against 301,039. Selaba records 288,928 pounds as compared with 176,043. The gain in the output of the smaller companies is in some cases in even a higher proportion.

TANDJONG RUBBER CO., SUMATRA.

The crop for the year ending June 30, 1912, of the Tandjong Rubber Co. was 34,864 pounds, exceeding the estimate by 4,864 pounds; the average yield being 108 pounds per acre. The net average price realized was 4s. 4.46d. per pound, against f. o. b. cost of 3s. 2.18d. per pound. The relatively high cost is owing to the recruiting of additional coolies, and the expenditures caused by inaugurating tapping. By the fact that the estimate for 1912-13 is 180,000 pounds, and the estimated cost reduced to 2s. 3d. per pound, the prospect of a large number of trees being about to come into bearing is indicated.

LANGEN (JAVA) RUBBER ESTATES.

According to the report presented to the annual general meeting of December 3, the original estimate for the year ending September 30 was 42,000 pounds; afterwards raised to 92,500 pounds. The amount actually harvested during that period was 145,633 pounds, the cost being 2*s.* 3.86*d.* per pound and the average net price realized 3*s.* 11½*d.* The estimate for the current year is 250,000 pounds; a reduction in cost being anticipated.

UNITED MALAYSIAN RUBBER COMPANY, LIMITED.

Prominence is given by the "Malay Mail" to a statement made to the shareholders by the secretary of the United Malaysian Rubber Co., to the effect that good progress is being made, reports of which would be published in due time.

UNITED SERDANG (SUMATRA) RUBBER PLANTATIONS.

In the report presented to the shareholders at the annual meeting of December 1, of the above company, the crop secured up to the date of the accounts was shown as 534,979 pounds, against a quantity of 218,000 in the previous year. The estimate for the year (ending August 31) had been 433,000 pounds. For the current year the estimate is 921,000 pounds.

A satisfactory feature recorded, was that the growth of the rubber is excellent, as well as the renewal of the bark, these conditions being attributed to the system of wide planting carried on throughout the estate. This system has promoted the renewal of the bark, which, it is added, is the capital of the rubber tree.

TANGKAH RUBBER ESTATE (JOHORE).

According to the report for the year ended September 30, 1912, presented to the shareholders' meeting of December 16, the crop of rubber amounted to 54,000 pounds against an estimate of 40,000 pounds, and a quantity for 1911 of 17,413 pounds. The estimate for the year ending September, 1913, is 100,000 pounds.

In order to develop the estate, the installation for an up to date factory has been shipped; while orders have been placed for a suction gas engine and the necessary washing mills. The cultivated area is 1,600 acres.

BOTANICAL GARDEN FOR SUMATRA.

According to the Batavia "Niewsblad," the local Director of Agriculture has gone to Medan, Sumatra, with the object of finding a suitable location for a Botanical Garden. Many of the larger planting companies are said to be interested in the project and have offered their land to the government to help the work. The general opinion in Sumatra is that such an institution would materially help experimental planting work and would afford much information as to the most suitable methods of cultivation.

KAMERUN AND CONGO RUBBER.

From the results of a botanical investigation undertaken by Herr C. Ledermann by order of the German Geographical Commission, it would seem that Kamerun is much behind the Congo in the preparation of rubber by the natives. In the latter territory every factory has a drying house, while Mr. Ledermann could not discover a single one in Kamerun.

He considers the higher value of Congo rubber, particularly Kassai, as being due to its judicious treatment by the Belgian buyers, who cut it, remove impurities as far as possible by beating and kneading, and reject every piece of crude rubber found to be adulterated.

It is added that if similar care were exercised in Kamerun, rubber from that quarter would command a higher price. Kamerun trees yield a good product, and the natives are not unskilled as rubber collectors. They must, however, be trained to deliver only rubber of good quality.

RUBBER IN FRENCH WEST AFRICA.

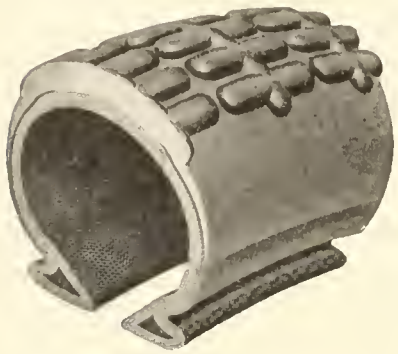
President Falliéres has recently approved an ordinance for the regulation of crude rubber gathering in the French West African territories. The Governor-General of West Africa had urged upon the government the need of such a measure, in order to prevent the depreciation of the article on the European markets.

According to this ordinance, the preparation and sale of crude rubber is forbidden in other form than in slabs or cakes of the maximum thickness of one centimeter (two-fifths of an inch); in crepe, or in very thin strips. Gathering from rubber plants is prohibited every year during a period not exceeding three months, to be fixed by the Lieutenant-Governor of each Colony. During this time, business in rubber can only be carried on in French West Africa with a certificate that the rubber was gathered before the commencement of the close season.

New Rubber Goods in the Market.

NEW GOODRICH SAFETY TREAD TIRE.

RAISED tread formation in any style does not of itself constitute a non-skid tire. It is the arrangement of it which offers resistance to any slipping or skidding movement. In the case of the traction engine, the cross-bars or strips attached to the rim of the wheel bite into the road, giving the necessary hold against slipping, thus allowing the bulky engine to be propelled up and down hill, and over all kinds of roadway.

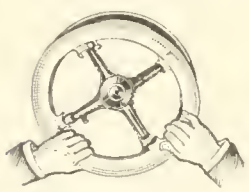


The application of this principle to the tread of an automobile tire has been engaging the attention of the B. F. Goodrich Co., and the apparent difficulty in the matter has been overcome by means of a series of longitudinal bars, broken into cross sections and strengthened by the cross-bars. In this way there is in reality a double series of raised projections, with the cross-bars holding against forward slipping and the longitudinal bars gripping the pavement and lessening the possibility of side slipping.

The double set of bars is distributed so as to prevent any punching in at any point on the fabric construction. In this way the cross-bar principle of traction wheels is adapted to automobile tire tread construction, being modified to meet rubber tire conditions. [B. F. Goodrich Co., Akron, Ohio.]

"STEEREASE."

For the prevention of slipping through the hands, it has been customary to wrap motor steering wheels with twine, rope, tap etc. Apart from the fact that such a wrapping is apt to chafe the hands, its efficacy for the purpose intended has been questioned.



With the object of meeting this difficulty a new device, "Steerease," has been introduced. This is manufactured from a fine quality of rubber, specially molded, and constructed to fit the steering wheel of the various motor cars and trucks. Being slightly corrugated, it prevents any slipping of the hands in wet weather, while there is no bunching, caused by the slipping of the cover upon the wheel.

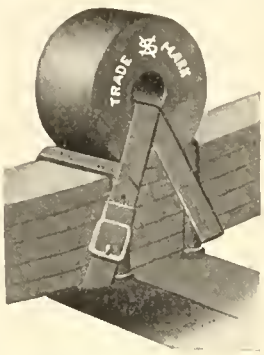
"Steerease" is easily applied. After thorough cleaning and the consequent removal of all moisture and grease, it is stretched over the wheel, the edges being made to fit closely together. These are turned back and the cement applied; being allowed to spread as much as possible. The wheel is firmly wrapped with tape and allowed to stand overnight, being then unwrapped. [Goodyear Rubber Hose and Packing Co., Philadelphia.]

RUBBER GLOVES FOR SURGEONS.

At a recent German medical congress, Dr. Krömer, of Greifswald, gave particulars, illustrating that specially prepared rubber gloves afforded greater antiseptic protection than any other description. The importance of these preventives in cases where the coating of the stomach of the patient had been injured was particularly dealt with.

THE ESSEX BUMPERS.

Among the prominent features of the Essex Rubber Co.'s line of automobile accessories are their very elastic and pliable rubber spring bumpers. These are made from high-grade stock, and retain their elasticity without becoming hard from old age. With the object of conforming to different kinds of springs, they are made in various shapes and sizes; the oblong being in three sizes, from 6½ to 8¼ inches in length, 1⅜ to 1¾ in. width, and 3 to 4 in height. The round bumpers (illustrated herewith) are likewise made in three sizes from 1½ to 2 inches in width, and from 3¼ to 3¾ in. diameter. One special advantage of the Essex Bumpers is that they will at certain times prevent the springs from breaking, when subjected to a sudden jolt.



Seeing the important functions of the spring buffer, the value of its reliability is self evident. This consideration is specially met by the Essex Rubber Co's products of this class, which are the results of close study of existing requirements.

The "Essex Outside Hook-on Boot" is also proving very popular among many users of automobiles. It is made of fine duck and high grade rubber. [Essex Rubber Co., Inc., Trenton, New Jersey.]

ANDERSON NEVERSLIP CUSHION HEEL.

The Anderson Patent Neverslip double cushion heel is said to be a triumph in rubber heel manufacture. Among its other features, claim is made that it is self-leveling and arch-supporting. It is further claimed that it is unusually resilient and will absolutely prevent slipping. The patentee, William G. Anderson, of the Sudbury Building, Boston, is offering this heel to rubber manufacturers on royalty.

MR. EGGERS INVENTS A NEW MOLD.

A new type of mold adapted for the manufacture of both hard and soft rubber specialties, which produces excellent results and costs less than the old kind, is now being made under his own patents by William Eggers, the well-known rubber machinist of Brooklyn, New York. The weight of the new molds is much less, consequently they are more easily handled; and because of the thinner material, they are more susceptible to heat and more uniform in vulcanization. The molds are so constructed that they cannot warp and are said not to be adversely affected by heat. The metal of which they are made, while less expensive than the material formerly used, takes a very high polish, giving the rubber product a fine finish. These molds are being used by prominent manufacturers, who state that they have used them with much success.

Commercial Arbitration: A Hopeful Outlook.

By Charles L. Bernheimer in the "Independent."

WHEN the New York Chamber of Commerce turned its attention to commercial arbitration, the fundamental and controlling purpose was to find a remedy for the law's delays, which President Taft, before his inauguration and many times since, declared "Amount in many cases to a denial of justice." In the final analyses one could hardly be charged with overstatement in saying that the law's delays are at the bottom of many of our present civic, political and economic disorders.

During the one hundred and forty years of its existence, the Chamber of Commerce has attempted to provide commercial arbitration in three distinct ways: The first failed because no method to enforce the award was provided; the other two because they attempted too much, for the promoters had in mind a Court of Commerce for merchants exclusively, fashioned after the Old World Handelsgerichte and Tribunaux de Commerce. Differences in laws, customs and viewpoints made such a scheme impracticable in our country.

A more modest attempt seemed in order, and quite within the realm of practicability. The controlling features of the plan now in operation under the ægis of the Chamber of Commerce, are the following:

First: Strict adherence to the provisions of the Code of Civil Procedure as found, and acceptance of their opportunities and obligations.

Second: Formal submission of the dispute, strictly in accordance with the formalities and safeguards prescribed by the existing law.

Third: Provision for a list of official arbitrators.

Fourth: Waiver of the revocation provision in the law; we are, of course, aware that there is still some question as to whether this right to revoke can be waived, but dependence has been placed upon the honor of those submitting to a tribunal instituted by and composed of fair-minded, public-spirited fellow merchants. Nothing in our experience has yet occurred to lessen this faith.

These are some of the things the New York Chamber's system actually accomplishes:

It saves money, time and trouble to the merchant, law office and State. It supplies "technical" skill for judicial decisions because, with the large membership of the Chamber (covering practically every phase of business and commercial life) the disputants can select arbitrators specially familiar with the technical and industrial data of the specific business involved.

It affords a medium for conciliation: The antagonism present in a lawsuit is lacking. Instead there is in the attempt at arbitration itself—a recognition of and respect by each side for the other's contention. In the atmosphere of openmindedness thus created, an amicable adjustment is frequently reached without actual arbitration.

It assures an absolutely impartial award—one that commands the respect of the disputants, the courts and the legal profession.

It establishes commercial equity: It applies the rule of reason to the actual facts, and it renders an award that is final and binding, one that *has the force and effect of a Supreme Court decision.* It admits of the disposal of a dispute within a short time, sometimes within twenty-four hours after it arises.

It offers the disputants the opportunity to select their own court, judge and jury; to designate the time of trial and hearing. They may, before the arbitrators selected by them, subpoena witnesses and compel the production of books and papers as they could in a court of law.

The number of cases that can be handled simultaneously by the Chamber is limited only by the number of arbitrators on the "official list," and this may be extended to include as many as fifteen hundred names.

The procedure is exceedingly informal. Usually the parties communicate with the Chamber for information; then they are referred to the chairman of the arbitration committee and supplied with a handbook of arbitration. The chairman arranges a meeting—with both parties, where possible—and, after hearing an explanation of the matter, endeavors to bring about a settlement "out of court," if he can. In other words, he attempts by conciliation to avoid both arbitration and litigation—as would a conscientious lawyer. And in a large number of the cases considered, such informal hearings have brought a satisfactory adjustment.

If arbitration is finally determined upon, the parties decide through which of the three methods available the arbitration is to proceed. A formal submission signed by both parties is placed before the committee on arbitration, which first judges whether or not the case is one that they can handle. The rules permit them to decline a case for any reason that appears to them good and sufficient.

The date of the hearing is set for a time that will suit all concerned—arbitrators and disputants. It takes place in one of the rooms of the Chamber of Commerce; the hearings and results are private, and are inaccessible even to the members of the Chamber expect by order of the arbitration committee.

In proceeding the arbitrator is sworn in before a notary or justice of the court; the arbitrator in turn places the witnesses under oath. The arbitrator then asks either of the parties to acknowledge the genuineness of the submission and to explain the situation in his own way, just as he views it, and also to present any documentary evidence he desires, and, if he has witnesses, to produce them. After the witnesses have been duly sworn, their testimony is taken. The same general method is followed in hearing the opposition. An informal cross-examination, or any other form of investigation best suited, follows, of course with the assent of both parties, under the control of the arbitrator. The proceedings are taken down by a court stenographer, and the award, including disposition of the expense item, is carefully worded and forwarded to both parties. When the submission is handed in a deposit of $60 is required from each party. This serves to defray incidental expenses, such as stenographer's fees and $10 per day—the compensation of each arbitrator. The arbitrator decides in his written award how this shall be paid and by whom. Any balance is returned to the parties.

This ends the work of the Chamber.

The law provides that the prevailing party may file the award with the Supreme Court any time within a year, and obtain judgment thereon. The court must confirm the award unless it is not in accord with the submission, or was obtained by fraud or undue influence, or shows partiality; or in case adjournments were warranted and were refused. Should the award of the arbitrator contain errors that do not affect the merits of the decision upon the matters submitted, the court must modify or correct them. Ordinarily (invariably, so far in our experience) the award has been complied with without an application to the court.

Arbitration by the Chamber is not limited to its members, nor even to citizens of this country. It serves impartially every business man bringing to it his honest differences with

another—whether he be a resident of this country or a foreigner.

The Committee on Arbitration has been frequently asked concerning its attitude toward the legal profession. The citing of a case submitted to the Chamber of Commerce about a month ago will answer:

The disagreement concerned lawyer's fees a law firm could not collect from its client. Both the lawyer and the client submitted the case to the committee and were represented by attorneys who argued the case for them. It was determined in two hearings and both parties write that they cannot speak too highly of the patience, ability and fairness displayed by the arbitrators.

The National Association of Credit Men are sympathetic in this arbitration work, keenly realizing, as they do, that a business man's assets are quickly vitiated by unsettled or pending lawsuits tying up his capital.

If the national, state and municipal governments will encourage arbitration in some form similar to that instituted by the New York Chamber of Commerce, by providing for arbitration of the disputes or differences arising between it and those furnishing supplies and labor, the number of bidders will be vastly increased and the prices and terms necessarily become more favorable to the Government. From 10 to 20 per cent. can undoubtedly be saved in its operation in this manner. At present the number of bidders on contracts is reduced because the average competent merchant, through business prudence, refuses to bid lest a dispute arise and leave him very little redress except through a lawsuit.

International commercial arbitration on its broadest basis seems a fair possibility: a system whereby the award rendered by a Chamber of Commerce of one country will be accepted and enforced by that of any other signatory to this agreement—as court decisions in one country are respected by the courts of any other country with which it is at peace.

In its very simplicity of procedure lies a great part of the strength of our plan; for the legal technicalities that, to the layman's mind so often obscure the real issue in litigation, are entirely lacking.

A FINE CATALOG OF HYDRAULIC MACHINERY.

R. D. Wood & Co., Phila., Pa., have recently issued their catalog No. 7 descriptive of hydraulic machinery for rubber mills. This is a handsome booklet of 36 large pages 8 x 11 inches in size, with effective cover of heavy paper. The company illustrates only one of its foundries—that situated in Camden; but practically all the entire 36 pages contain fine illustrations of the different hydraulic tools and machinery manufactured by this company for use in rubber mills. Among these machines so illustrated are the following: Hydraulic Operating Valves, two-pressure type; High-pressure Stop Valves, balanced type; High-pressure Check and Stop Valves, unbalanced type; Pressure Relief Valves; Closing Press; Heater Press, standard type; Heater Press, Goodrich Patent; Tire Bead Press, eight-column type; Tire Bead Press, goose-neck type; Tire Bead Press, two-opening type; Tire Bead Press, twin type; 700 Ton Rubber Press; Steam Platen Press, single-opening type; Steam Platen Press, special type; Steam Platen Press, two-opening type; Steam Platen Press, multiple-opening type; Die Chilling Press; Laboratory Press, 100-ton capacity; Tire Forcing Press, hand operated; Tire Forcing Press, power driven; Horizontal Two-plunger Pump, cross-head pattern; and Hydraulic Accumulators, inverted type.

The illustrations are to be commended not only for the artistic way in which the engraver and printer have done their work, but for the exceedingly fine detail which enables the prospective purchaser to get almost as good an idea as he would if examining the machine itself.

ONE REASON WHY SHOES BLOOM.

IF there is anything a rubber shoe manufacturer dreads more than another it is "BLOOM." It is certainly the worst fate that can befall him. It is a continuous nightmare to know that even one shoe taken out of stock shows signs of bloom.

A frequent and most generally understood reason for this trouble is that the shoes are under-cured, but there are instances when it is quite certain that the cure is complete and correct, and that shoes placed side by side in the same heater, and at unquestionably the same temperature, show that something is wrong, inasmuch as some show bloom, while on others there is none.

It usually takes a long investigation in a matter like this. Probably the very next heat will fail to show any trouble whatever.

It is my purpose to show *one* of the causes. The temperatures in the chamber were found to be correct, the varnish was right, the compounds were chemically correct; and so I finally landed where we frequently do land viz.: crude rubber. I found the trouble. We were using Centrals,—"Esmeralda" in particular. Examination of the rubber hanging up showed that about 10 per cent. of it was soft and mucky. A sheet would show some usually hard, and some soft; another sheet was all hard; while again some was falling on the floor. I mixed three batches of shoe upper stock, using three selections of the rubber, the hard, the soft, and a combination of the two. The three sheets were cured together, wrapped on a mandrel. The results were sufficient to convince anyone.

The *hard* rubber was what it should be—fully cured and elastic. The combination of *hard and soft* was under-cured quite a little in comparison, and bloomed in three days. The *soft* rubber sample bloomed in two hours; the elasticity was almost nil.

Further work in the laboratory showed the sulphur in combination varied greatly; the good sample contained practically no free sulphur, while the soft rubber had taken up such a small amount that 78 per cent. of the amount used was still in a free state, and, of course, commenced to work its way out and show in the form of bloom.

Other rubbers than "Esmeralda" act this way. Ceylons in particular need watching, while the sweated Congos are dangerous, but not so much so as the Centrals and Ceylons.

SUPERINTENDENT.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of the values of exports of manufactures of india-rubber and gutta-percha for the month of October, 1912, and for the first ten months of five calendar years:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
October, 1912.....	$236,900	$134,028	$606,963	$977,891
January-September .	1,888,433	1,014,688	6,016,371	8,919,492
Total, 1912.....	$2,125,333	$1,148,716	$6,623,334	$9,897,383
Total, 1911.....	1,909,150	1,487,563	5,935,113	9,331,830
Total, 1910.....	1,759,590	1,906,961	4,687,399	8,353,950
Total, 1909.....	1,469,272	1,288,705	3,478,438	6,236,415
Total, 1908.....	1,049,641	1,157,136	2,940,309	5,147,086

THE above heading, "All Other Rubber," for the month of October, 1912, and for the first nine months of two years, include the following details relating to tires:

MONTHS.	For Automobile.	All Other.	TOTAL.
October, 1912 .....*values*	$225,704	$42,465	$268,169
January-September	2,533,635	443,443	2,977,078
Total, 1912.....	$2,759,339	$485,908	$3,245,247
Total, 1911.....	2,080,517	480,915	2,561,432

News of the American Rubber Trade.

A VERY FINE PORTRAIT OF GOODYEAR.

EVERYBODY familiar with Boston remembers the Goodyear Rubber House on School street. It was there for many years and was one of the landmarks of the older city. The proprietor of that rubber house was Robert Josselyn, and he had among his most prized possessions an old photograph of Charles Goodyear, bearing his signature. A niece of Mr. Josselyn, Miss Frances Chamberlin, is a portrait painter of distinction, and she has reproduced a large portrait in oils from this old photograph. The illustration below is a small reproduction of this oil painting. While this cut, of course, gives but an inadequate idea of the painting, at the same time it conveys at least a suggestion of the excellence with which the work has been done. Not only is the face full of character, but it is unquestionably one of the best likenesses extant of the famous old rubber pioneer.

A NEW PORTRAIT OF GOODYEAR.

RUBBER IN CONGRESS.

An appeal was recently introduced in Congress by Representative Raker of California, providing for the appropriation of $5,000 for the investigation and study of the methods of growing and testing sage-brush and grease-wood for the production of rubber, alcohol and acetic acid. $5,000 will not cover the normal expenses of a large number of inspectors over a protracted period of time, but still, if the bill is passed, it would be an official recognition of the possibility of producing rubber from plants indigenous to the United States.

UNITED STATES RUBBER CO.'S FOOTWEAR PRICES, 1913.

The United States Rubber Co. has issued its new gross price list on Rubber Footwear, which goes into effect on January 1, 1913. The discounts are the same as those announced on February 1, 1912, which include a premium of 5 per cent. for early orders.

Where certain styles are packed both in bulk and in cartons, a common gross price has been made, which is the carton gross price. This change was made at the request of the wholesale and retail trade of this country.

TIRE EXPORTS INCREASING.

Tire exports from the United States show a substantial increase for the year just passed over the preceding year. The value of the exports for the first nine months of 1912 amounted to $3,025,736 as against $2,375,268 for the same period in the preceding year—being an increase of over 30 per cent.

THE GUTTA PERCHA & RUBBER MFG. CO., OF TORONTO, LTD., TO BE REORGANIZED.

There is to be a reorganization of The Gutta Percha & Rubber Manufacturing Co. of Toronto, Limited, whose factories are located in Toronto (Parkdale). The reorganization will take effect as of January 1, 1913. The company has carried on an extensive business throughout Canada, and by export to various parts of the world for over a quarter of a century, having been incorporated as a purely Canadian industry under the Ontario Joint Stock Companies' Act in 1887.

As the business of the company grew, it became necessary to open branches in many places. At some points these branches were operated under the name of "The Gutta Percha & Rubber Mfg. Co. of Toronto, Ltd.," but in the Prairie Provinces the business has been conducted at Winnipeg and Calgary through a subsidiary company, The Winnipeg Rubber Co., Ltd., and in British Columbia through another subsidiary company, the Vancouver Rubber Co., Ltd. The directors and shareholders of the company have now decided to operate in all its branches under one name and at the same time adequately care for and develop its very large and constantly increasing business. To this end, application has been made for a Dominion charter under the name "Gutta Percha & Rubber, Limited," with an authorized capital of $6,000,000. The new company will be controlled by the same interests and be under the same management as the old. It will acquire all the trade-marks, patents, properties and good-will of the old company and, as heretofore, will be an entirely independent concern without connection or affiliation with any other company in or out of Canada.

CALENDARS, CARDS AND BOOKS RECEIVED.

The handsome calendar is a souvenir of which the trade never tires—as a calendar of some sort is obviously a necessity, and quite as obviously, a handsome calendar is preferable to one that cannot be so described. A number of desirable calendars have been received at this office.

The Lebanon Mill Co., Pawtucket, Rhode Island, which manufactures knitted fabrics, has favored its customers with a very dainty calendar, the full size of which is about 9 x 20 inches. It consists of a reproduction in water color effects of a handsome young woman set off with a sizeable corsage bouquet of violets and pansies. A unique feature of this calendar is its multiplied mounting—the picture being mounted on a drab board, which in turn is mounted on grey, and that again mounted on a piece of drab—the whole being tied at the top with a pearl grey ribbon. Its delicacy would suggest that as a rule this calendar would be carried home rather than being left in the office.

The Derby Rubber Co., Derby, Connecticut, engaged in the manufacture of reclaimed rubber, has a calendar somewhat similar in its general appearance to the one described above, but different in its dimensions. This is about 14 inches square. It has a water-color face on a panel at one side, and is tied with a silk cord at the top. This panel also has a double mounting—first on a heavy cream cardboard, and that in turn upon a board of green. This calendar, like the one mentioned above, is suited for home consumption.

The Apsley Rubber Co., Hudson, Massachusetts, has supplied its customers with one of those exceedingly convenient desk memorandum calendars with a week on each page and enough space opposite each day to make any important memoranda that it may be necessary to make. The calendar is 5½ by 8½ inches in size and has a cover and a mount of mottled green printed in gold, which gives it a rich and artistic effect.

The New Jersey Rubber Co., Lambertville, New Jersey, manufacturing reclaimed rubber, is distributing a number of "The Handy Memorandum Desk Calendars" which have a page for every day in the year, the front of the page giving the day of the month and underneath that in small type three whole months, while on the back there is ample space for any memoranda. The leaves are 3 by 4 inches in size, which gives abundant writing space. These leaves are intended to be placed on the little metal frames that are familiar to users of this sort of calendar. A good many business men wouldn't feel that they could start their day's work until they had turned over a page in one of these familiar desk conveniences.

The American Asphaltum and Rubber Co., of Chicago, Illinois, has favored its customers with a very convenient little leather pocket-book, having a pocket at one side containing a celluloid calendar for 1913, and on the other side a memorandum pad supplied with a number of small memorandum slips about 2½ by 4 inches in size. This is a souvenir that anybody might be pleased to get.

The Dunlop Tire and Rubber Co., Toronto, Canada, has distributed a little Christmas booklet of 16 pages and cover printed in red and green and black, giving in a humorous vein the story of its 20 years of successful operation.

White & Reid, rubberizers of textile fabrics, Hoboken, New Jersey, have mailed to many members of the rubber trade an engraved folder ornamented with a spring of holly, extending the compliments of the season, and wishing their customers and all their employees a happy and prosperous New Year.

The Derby Rubber Co., Derby, Connecticut, has favored some of its friends with a particularly convenient pocket memorandum book 3½ x 5½ inches in size, having a flexible leather cover in which is inserted a pad of about 100 leaves provided with a sheet of carbon paper, so that one may not only make a memorandum, but also keep a copy of the same. The leaves are perforated at the top so as to be easily detached. An additional pad goes to complete the equipment—a very great convenience—particularly for the traveling man who wants to send a memorandum to the home office and still keep a copy himself.

The Selby Shoe Co., Portsmouth, Illinois, mailed at Christmas time to its customers, a seasonable card ornamented with gilt bells and holly sprigs, carrying the company's good wishes for a happy Christmas and a prosperous New Year.

LECTURING ON RUBBER.

Mr. C. H. Guild, Jr., connected with the general manager's office of the United States Rubber Co., and son of C. H. Guild, treasurer of the Woonsocket Rubber Co., gave a lecture recently in Brooklyn (to which the "Brooklyn Eagle" devoted nearly half a column) on "The Biography of a Rubber Shoe from the Tree to the Foot," in which he described the processes through which rubber goes from the time it leaves the tree as cream-like latex to the time that it goes on the foot as a rubber shoe—and beyond that through its post-mortem and revivification as reclaimed rubber. Mr. Guild illustrated his lecture by samples of crude rubber, and by making a shoe where all the spectators could watch the operation.

There is so much interest in rubber these days because of the extremely important position it occupies among the industries of the world that a good lecturer on the subject can always command an attentive audience.

PRINTERS WHO PRINT ON RUBBER.

Printing establishments are innumerable in this country, as the output of literature of one sort or another is voluminous and unceasing; but printers who print on rubber are scarce. The

ROGER-WILLIAMS PRINTING CO.

Roger-Williams Printing Co., of Providence, Rhode Island, print on all kinds of rubberized fabrics. They print a great many handsome designs in many colors, as was shown in THE INDIA RUBBER WORLD for last March. Their work has been very successful, and they have been compelled recently to add considerably to their quarters. This added space is shown in the cut of the building given below. They print in fast colors that have been thoroughly tested and are guaranteed not to injure rubber in any way.

SCHRADER TAKES THE TWITCHELL PATENT.

A. Schrader's Son, Inc., of New York, has acquired the entire right, title and interest in the Twitchell tire gauge patent. This acquisition, together with the Schrader patents already owned by the company, places the entire tire pencil-gauge business in the hands of this company.

THE UNITED STATES RUBBER CO.

THE daily press of late has been devoting an unusual amount of attention to the affairs of the United States Rubber Co. Some Western papers—particularly Chicago and Cleveland papers—have felt quite positive that there was to be some sort of a merger between the United States Rubber Co. and the B. F. Goodrich Co.—either that the United States would absorb the Goodrich or that the Goodrich would absorb the United States—or that they would mutually combine—each half absorbing the other, and forming a company representing in capitalization and bond issues a quarter of a billion dollars.

RUMORS OF CONSOLIDATION DENIED.

But all these rumors are industriously denied by the officers of the United States Rubber Co., on one hand, and the officers of the B. F. Goodrich Co., on the other. Notwithstanding these denials, some of the Western papers have exploited the topic at a considerable length, stating that the competition between the two great corporations was being felt keenly by both—and particularly in the tire department—and that a consolidation would be greatly to the interest of both. It seems hardly likely, however, in the present—and prospective—attitude of the people at Washington, that any such merger will be attempted.

6 PER CENT. COMMON DIVIDEND?

Another theme to which certain members of the daily press have devoted some attention is the possibility of an increase of dividend on the common stock of the United States Rubber Co. The "Christian Science Monitor" of Boston, in a recent issue, contained this interesting paragraph:

"In connection with the recent advance in the common stock of United States Rubber it is rumored that the dividend would be increased from 4 to 5 per cent. There is, however, excellent authority that the new rate will be 6 per cent. Action may be taken next month and it may not be taken for three months, it is said."

The "New Haven Register," a publication that from time to time prints quite a little information about the big rubber company, discourses as follows:

"It is understood that including undivided profits of its various subsidiaries the company is earning so far this fiscal year at the rate of 20 per cent. on its former $25,000,000 common stock. This is at the rate of 16 per cent. on the present outstanding common. From a neglected issue, Rubber common has become a considerable center of speculative activity, largely on buying of interests closely identified with the directorate.

"While it is too early as yet to talk definitely regarding a further increase in the common dividend rate, there are bankers close to the company who expect to see 6 per cent. within the next eighteen months."

But, as stated in our December issue, inquiry at the head office of the company in New York brings the answer that increase of dividends on the common stock is a subject that has received no consideration by the directors of the company.

The directors of United States Rubber Co. at their meeting December 5, voted to authorize the officers of the company to carry out the action of the stockholders last spring providing for the retirement of the Second Preferred Stock of the company by the purchase of the same and the issue of three shares of First Preferred Stock for each four of Second Preferred Stock. They also voted to offer to the outside holders of the Rubber Goods Manufacturing Co. Preferred Stock—amounting to $2,413,900—the privilege of exchanging their stock for the First Preferred Stock of the United States Rubber Co.

At a meeting of the directors of the General Rubber Co., held on the same date, action was taken for the increase of the capital stock of the company from $5,000,000 to $10,000,000 to provide additional funds for the investments of that company in the Far East. All matters pertaining to the Crude Rubber interests of the United States Rubber Co. are handled through the General Rubber Co.

THE UNITED STATES TIRE ANNOUNCEMENT.

The publicity department of the United States Tire Co.—one of the constituents of the United States Rubber Co.—makes the following announcement regarding the company's tire plans for the coming year:

"The greatest daily output ever considered possible in tire manufacture is provided for in next year's plans of the United States Tire Co. This concern, which operates four great plants, plans an expenditure of over $3,000,000 in factory improvements and extensions. First of all, the Morgan & Wright plant, which is located in Detroit, is to be doubled in both area and production. An idea of the extent to which this factory will be increased may be gained from the fact that whereas its employes now number 2,500, 6,000 workmen will be required when all the improvements are finished. The output of the factory will be in excess of 5,000 tires daily.

It is planned to erect sixteen new factory buildings, ranging in size from 2,000 square feet to 131,000 square feet. Among these will be a finely appointed laboratory, where the scientific experimental work incident to the manufacture of automobile tires can be carried on; several vast warehouses, and at least half a dozen great manufacturing buildings—the largest of these to be 230 x 60 feet and six stories high. A big new power plant also will be installed, doubling the boiler capacity of the factory. When all of this work is finished, the Morgan & Wright plant will have a floor space of more than 1,000,000 square feet, twice its size at the present time.

"In addition to its big Detroit factory, the United States Tire Co. operates extensive rubber works in Indianapolis, Hartford and Providence, and it is the intention to increase the facilities of all these plants. At Indianapolis a building 80 x 170 feet and six stories high is being erected. At Providence another structure, 75 x 300 feet and three stories high, will be added, while at Hartford a fine new power house and power plant have been installed at a cost of more than $175,000."

THE DOMINION RUBBER CO.

The Dominion Rubber Co., of Toronto has just been organized by a number of prominent Toronto men, with a capital of one million dollars, to engage in the manufacture of all kinds of automobile, truck, bicycle, motorcycle and carriage tires, and a full line of belting, hose, packing, etc. The plant will be built in Toronto, and will be of considerable size. Mr. John J. Main, former vice-president and general manager of the Polson Iron Works of Toronto, director of the Dominion Radiator Co., and president of the Policyholders Life Insurance Co. of Toronto, is the managing director; Mr. W. R. Blowers, who resigned from the Independent Tire Co. of Toronto, some time ago, is general factory manager, and W. Deane Tyrer is the general manager of sales.

A NEW TIRE COMPANY FOR BRIDGEPORT.

The Polack Tire & Rubber Co., is not exactly a new company. The original Polack Company began business in 1863 in Waltershausen, Germany, making fire hose and other rubber goods. When the auto industry came into being the Polack company took up the manufacture of tires on a very large scale. It employs 2,000 hands at its big German plant, and has in addition thriving plants in Paris; Shepherd's Bush, England, and Sydney, Australia. In all of its factories it makes a high grade solid truck tire, and also a line of pneumatic tires. It has been looking for some time for a location in the United States, and has decided upon Bridgeport, Connecticut, where it has secured a small factory building, formerly occupied by a copper company. It is installing machinery and intends to start in the manufacture of tires in a small way immediately. It hopes later to build its own factory in Bridgeport with equipment for a very large output. This plant is in charge of Herman W. Polack, the company's vice-president.

PERSONAL MENTION.

Mr. William Keyes, formerly with Prescott Bros., Boston, is now traveling in the South for the Chicago Rubber Clothing Co., of Racine, Wisconsin, and has booked some very large orders for "at once" and future delivery.

E. T. Carnahan has resigned from the sales force of the Swinehart Clincher Tire & Rubber Co., and will travel in the East for the Firestone Tire Co., with headquarters at Buffalo.

T. B. Goodlee has been made manager of the United States Tire Co., Atlanta branch. He was formerly manager of the company's branch at Richmond, where he has been succeeded by J. G. Given from the Philadelphia organization. The United States Tire Co.'s branch in Dallas, Texas, is now under the management of W. F. Gordon, formerly with the United Motor Co., Dallas. This branch covers the States of Texas, Louisiana, Mississippi and part of Alabama.

MR. MINITER WITH RAYFIELD.

N. H. Miniter, who for several years has been sales manager of the Stromberg Motor Devices Co., has resigned his position with that concern and is now associated with the Findeisen & Kropf Manufacturing Co., of Chicago, as factory sales manager. He will in future represent the Rayfield Carbureter throughout the country.

F. C. HOOD, GENERAL MANAGER.

On December 1, 1912, Mr. F. C. Hood retired as treasurer of the Hood Rubber Co., and will hereafter act as general manager, with his office at the Factory Administration Building in Watertown, where the company has consolidated all its business offices including the purchasing department, foot-wear sales department, tire sales department, and accounting department. Mr. A. N. Hood will succeed Mr. F. C. Hood as treasurer, and Mr. J. E. Stone will become assistant treasurer, with offices as heretofore at 103 Bedford street, Boston.

A DIAMOND PIN FOR MR. CROCKER.

Mr. Isaac Crocker, treasurer of the Hope Rubber Co., of Providence, the company that operates a chain of rubber stores through New England and the Middle States, sailed for Florida and the Panama zone a few days ago, and just before sailing he was decoyed by his employes into one of the Providence hotels, given a Christmas dinner, and presented with a handsome diamond stick-pin. Mr. Crocker was taken quite by surprise, but responded appropriately to the complimentary speech of presentation.

AN ALDEN CHRISTMAS CAROL.

Geo. A. Alden & Co., of Boston, are famous for the individual character of their advertising. They are now sending out to the trade a little booklet of 4 pages and ornamental cover, entitled "Wishing You A Me Rry Xmas," etc., in which it will be noticed that certain letters in "Merry Christmas" represent the famous M. R. X rubber substitute manufactured by the company. The opening stanza of the carol is as follows:

"'Twas the night before Christmas,
When all through the mill,
M. R. X. made by Alden
Was used with good will."

And the rest of the carol maintains this same poetic level.

VALIDITY OF THE ADAMS TIRE TREAD PATENT.

In July, 1911, Judge Platt, in the United States District Court, Hartford, Connecticut, declared against the application of the Calvin T. Adams patent, No. 609,320, to heavy automobile tires, in the suit of the Metallic Rubber Tire Co., against the Hartford Rubber Works Co. On the dismissal of the suit, the plaintiffs appealed, with the result that Judge Platt's decision has been reversed in the Court of Appeals by Judge Noyes.

The patent is for preventing the yielding tires of bicycles and other wheeled vehicles, from slipping in the roadway, as they are particularly apt to do when the roadway is smooth and wet.

THE CHICAGO RUBBER CLOTHING CO.'S NEW FACTORY.

The Chicago Rubber Clothing Co., of Racine, Wisconsin, will have completed by January 15 a new three-story and basement brick factory, mill construction, 62 feet wide by 117 feet long, the upper floor of which will be devoted to the manufacture of men's and women's "Slip Ons," both single and double texture. They have installed a number of new and up-to-date machines and this new factory—combined with a 50-foot addition to their spreading department—will enable them to double their output. The year just closed has been the most successful the company ever had in its 28 years.

THE PORTAGE CO. DOUBLES ITS OUTPUT.

The Portage Rubber Co., incorporated in the state of Ohio, and capitalized at $1,000,000, is putting up a new building to add to its plant in Barberton, Ohio. When this building is completed the company expects to double the output of its auto tires and tubes.

ANOTHER HOPE STORE.

The Hope Rubber Co., which already had nine rubber stores that do both a wholesale and retail trade, has now added a tenth store, situated at Portland, Maine. Its chain of stores covers most of the New England States and one or two of the Middle States. They are operated by Mr. Isaac Crocker, treasurer of the company, who is located at the Providence, Rhode Island, store.

TWO BIG FINES.

Suit has been brought by the United States government against the American Stepney Spare Wheel Co., and the Neumastic Tire Co. A fine of $10,000 is claimed from each company, for failure to make returns under the corporation laws.

THE UNDERWRITERS' LABORATORIES AND THE INSULATED WIRE INDUSTRY.

Editor, INDIA RUBBER WORLD:

In a recent number of the "Journal of Industrial and Engineering Chemistry" (November, 1912, page 856) Mr. G. H. Savage, a rubber specialist well known in the chemical fraternity, calls attention to the Cottle Extraction Apparatus designed by G. T. Cottle of the New York Insulated Wire Co.

It appears from the article that the Underwriters' Laboratories have borrowed—to use a euphemism—the design of the apparatus and the "Methods of Analysis." The author states that the "Methods" are actually the joint work of several chemists of the insulated wire industry, who completed the work without the smallest assistance from the Underwriters' Laboratories. After several unessential changes these instructions were actually published as the "Underwriters Laboratories Methods for Chemical Tests of Rubber Compounds, etc." This attitude of the Official Laboratory of the National Fire Protection Association is interesting in view of the Editorial which appeared in THE INDIA RUBBER WORLD for December, 1912. CHEMIST.

UNITED STATES TIRE CO. ENLARGING BRANCH SYSTEM.

In addition to the changes in staff of agents noted elsewhere the United States Tire Co. is opening new sub-branches at Washington, D. C.; Newark, New Jersey; Birmingham, Alabama; Rochester, New York; and Milwaukee. It is also in contemplation to open sub-branches at Providence; Worcester, Massachusetts; Baltimore; Syracuse, New York; as well as Columbus and Toledo, Ohio.

PROPOSED AUTO ROAD ACROSS CONTINENT.

AT a banquet attended by some 300 Indiana automobile manufacturers and dealers, the amount of $800,000 was subscribed towards the construction of a macadam roadway from New York to San Francisco. The length of the road would be 3,349 miles, and the total estimated cost $25,000,000.

THE CHEMIST AND THE ENGINEER IN THE RUBBER INDUSTRY.

In a recent circular letter to the rubber industry, Messrs. Frederic Dannerth and Hubert E. Collins announce the opening of their new office in New York City. The announcement incidentally points out to the rubber manufacturer, several lines along which the consulting chemist and the consulting engineer can be of service to the several departments in the rubber works. It is probably well known to many of the leading manufacturers, that Messrs. Dannerth and Collins have rendered such services for a considerable period, but the announcement states the character of the work concisely and clearly. Those who have not yet received copies of the announcement can secure one by sending a post card request to their offices at 110 West 34th street, New York. Mr. Collins has been practising as a consulting engineer since 1902, and has in that time acquired a reputation as an expert in power plant efficiency. His professional work has taken him from coast to coast and as far south as the city of Belem-Pará, the hub of the wild rubber industry. Mr. Frederic Dannerth has back of him an extended experience as a consulting industrial chemist, and has devoted a large part of his time to problems peculiar to the rubber industry. His activity as advisory chemist to rubber manufacturers has never been given publicity, chiefly because such services are, as a rule, confidential and "not for publication." This attitude toward his clients has won for Mr. Dannerth an enviable reputation.

THE EMPIRE TIRE AND RUBBER CO.

The Empire Tire and Rubber Co., Trenton, New Jersey, has been incorporated with a capital of $1,000,000—$500,000 common stock and $500,000 preferred stock—to take over the business of the Empire Rubber Manufacturing Co. and the Empire Tire Co. The officers of the new company are Charles H. Baker, president; C. Edward Murray, treasurer, and A. Boyd Cornell, secretary.

NEW OFFICERS FOR REPUBLIC RUBBER CO.

At the directors' meeting of the Republic Rubber Co. on November 27 the following elections were made: L. T. Petersen was chosen first vice-president, succeeding L. J. Lomasney, deceased. John H. Kelly was chosen second vice-president and director, succeeding L. T. Petersen as second vice-president. A. H. Harris was chosen a director of the company, filling the remaining vacancy on the board.

THE MYSTIC CO. REORGANIZES.

The Mystic Rubber Co., located in West Medford, Massachusetts, for the past three years, manufacturing dress shields, rubber sheeting and rubber specialties, has reorganized under the same name with the following officers: Herman T. Dean, president; William B. Marshall, vice-president; Herbert A. Derry, general manager. Edmond N. Warner will continue in charge of the factory, acting as superintendent. They are negotiating for new machinery and expect to branch out in several lines. This plant has a most advantageous location.

A NEWARK TIRE CO.

The "Best Tire Co.," of Newark, completed its permanent organization on December 7. The president is S. L. Henry, of Newark, the secretary and treasurer is Edward Spillane, and the board of directors are S. L. Henry, Edward Spillane and Martin Walker. The office of the company is at the above address, which is also to be the sales office. The capital stock is $125,000 divided into 125,000 shares, all common. The company has purchased the right to manufacture and sell an automobile tire that is constructed on a new model and which is a radical departure, both in design and principle, from any of the tires so far proposed or placed on the market.

TRADE NEWS NOTES.

THE Atlas Tire Co., incorporated in New York, with salesroom at 1771 Broadway, New York, is engaged in the wholesale and retail jobbing of tires and tubes of all standard makes and is now arranging for factory facilities for the manufacture of special brands of casings.

The general tendency of tires seems to be in the direction of the larger sizes, but the American Tire & Rubber Co. of Akron has just sent out some tires that show a distinct movement in the other direction. These tires are half an inch thick and only 2¼ inches in diameter. They evidently are not intended to go on any wheels now in existence, but rather are intended to go on the desk or table—probably as paper weights—though in reality they would serve an excellent purpose as mats, under a stein, for instance.

The John W. Wood Elastic Web Co., of Brockton, Massachusetts, intends to build an addition to its factory, 60 x 80 feet, with fireproof material. This will about double the factory's manufacturing facilities.

The Lyon Rubber Co., of Akron, Ohio, has awarded a contract for a two-story and basement factory.

The Connecticut Mills Co., Danielson, Connecticut, is installing a 50 per cent. increase in its equipment, which is expected to be ready for operation early in February.

The De Leon Tire and Rubber Co., Trenton, New Jersey, incorporated a few weeks ago, with a capitalization of $500,000, is getting bids through the architects for a two-story factory, 245 x 60 feet.

The Chicago Rubber Clothing Co., Chicago, Illinois, expects soon to build a two-story factory, 126 x 60 feet.

It is reported that George M. Anderson and J. S. McClurg, of Akron, Ohio, and N. F. Sanford, of Pittsburg, are looking for a site in Pittsburg for a rubber reclaiming mill.

The Independent Tire Co., of Guelph, Ontario, expects very soon to have its plant in operation.

The American Hard Rubber Co., College Point, New York, expects to make a three-story addition to its present plant.

The Seamless Rubber Co., New Haven, contemplates an addition to its plant, 60 x 100 feet and two stories high.

Plans have been filed for the erection of a four-story brick factory to cost $225,000 for the Goodyear Improvement Co., of Akron, Ohio, at Long Island City, New York.

The Canadian Consolidated Rubber Co., Ltd., has declared regular quarterly dividends of 1¾ per cent. on its preferred and 1 per cent. on its common stocks, payable Jan. 1, to holders of record Dec. 21.

The Walpole Rubber Co. has declared the regular quarterly dividend of 1¾ per cent. on preferred stock and 1 per cent. on common, payable Jan. 15 to stock of record Jan. 1.

The Continental Rubber Works, of Erie, Pennsylvania, have been for a number of years producing an extensive line of bicycle tires, the distinguishing mark of which was and is a knurling—or indentation. The Continental Works have recently served notice on tire manufacturers who have been using this registered trade-mark, which, as already stated, is characterized by a zig-zag corrugation, that they will take action against concerns—either making or selling—tires bearing this mark. It is especially used by the Continental Rubber works for the purpose of individualizing their single tube bicycle tires.

The Wellington Rubber Co., with headquarters at 79 Milk street, Boston, and a factory located at Medford, Massachusetts, are doing spreader work and making carriage automobile goods, as well as cloth for surface clothing. It is a Massachusetts corporation with a capital of $25,000. The president is F. F. Silliman, and the treasurer E. B. Silliman.

TRADE NEWS NOTES.

The Motz Tire and Rubber Co., of Akron, Ohio, which has hitherto been represented in New England by an agency, has now established a branch factory in Boston.

The Bourne Rubber Co., of Providence, Rhode Island, has commenced the manufacture of automobile tires, its product being designated as the "Bourne-Goodyear" tire. It has, however, no connection with any other tire company.

The Tire Core Co., of America, New York, the Eastern distributor of the Dahl tire filler, has filed schedules in bankruptcy.

Contracts have been awarded for the erection of a factory building at Clermont and Atlantic avenues, Brooklyn, by A. Schrader's Sons, Inc., makers of the well known Schrader valves and tire gages.

The Etablissements Bergougnan, of Clermont-Ferrand, France, the large tire makers, are preparing to open a branch selling office in New York City, for the purpose of introducing their tires in the American trade. They are said to contemplate subsequently establishing a factory in America.

The Seamless Rubber Co. have removed from 2007 Broadway, to 250 West Fifty-fourth street, New York, from which address the entire United States sales are now handled; the offices of the company being also located there.

The Atlas Tire Co., New York, has been registered to deal in motor car tires.

The Dayton Airless Tire Co., of Dayton, Ohio, has recently opened a branch at 803 Race street, Cincinnati.

The McNaull Automobile Tire Co., of Toledo, Ohio, has increased its capital from $50,000 to $75,000.

The Detroit Puncturine Company, recently incorporated, is making a compound intended to heal punctures in tires, and cure in the envelope.

A meeting of the stockholders of the McGraw Tire Co., of Pittsburgh, is called for January 27, to consider a change in the by-laws.

The Dayton Airless Tire Sales Co., of Cleveland, Ohio, has been incorporated to deal in automobile tires and supplies.

For the cultivation of south western business, the Cutting Motor Car Co., of Jackson, Michigan, is about to establish a factory at Kansas City; from which point the trade of Missouri, Texas, Oklahoma, Kansas and New Mexico will be handled.

The L. & M. Co-operative Tire Association, Chicago, has been registered under Illinois laws, to deal in motor car tires.

Various changes are reported in the western staff of the Diamond Rubber Co. H. M. Fauvre has been promoted from the management of the Indianapolis branch to that of the Chicago branch, being succeeded at the former point by O. C. Reavell, from the Kansas City office.

The Universal Wheel Co., Fort Wayne, Indiana, making punctureless auto wheels, has let the contract for the erection of its $150,000 plant.

The Heilbron Rubber Co. has opened up premises at East Union street, Pasadena, California, where "Gibraltar" tires will be kept in stock.

Ballon & Wright, the well-known Portland (Oregon) jobbers, are about to open a branch store in Seattle, Washington, under the management of A. J. Jones, former manager of the United States Tire Co.'s branch at the latter point.

The Mosher Rubber Co., of Los Angeles, has been purchased by Franz O. Nelson, former branch manager of the Diamond Rubber Co., and Frank T. Price, a Diamond tire adjuster. They will deal in tires and perform vulcanizing work.

RUBBER IMPORTS NOW AND TEN YEARS AGO.

The value of manufacturers' materials imported into this country during the year 1912 exceeded $900,000,000—or double what it was ten years ago. Of this great importation about $100,000,000 will represent the importation of crude rubber. The figures for the entire year are not now at hand, but for the ten months ending with October 31, the crude rubber imports amounted to 97,000,000 pounds valued at $82,000,000 which would bring the total for the year about 120,000,000 pounds with a valuation close to the $100,000,000 mark. The figures for the same ten months of 1902 were 41,000,000 pounds with a value of $20,000,000.

RUBBER LEADS IN RAW MATERIAL IMPORTS.

According to advance sheets of the statistics for the fiscal year 1912, the imports of the principal raw materials for that year were:

India rubber, gutta percha and substitutes	$105,034,556
Hides and skins	102,371,585
Silk	69,796,848
Chemicals, etc.	58,167,903
Tin	46,227,460
Copper	45,045,222
Wool	14,454,234

Rubber thus takes the lead among industrial raw materials imported; being with the exception of coffee, the largest article of import.

IMPORTS OF CRUDE RUBBER.

The total is given below of the imports of crude rubber into the United States for the 12 months ending June 30, during the last three years, and for the 10 months ending October 31, for the same period. It will be noticed that the imports for 1911 were materially below those for 1910, but that the increase for 1912 carried the figure considerably beyond that for 1910.

FOR FISCAL YEARS ENDING JUNE 30.

	Pounds.
1910	101,044,681
1911	72,046,260
1912	110,210,173

FOR TEN MONTHS ENDING OCTOBER 31.

	Pounds.
1910	77,691,446
1911	66,334,189
1912	97,308,544

THE REPORT FROM PUTAMAYO.

Consul Stuart Fuller, who was sent by the American government to investigate the atrocities in the Putamayo district in Peru, and particularly to discover if—as has been stated by the Peruvian government—these atrocities have been entirely stopped, has returned to the United States with his report. He reached Washington on December 23, and immediately conferred with the officials of the State Department. The contents of his report have not been made public, but there is ground for the surmise that cruelty is still being practised upon the defenceless natives in that unhappy country; and it is believed that the report presents a very delicate problem for the State Department to handle; especially as many of the rubber gathering interests in that country are in the hands of British citizens.

THE JANUARY AUTO SHOWS.

As noted in THE INDIA RUBBER WORLD of December, the automobile manufacturers will hold their annual shows from January 11 to January 25. The two shows will take place concurrently in Madison Square Garden and at the Grand Central Palace; the second week, beginning January 20, being specially devoted to motor trucks, delivery wagons and accessories. The Chicago show follows from February 1 to 8.

RUBBER TRADING CO. ELECTS NEW OFFICERS.

At a recent meeting of the stockholders of the Rubber Trading Co., Collier W. Baird and Robert L. Baird were elected directors, and later at a directors' meeting, Collier W. Baird was elected assistant treasurer, and Robert L. Baird was elected assistant secretary.

WILLIAM T. BAIRD,
President and Treasurer.

This company—one of the most important in the crude rubber field—had its inception in March, 1902, and since that period has developed to its present important growth.

The Rubber Trading Co. today enjoys the confidence and patronage of a very large number of the rubber manufacturers of this country and Canada, and has through effective methods and honest management established a most lucrative and extensive business. Its European connections are of a very desirable character and its buying facilities excellent.

The home offices are located at 38 Murray street, New York, with connections in principal rubber centers. The company handles practically every variety of crude rubber, and its offerings are invariably regarded as dependable.

The gentlemen comprising the executive staff of the Rubber Trading Co., at this time are Mr. William T. Baird, president and treasurer; Robert B. Baird, vice-president and secretary; Collier W. Baird, assistant treasurer and Robert L. Baird, assistant secretary. Mr. William T. Baird who from 1892 until 1902 was prominently identified with The New York Belting and Packing Co., of which he was—during the latter period of his connection—the secretary. Later he was identified with the Mechanical Rubber Co., as secretary and treasurer; so that when he came to the Rubber Trading Co., he brought a wide experience which has contributed in no little degree to the success of that organization, and he is today recognized as one of the most effective credit men in the rubber trade.

ROBERT L. BAIRD,
Assistant Secretary.

The vice-president and secretary of the company is Robert B. Baird, who from 1892 until 1899 was connected with The New York Commercial Co., and George A. Alden & Co., and from 1899 until the start of the Rubber Trading Co., operated under his own name. Mr. Baird conducts the selling end of his concern and it is a safe assumption that there is no more successful, popular, or competent crude rubber salesman in the trade today, and the volume of business which has resulted from his efforts may no doubt be ascribed in a large measure to his unusual energy, honest representation, and to "the smile that won't come off."

ROBERT B. BAIRD,
Vice-President and Secretary.

Mr. Baird spends a large proportion of his time in traveling through the various rubber centers of the country, where he is very well known, and where his presence is always welcome. He is naturally of a very cheerful and helpful disposition, and he has always had the confidence and respect—not only of his customers but of competing rubber men as well. In 1911 Mr. Baird went to London as the commissioner of the Rubber Club of America to the Second International Rubber and Allied Trades Exhibition, and incidentally toured Europe with his family. During his visit he called on various members of the trade in Great Britain and on the Continent, cementing many old friendships and establishing a number of new and profitable connections.

COLLIER W. BAIRD,
Assistant Treasurer.

Robert L. Baird, son of Mr. Robert B. Baird, and the present assistant secretary of the Rubber Trading Co., became identified with the company in 1907, and at the present time he is well and favorably known to the rubber manufacturing trade.

Collier W. Baird, who is now assistant treasurer of the company, is the son of Mr. William T. Baird, and is a graduate of the Sheffield Scientific School of Yale. His connection with the company commenced September 16, 1910, and he has already shown remarkable aptitude in his department.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED NOVEMBER, 1912.

NO. 1,043,961. Quick demountable block-tire. P. B. Bosworth, assignor to the Firestone Tire & Rubber Co.—both of Akron, Ohio.

1,043,062. Tire-grip. R. A. Breul, Bridgeport, Conn.

1,043,075. Resilient wheel. F. E. Day, Everett, Mass.

1,043,143. Tire fabric. H. K. Raymond, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.

1,043,149. Life-saving device. J. Schwab, Winnipeg, Manitoba, Canada.

1,043,208. Means for mounting punctureless tires on wheel-rims. B. Dahl, Minneapolis, Minn.

1,043,373 Tread for tires, etc. G. C. Taylor, Helsby, England.

1,043,407. Pneumatic tire. A. A. Dennis, Grand Rapids, Mich.

1,043,424. Tire-removing tool. H. Hevey, Biddeford, Me.

1,043,525. Elastic-webbing. W. Kops, assignor to Kops Bros., New York.

1,043,571. Resilient wheel. D. L. Crosbie, Sacramento, Cal.

1,043,620. Bottle-closure. J. Marian, Pressburg, Austria-Hungary.

1,043,642. Resilient-tire. H. A. Stoneham and C. T. Schwarze, South Orange, N. J.

1,043,647. Hose-Reel. C. Wagner, Grantwood, N. J.

1,043,658. Tire-rim. J. D. Anderson, Kansas City, Mo.

1,043,677. Pneumatic cushion for vehicles. J. O. Davis, Pawnee, Okla.

1,043,752. Tire-supporting case. E. R. Bolz, Somerville, Mass.

Designs.

42,214. Vulcanizer. A. M. Baugh, Omaha, Neb.

Trade Marks.

57,833. La Crosse Rubber Mills Co., La Crosse, Wis. Indian-head in a circle. For rubber boots and shoes.

59,300. The Miller Rubber Co., Akron, Ohio. The letter *M* in a circle. For adhesive rubber-cement and rubber-tire dough for repairing rubber articles.

59,904. Imperial Rubber Co., New York. The word *Premier*. For rubber belting, etc.

60,721. Edward James, Cleveland, Ohio. The word *Gyroheel*. For rubber heels.

61,248. Charles A. Daniel, Philadelphia, Pa. The letters *aniel* inside a large *D*. For rubber and fabric packing.

63,853. The Diamond Rubber Co., Akron, Ohio. The letters *XX*. For bicycle and all kinds of vehicle tires.

63,854. The Diamond Rubber Co., Akron, Ohio. The number 400 and word *Tandem*. For bicycle and all kinds of vehicle tires.

63,855. The Diamond Rubber Co., Akron, Ohio. The number 1930. For bicycle and all kinds of vehicle tires.

63,856. The Diamond Rubber Co., Akron, Ohio. The word *Ixion*. For bicycle and all kinds of vehicle tires.

63,891. The Diamond Rubber Co., Akron, Ohio. The word *Python*. For rubber belting, valves, etc.

63,892. The Diamond Rubber Co., Akron, Ohio. The word *Unicorn*. For bicycle and all kinds of vehicle tires.

63,893. The Diamond Rubber Co., Akron, Ohio. The word *Clipper*. For rubber belting, valves, etc.

63,894. The Diamond Rubber Co., Akron, Ohio. The word *Defiance*. For rubber belting, valves, etc.

ISSUED NOVEMBER 12, 1912.

1,043,828. Vehicle-wheel. J. B. Hayden, San Angelo, Tex.

1,044,013. Hose-protector. R. W. Burnett, Montreal, Quebec, Canada.

1,044,015. Pneumatic insole and arch support. M. Byrne, San Francisco, Cal.

1,044,222. Rubber-heel. J. Mladezki and P. Wenk, Chicago, Ill.

1,044,260. Waterproof flower-stem protector. E. Schloss, New York.

1,044,294. Resilient top piece for the heels of boots and shoes. H. Thorne, Melbourne, Australia.

1,044,324. Adjustable elastic automobile-wheel. P. Wilkes, Cleveland, Ohio.

1,044,328. Detachable rim for vehicles. M. Wolff, Chelsea, England, assignor to Messrs. Michelin & Cie, Clermont-Ferrand, France.

1,044,352. Vehicle-tire. W. C. Cleghorn, Bloomington, Ill.

1,044,355. Shoe-dauber. J. R. Cygon, Annapolis, Md.

Trade Marks.

65,559. Near-Air Tire Co., St. Louis, Mo. The words *Near Air*. A compound filler for non-metallic tires.

66,208. Vulcanized Rubber Co., New York. The word *Senorita*. For rubber combs.

66,263. The Republic Rubber Co., Youngstown, Ohio. The letter *R* over an eagle and wreath design.

ISSUED NOVEMBER 19, 1912.

1,044,174. Vulcanizer. B. R. Barder, Akron, Ohio.

1,044,495. Hose-coupling. T. Clegg and G. Gee, Calgary, Alberta, Canada.

1,044,512. Cushion-tire. H. A. Fry and G. J. Bruce, Spring Lake, Wis.

1,044,522. Resilient wheel. A. Frederick, Hawksley, Fairhaven, England.

1,044,540. Rubber heel. F. W. Kremer, Carlstadt, N. J.

1,044,619. Resilient hub for vehicle-wheels. E. Yoder, Tulsa, Okla.

1,044,652. Buoyant wearing-apparel, cloth, and other article. K. Hartwig, assignor to Hartwig-Gesellschaft, m. b. H. Berlin, Germany.

1,044,703. Tire-protector. S. Stern, Albuquerque, N. Mexico.

1,044,737. Nipple. F. H. Bowly, New York.

1,044,779. Tire-signal. G. T. Hackley, Los Angeles, Cal.

1,044,888. Wheel-tire. F. Householder, Guthrie, Okla.

1,044,890. Elastic fabric. W. Kops, assignor to Kops Bros., New York.

1,044,947. Corset. E. Temple, London, England.

1,044,951. Resilient wheel. T. E. Van Der Werken, Green Island, New York.

1,044,977. Protective covering for hats and the like. H. Berlin and M. J. Fogarty, New York.

1,045,018. Demountable rim. E. L. Gold and J. H. Messinger, Nazareth, Pa.

1,045,042. Garment clasp. M. Krischer, New York.

1,045,053. Method of producing a rubber-containing product. A. E. Merritt, Gainesville, Ga.

Trade Mark.

65,693. Hood Rubber Co., Boston, Mass. The words *Country Club*. Rubber boots and shoes.

ISSUED NOVEMBER 26, 1912.

1,045,214. Sectional tire. B. C. Swinehart, Youngstown, Ohio.

1,045,346. Tire-making machine. T. J. Whalen, New Brunswick, N. J.

1,045,402. Pulsator for pneumatic milking. C. V. Henrichsen, Copenhagen, Denmark.

1,045,456. Nursing nipple. A. H. Tatum, assignor to Whitall Tatum Co., New York.

1,045,495. Tire-inflating pump. H. K. Austin, Reading, Mass.

1,045,543. Elastic tire for wheels. C. H. Genth, Philadelphia, Pa.

1,045,544. Wheel-tire. C. H. Genth, Philadelphia, Pa.

1,045,574. Rupture-truss. A. Loewy, Berlin, Germany.

1,045,601. Toy bottle. W. C. Parsells, Ellenville, N. Y.

1,045,661. Spring-wheel. J. Baird, Detroit, Mich.

1,045,760. Tire-inflator. W. A. Vinson, Heraldsburg, Cal.

1,045,762. Rubber mats. E. P. White, Chicago, Ill.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 6, 1912.]

16,490. Inflating rubber articles by diffusion. A. Staehler, 1 Hessische strasse, Berlin.

16,560. Molding tire covers. J. S. Stocks, Chapeltown, Leeds, and G. W. Bell Fulstone, Mile End Lane, Stockport.

16,570. Washing or wringing machines, etc. E. Bentley, 149 Beeches avenue, Bradford Road, Keighley, Yorkshire.

16,604. Wrapping fabrics round pneumatic tyres. Soc. A. Olier et Cie., Usines St. Remy, Clermont-Ferrand, Puy de Dome, France.

16,606. Working crude rubber. Soc. A. Olier et Cie., Usines St. Remy, Clermont-Ferrand, Puy de Dome, France.

16,803. Pneumatic tire-cover. A. J. Boult, 111 Hatton Garden, London.

16,812. Pneumatic cushion for tires. E. R. Riedinger, 84 Upper Kennington Lane, and A. Fraser, 6 Atherstone Terrace, Kensington—both in London, England.

16,855. Use of layers of india-rubber in boots. A. G. Knight, Wickham, Hampshire.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 13, 1912.]

16,949. Supports for rubber tires. O. H. Hinds, Le Mars, Iowa.

17,124. Extracting resin from rubber. W. Hiestrich (Nachfolger), 4 Jungfernstieg, Hamburg, Germany.

17,125. India-rubber. W. Hiestrich (Nachfolger), 4 Jungfernstieg, Hamburg, Germany.

17,182. Flexible tires. J. Souden, 10 Oswald Road, Edinburgh, Scotland.

17,261. Pneumatic cushion in tires. W. Woodland, 34a Melville Road, Walthamstow, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 20, 1912.]

*17,406. Caps for fountain pens. J. Blair, 6 John street, New York, U. S. A.

17,578. Tire attachments to rims. T. D. Staples, 1 Coronation Cottages, Exning Road, and C. Peck, Sefton Lodge—both in Newmarket.

17,582. Feeding-bottles. B. E. D. Kilburn, Chancery Lane Station Chambers, London.

17,624. Block tires. H. P. Haas, 112 Boulevard de la Senne, Brussels.

17,643. Tongue-cleaning appliances. M. Balaban, Barlow Moor Road, West Didsbury, Manchester.

17,689. Locating punctures in tires. B. G. Burchell, 10 Dalkeith Place, Kettering.

17,700. Wheel tires. D. Maggiora, 1 Albany street, Regent's Park, London.

17,726. Purifying india-rubber. M. Kochnitzky, 204 avenue Brugmann, and A. Friedl, 81 avenue du Midi—both in Brussels.

17,789. Moulding-process. L. Penkala, 7 Rue Condorcet, Courbevoie, Seine, France.

17,808. Wheel and mud guards. E. Newman, 1 Leonard street, City Road, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 27, 1912.]

17,888. Rubber seed shells in fuel composition. Williamsons, Ltd., Savage Gardens, and W. S. Curtis, 19 Lancaster Road, Ealing—both in London.

*17,956. Rubber casing in rectal appliances. T. Weaver and D. M. Ennis, 1529 Prospect avenue, and I. O. Crittenden, 8920 Wade Park avenue—both in Cleveland, Ohio., U. S. A.

17,992. Rubber hand stamps. A. H. Rogers, 22 Temple street, Springfield, Mass., U. S. A.

17,998. Winding wire, etc., on cores. W. Furstenberg, 54 rue Scheutveld, Anderlecht, near Brussels.

18,045. Springs for fastenings, straps, etc. M. Alberiz, 28 Muhlenbach, Cologne, Germany.

*18,079. Couch rolls in paper machinery. W. H. Millspaugh, Sandusky, Ohio, U. S. A.

18,075. Rubber cements. C. Jearsain, 5 bis, rue Sebastien Gyrphe, Lyons, France.

18,146. Pneumatic cushions for tires. T. H. Holroyd, 34 Morley Road, East Twickenham, Middlesex.

18,234. Vulcanizing solid tires to metal bands. J. Reuse and C. Reuse, Quai au Charbon, Hal, Belgium.

18,258. Rubber gymnasium shoes. North British Rubber Co., Castle Mills, Fountainbridge, and E. C. Clark, 156 Craiglea Drive—both in Edinburgh.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

442,704 (March 23, 1912). A. Thevenin. Leather protector against wear and bursting of pneumatic tires.

442,800 (April 23). G. Gerli. Tanned and parchmented leather cover for pneumatic tires.

442,862 (April 23). M. Giraud. Elastic vehicle tire.

442,878 (June 29, 1911). C. Morel. Elastic vehicle tire.

442,893 (April 29, 1912). W. W. Byam. Improvements in elastic tires and wheel rims.

442,974 (March 11). J. Gand. Demountable pneumatic tire in 3 parts, with non-wearing and non-bursting band.

442,980 (March 21). Ostromislensky and Bogatyr Rubber Manufacturing Co. Process for obtaining isoprene by means of dipentenes, their isomers and analogues.

442,981 (March 21). Ostromislensky and Bogatyr Rubber Manufacturing Co. Process for obtaining rubber by means of chloride and bromide of vinyl.

442,982 (March 21). Ostromislensky and Bogatyr Rubber Manufacturing Co. Process for obtaining rubber by means of isoprene and analogous bodies.

443,156 (April 30). J. M. Thevenet. Elastic vehicle tire.

443,180 (April 30). Ober & Co. Apparatus for vulcanizing covers of pneumatic tires.

443,222 (May 1). W. Mascord. Improvement in elastic tires.

442,991 (March 30). Ostromislensky and Bogatyr Rubber Manufacturing Co. Manufacture of rubber or analogous substances by means of halogene compositions and organic substances.

443,322 (May 2). Heinemann and Boehm. Manufacture of tires.

443,333 (April 26). "Tenax" Tire Co. Tires for heavy automobiles.

443,275 (July 10, 1911). A. Pinel. Manufacture of gum or mucilage from carob seeds.

443,338 (April 27, 1912). J. Giraud. Fixed double faced rubber heel.

443,511 (May 8). G. Chapelet. Protected pneumatic automobile tire.

443,546 (March 5). De Laski & Thropp Circular Woven Tire Co. Machine for manufacture of pneumatic tires.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

254,371 (September 1, 1911). Farbenfabriken, vorm. F. Bayer & Co., Elberfeld. Process for production of substance resembling rubber.

253,517 (August 7, 1910). Process for manufacture of products resembling rubber. Dr. H. Noerdlinger, Flörsheim, Germany.

253,518 (August 7, 1910). Process for manufacture of elastic masses. Dr. H. Noerdlinger, Flörsheim, Germany.

253,519 (August 7, 1910). Process for manufacture of products resembling rubber. Dr. H. Noerdlinger, Flörsheim, Germany.

253,854 (November 13, 1910). Machine for washing crude rubber, etc. Crude Rubber Washing Co., London.

254,196 (January 12, 1911). Process for preservation and improvement of latex. Dr. G. Eichelbaum, Augsburger Strasse 8, Berlin.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

249,236 (1912). Wenjacit G. m. b. H., Hamburg. Preparation of an elastic and plastic substance.

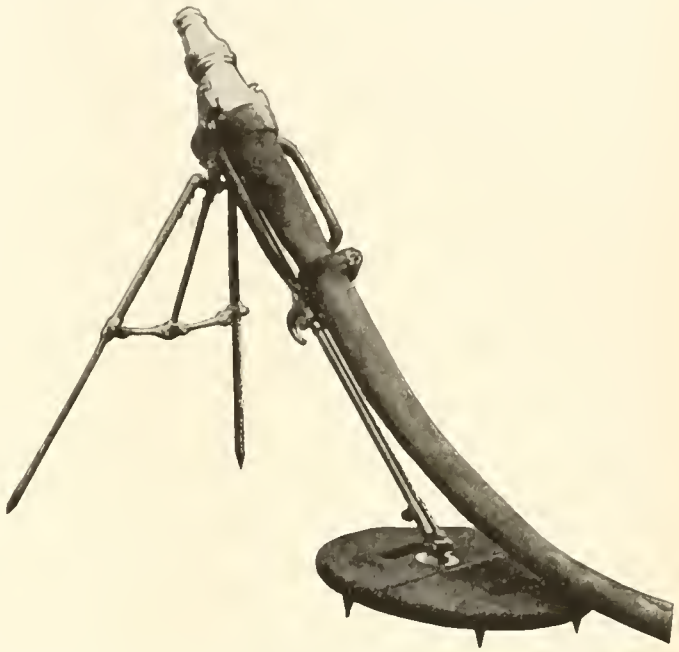
249,212 (1912). F. Frank and E. Marckwald, Berlin. Extraction of rubber from latex.

249,382 (1912). Diamond Rubber Co., Akron, U. S. A. Preparation of rubber and analogous substances.

249,774 (1912). J. Sterckx, rue Van Dyk 54, Brussels. Manufacture of special articles in ebonite or hard rubber.

A PLATFORM FOR HIGH-PRESSURE STREAMS.

It is often a very hazardous matter to hold the nozzle of a fire hose on an icy pavement, a slippery street, or a slanting roof. The illustration shows a small and conveniently handled device that makes it perfectly possible for a single person to manipulate the nozzle of a hose pipe no matter how uncertain the footing or how high the pressure. It is a small oblong platform which can be folded up, and when folded is only about 20 inches long and 10 inches high; it weighs only 20 pounds. This can be opened and put down on a slanting roof or an icy



THE EASTMAN PLATFORM FOR HIGH-PRESSURE STREAMS.

pavement, and nothing can budge it, because there are several sharp prongs on the lower side that take hold and keep hold. The upper surface of this platform is covered with rubber to protect the firemen from electric shocks from streams that strike highly charged wires. Near the center of the platform there is a socket which holds the extension rod of the "Perfection" holders, also made by the Eastman Company. The accompanying cut shows the Eastman platform in conjunction with one of the Eastman Perfection holders. By the use of this combined platform and holder, the stream can be directed at any angle and under all possible pressures. A great many city fire departments are equipped with these Eastman outfits, the Baltimore Fire Department having recently adopted this system for its million-dollar high-pressure service. (The Samuel Eastman Co., Concord, N. H.)

FINE IF IT ONLY WORKS.

From time to time the general consumer is cheered by a paragraph—that turns up once in so often in the columns of the newspapers—telling him how rubber articles that have lost their elasticity can be brought back to their original estate. The advice usually reads something like this paragraph, taken from a recent number of a western paper:

"People using articles made of rubber that frequently lose their elasticity through oxidation may restore the material to its original condition by a simple process. Soak the article in a mixture of one part of ammonia to two parts water. This is particularly well adapted to the restoring of rubber bands, rings and small tubing which are ready to become dry and brittle."

Soaking rubber goods in a mixture of ammonia and water is simple and easy, but, unfortunately, there is one drawback—it doesn't work. The only way to remedy a rubber band that has turned hard and brittle is to get a new band.

Review of the Crude Rubber Market.

ON November 25, at date of last report, the price of fine Pará in London was 4s. 5d. During the later days of the month it improved, reaching 4s. 6¼d. on November 30. A further improvement brought it by December 10, to 4s. 8¼d., the highest price reached during the month, from which point it fell during the ensuing week to 4s. 6d. Another rise commencing on the 18th brought the price by the 24th, just before the holiday, to 4s. 7¾d. The month's fluctuations, therefore, resulted in an advance of 2¾d.; restoring figure to about where it had stood three months earlier.

In plantation rubber there was during the month a closer approximation of value to that of fine Pará. On November 25, they stood respectively at 4s. 5d. and 4s. 3¾d., since which time the difference thus shown was in some cases increased by the course of plantation rubber. The latest quotations, of December 24, are: Pará, 4s. 7¾d.; plantation, 4s. 7¼d. (only ½d. difference). Compared with the position on October 26, of 4s. 6d. and 4s. 2½d., the interval of two months has resulted in an advance of 1¾d. in the former, and of 4¾d. in the latter.

The relative quietness of demand in the London market throughout the month, was accompanied by absence of any pressure by sellers. Consumers have not been desirous of anticipating their wants. In some quarters it is thought that there is a considerable short account in existence, but this consideration has not exercised much influence upon the action of buyers. Meanwhile the increased American consumption has strengthened the market. Anticipations have been expressed of consumers entering the market more freely after the turn of the year, in order to replenish their stocks.

Auctions took place in London on December 3 and 17; the former comprising about 800 tons. The quantity would have been larger but for the withholding of crêpe descriptions, arrived in execution of contracts. The anticipations of firmness proved correct, the rates averaging one penny above the previous fortnightly sale; thus reflecting the course of the open market. One of the features of the auction was the attaining of the price of 5s. per pound for Highland smoked sheets. Cable reports of the sale of December 17 indicate a slight decline on the rates of the previous auction of December 3. Offerings were 922 tons.

At the Antwerp sale of December 13, out of 392 tons Congo, 359 were sold at an advance of about 6 per cent. on valuations. Of 118 tons plantation, practically the whole was sold at a similar increase.

The Rotterdam sale of December 10, included 60 tons Congo and 6 tons *Hevea*. An advance representing on an average 5 per cent. over valuations was obtained.

At Amsterdam, on December 11, there were offered 56 tons, chiefly *Hevea* and *Ficus*, of which about 40 tons were sold at 4 per cent. above valuations.

New York Quotations.

FOLLOWING are the quotations at New York for Parà grades, one year ago, one month ago, December 30—the current dates:

PARA	Jan. 1, '12.	Dec. 1, '12	Dec. 30, '12
Islands, fine, new	96@ 97	95@ 96	102@103
Islands, fine, old	98@ 99	.....	.....
Upriver, fine, new	104@105	106@107	111@112
Upriver, fine, old	108@109	113@114	118@119
Islands, coarse, new	62@ 63	54@ 55	56@ 57
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	89@ 90	82@ 83	82@ 83
Upriver, coarse, old	.....	.....	.....
Cametà	63@ 64	55@ 56	57@ 58
Caucho (Peruvian) ball	88@ 89	81@ 82	84@ 85
Caucho (Peruvian) sheet	.....	.....	.....
PLANTATION CEYLONS.			
Fine smoked sheet	115@116	111@112	112@113
Fine pale crepe	119@120	106@107	110@111
Fine sheets and biscuits	115@116	105@106	109@110
CENTRALS.			
Esmeralda, sausage	86@ 87	78@ 79	81@ 82
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	83@ 84	77@ 78	80@ 81
Panama	.....	.....	.....
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	84@ 85	76@ 77	79@ 80
Mexican, slab	53@ 54	.....	.....
Managabeira, sheet	62@ 63	.....	.....
Guayule	53@ 54	58@ 59	60@ 61
Balata, sheet	81@ 82	82@ 83	.....
Balata, block	53@ 54	54@ 55	.....
AFRICAN.			
Lopori, ball, prime	101@102	98@ 99	.....
Lopori, strip, prime	.....	.....	.....
Aruwimi	100@101	87@ 88	98@ 99
Upper Congo, ball, red	.....	97@ 98	101@102
Sierra Leone, 1st quality	89@ 90	95@ 96	96@ 97
Massai, red	90@ 91	98@100	99@100
Soudan, Niggers	.....	.....	.....
Cameroon, ball	62@ 63	.....	.....
Benguela	64@ 65	73@ 74	74@ 75
Madagascar, pinky	.....	.....	.....
Accra, flake	26@ 27	25@ 26	26@ 27
EAST INDIAN.			
Assam	.....	.....	.....
Pontianak	.....	6¾@ 7	6⅞@
Borneo	.....	.....	.....

Late Pará cables quote:

Per Kilo.		Per Kilo.
Islands, fine	Upriver, fine	5$650
Islands, coarse	Upriver, coarse	3$900
	Exchange	16 11/32d.

Latest Manáos advices:

Upriver, fine	5$900	Exchange	16 11/32d.
Upriver, coarse	3$700		

African Rubbers.

NEW YORK STOCKS (IN TONS).

November 1, 1911	45	June 1, 1912	94
December 1	60	July 1	62
January 1, 1912	58	August 1	85
February 1	150	September 1	156
March 1	90	October 1	89
April 1	80	November 1	90
May 1	62	December 1	80

New York.

IN REGARD to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "The demand for paper during December has been very light, city banks buying almost nothing and out-of-town ones but little. Rates have ruled at 6@6½ per cent. for the best rubber names, and 6½@7 per cent. for others. We look for an improvement in demand and lower rates in January."

NEW YORK PRICES FOR NOVEMBER (NEW RUBBER).

	1912.	1911.	1910.
Upriver, fine	$1.02@1.08	$0.99@1.06	$1.36@1.52
Upriver, coarse	.80@ .84	.87@ .91	1.02@1.07
Islands, fine	.94@1.00	.93@1.00	1.20@1.28
Islands, coarse	.53@ .58	.57@ .60	.73@ .75
Cameta	.55@ .58	.60@ .62	.75@ .78

Statistics of Para Rubber (Excluding Caucho).

	New York. Fine and Medium.	Coarse.	Total, 1912.	Total, 1911.	Total, 1910.
Stocks, October 31...*tons*	144	17 =	161	352	211
Arrivals, November.....	1,151	480 =	1,631	1,883	1,432
Aggregating	1,295	497 =	1,792	2,235	1,643
Deliveries, November....	1,143	473 =	1,616	1,877	1,487
Stocks, November 30..	152	24 =	176	358	156

	Para. 1912.	1911.	1910.	England. 1912.	1911.	1910.
Stocks, Nov. 30...*tons*	1,845	3,475	875	240	750	1,120
Arrivals, November...	3,000	3,240	3,550	1,073	1,146	1,698
Aggregating	4,845	6,715	4,425	1,313	1,896	2,218
Deliveries, November.	3,580	3,665	3,235	1,053	961	883
Stocks, November 30	1,265	3,050	1,190	260	935	1,335

	1912.	1911.	1910.
World's visible supply, November 30....*tons*	3,284	5,529	4,591
Pará receipts, July 1 to November 30.....	11,455	11,190	11,085
Pará receipts of caucho, same dates.....	2,030	1,400	2,090
Afloat from Pará to United States, Nov. 30..	338	256	420
Afloat from Pará to Europe, November 30...	1,245	930	1,490

WEEKLY MOVEMENT OF LONDON PRICES.

[In Shillings and Pence Per Pound.]

May 3, 1912.....	4/7½	August 30, 1912.....	5/1¾
May 10	4/7½	September 6	4/11½
May 17	4/7½	September 13	4/9½
May 24	4/7½	September 20	4/8
May 31	4/7½	September 27	4/7
June 7	4/8½	October 4	4/7
June 14	4/10	October 11	4/7
June 21	4/9½	October 18	4/6½
June 28	4/7½	October 25	4/6
July 5	4/9	November 1	4/4½
July 12	4/10	November 8	4/5
July 19	4/10	November 15	4/5¾
July 26	4/11¾	November 22	4/5¼
August 2	4/11	November 29	4/5½
August 9	5/0½	December 6	4/7
August 16	5/0½	December 13	4/7
August 23	5/2	December 20	4/6½

Liverpool.

WILLIAM WRIGHT & Co. report December 2, 1912:

Fine Pará.—In the early part of the month there was a sharp decline of *2d.* to *3d.* per pound. Since then prices advanced to the former level. The market closes with a distinctly steady undertone. Closing values: hard fine, *4s. 6d.* [$1.10]; soft fine, *4s. 1½d.* [$1]. Trade demand on the whole continues good, which, we think, is evidenced by stock returns, which, in spite of an increase in supplies, are 263 tons, against 929 tons in November, 1911, and 1,337 tons in 1910. America still continues buying a fair proportion on this market, in addition to direct purchases in Brazil; further parcels are now in course of shipment, which do not appear in this month's statistics. The outlook at present is for steady prices, with moderate fluctuations. Receipts for the month are 3,760 tons, including 500 tons Caucho, against 3,920 tons last month, and 3,540 tons last year, totaling 14,140 tons against 12,180 tons last season.

Rubber Stock at Para.

On May 31 the stock had increased, but had receded by June 30; and had again fallen off on July 31. Large sales by the syndicate materially reduced the stock by the end of August, from which point it had slightly increased by September 30. A further increase was shown on October 31. The stock had dropped by November 30 to the lowest point reached in 1911 or 1912.

April 30, 1911.....*tons*	5,104	February 29, 1912...*tons*	3,240
May 31	5,350	March 31	2,730
June 30.....	4,545	April 30	2,770
July 31	3,884	May 31	2,995
August 31	3,450	June 30	2,685
September 30	3,102	July 31	2,300
October 31.....	3,320	August 31	1,355
November 30	3,050	September 30	1,420
December 31	2,675	October 31	1,845
January 31, 1912.....	3,370	November 30	1,265

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

NOVEMBER 25.—By the *Christopher*, Manáos and Pará:

	Fine.	Medium.	Coarse.	Coucho.	Total.
Arnold & Zeiss.....	426,400	37,800	128,900	54,200=	647,300
Henderson & Korn.....	75,300	6,800	62,100	104,600=	248,800
General Rubber Co.....	71,400	13,200	32,000	.....=	116,600
Meyer & Brown.....	41,600	4,100	32,700	8,500=	86,900
Robinson & Co.....	60,800	5,500	14,900	.....=	81,200
New York Commercial Co...	47,300	5,000	23,000	3,900=	79,200
De Lagotellerie & Co.....	34,000	4,600	25,100	3,900=	67,600
Edward Maurer	8,800	900	800	.....=	10,500
Total	765,600	77,900	319,500	175,100=	1,338,100

DECEMBER 4.—By the *Aidan*, Manáos and Pará:

	Fine.	Medium.	Coarse.	Coucho.	Total.
Arnold & Zeiss.....	132,300	73,900	142,800	37,700=	386,700
Henderson & Korn.....	18,800	5,700	27,400	124,200=	176,100
General Rubber Co.....	79,000	13,400	22,800	.....=	115,200
New York Commercial Co..	54,000	10,400	14,100	3,100=	81,600
Meyer & Brown.....	25,500	.....	4,100	51,800=	81,400
Edward Maurer	9,600	300	3,300	19,900=	33,100
H. A. Astlett Co.....	23,500	1,100	5,900	.....=	30,500
L. Johnson & Co.....	.....	.....	.....	27,800=	27,800
Robinson & Co.....	.....	.....	17,900	300=	18,200
De Lagotellerie & Co.....	.....	.....	14,500	.....=	14,500
Hagemeyer & Brown.....	4,700	1,800	.....	.....=	6,500
Total	347,400	106,600	252,800	264,800=	971,600

DECEMBER 11.—By the *Napo*, Iquitos.

	Fine.	Medium.	Coarse.	Coucho.	Total.
H. A. Astlett Co.....	33,100	.....	5,600	9,500=	48,200
W. R. Grace & Co.....	4,400	.....	1,400	5,000=	10,800
Manuel Ayala	1,500	.....	.....	2,300=	3,800
Total	39,000	.....	7,000	16,800=	62,800

PARA RUBBER VIA EUROPE.

NOVEMBER 26.—By the *Kroonland*=Antwerp:

	Pounds.
Ed. Maurer (Fine)	9,000

NOVEMBER 29.—By the *President Grant*=Hamburg:

Ed. Maurer (Fine).....	45,000	
N. Y. Commercial Co. (Fine)...	22,500	
Wallace L. Gough Co. (Fine)..	7,000	
Ed. Maurer (Caucho).....	7,000	81,500

NOVEMBER 30.—By the *Niagara*=Havre:

Raw Products Co. (Coarse)....	3,500	
Arnold & Zeiss (Caucho).....	34,000	37,500

DECEMBER 2.—By the *Carmania*=Liverpool:

Arnold & Zeiss (Fine).....	27,000	
N. Y. Commercial Co. (Fine)..	22,500	
Robinson & Co. (Fine).....	8,000	57,500

DECEMBER 3.—By the *Tivives*=Mollendo:

N. Y. Commercial Co. (Fine)...	3,500	
N. Y. Commercial Co. (Coarse)	2,500	6,000

DECEMBER 3.—By the *Victoria*=Hamburg:

Wallace L. Gough Co. (Fine)..	7,000	
N. Y. Commercial Co. (Fine)..	4,500	
Arnold & Zeiss (Fine).....	3,500	15,000

DECEMBER 9.—By the *Caronia*=Liverpool:

N. Y. Commercial Co. (Fine)...	275,000	
Ed. Maurer (Fine).....	22,500	
Arnold & Zeiss (Fine).....	15,000	
Raw Products Co. (Fine).....	8,000	
N. Y. Commercial Co. (Caucho).	34,000	354,500

DECEMBER 16.—By the *Baltic*=Liverpool:

N. Y. Commercial Co. (Coarse).	9,000	
Raw Products Co. (Fine).....	9,000	18,000

DECEMBER 16.—By the *Pennsylvania*=Hamburg:

Ed. Maurer (Fine).....	40,000	
Rubber Trading Co. (Fine)....	11,500	
Wallace L. Gough Co. (Fine)..	11,000	
N. Y. Commercial Co. (Fine)...	5,000	67,500

DECEMBER 21.—By the *Megantic*=Liverpool:

N. Y. Commercial Co. (Fine)...	95,000	
N. Y. Commercial Co. (Caucho).	26,000	
Arnold & Zeiss (Fine).....	15,000	
Raw Products Co. (Fine).....	15,000	151,000

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

	Pounds.
NOVEMBER 26.—By the *Louisiana*=Havre:	
Henderson & Korn.....	20,000

NOVEMBER 26.—By the *Frutera*=Honduras:

A. Rosenthal & Sons.....	7,000	
G. Amsinck & Co.....	2,000	
R. G. Barthold.....	1,000	10,000

NOVEMBER 27.—By the *Allianca*=Colon:

G. Amsinck & Co.....	15,000	
L. Johnson & Co.....	9,000	
W. R. Grace & Co.....	5,000	
Wessels, Kulenkampff & Co.....	5,000	
J. Sambrada & Co.....	2,500	
Chas. E. Griffin.....	2,500	
Roldan & Van Sickle.....	1,500	40,500

NOVEMBER 28.—By the *Manzanillo*=Tampico:

Continental Mexican Co.....	*89,000	
Arnold & Zeiss.....	*22,500	
American Trading Co.....	*5,500	
For Europe	*70,000	*187,000

NOVEMBER 29.—By the *Morro Castle*=Vera Cruz:

Chas. T. Wilson.....	2,500	
J. W. Wilson & Co.....	1,500	4,000

NOVEMBER 29.—By the *President Grant*=Hamburg:

Ruhber Trading Co.....	11,500	
Arnold & Zeiss.....	11,000	22,500

NOVEMBER 30.—By the *Niagara*=Havre

In transit		15,000

DECEMBER 2.—By *El Occidente*=Galveston:

Chas. T. Wilson	*7,000	
For Europe	*55,000	*62,000

DECEMBER 2.—By the *Carmania*=Liverpool:

Geo. A. Alden & Co.	11,500	
Arnold & Zeiss	11,000	22,500

DECEMBER 3.—By the *Victoria*=Hamburg:

Arnold & Zeiss	105,000	
Ed. Maurer	30,000	135,000

DECEMBER 3.—By the *Allemannia*=Colombia:

Caballero & Blanco	4,500	
Kunhardt & Co.	3,500	
Winter & Smillie	3,500	
I. Brandon & Bros.	1,500	13,000

DECEMBER 4.—By the *Colon*=Colon:

G. Amsinck & Co.	11,500	
Piza, Nephews & Co.	2,500	
Wessels, Kulenkampff & Co.	2,500	
Mecke & Co.	2,000	
Pablo Calvet & Co.	1,500	
Heilbron, Wolff & Co.	1,500	21,500

DECEMBER 4.—By the *Momus*=New Orleans:

Manhattan Rubber Mfg. Co.	4,500	
Eggers & Heinlein	2,500	
Wessels, Kulenkampff & Co.	2,000	
A. N. Rotholz	1,500	10,500

DECEMBER 4.—By the *Magdelena*=Colombia:

G. Amsinck & Co.	7,000	
Mecke & Co.	5,500	
J. Sambrada & Co.	3,500	
A. M. Capen's Sons	3,000	
R. Del Castillo & Co.	2,500	
Chas. E. Griffin	1,500	23,000

DECEMBER 5.—By the *Seguranca*=Tampico:

For Europe		*67,000

DECEMBER 6.—By the *Voltaire*=Bahia:

A. Hirsch & Co.	9,000	
J. H. Rossbach & Bros.	5,000	14,000

DECEMBER 7.—By *El Norte*=Galveston:

Continental-Mexican Co.	*79,000	
Chas. T. Wilson	*22,500	*101,500

DECEMBER 9.—By the *Caronia*=Liverpool:

Arnold & Zeiss		15,000

DECEMBER 9.—By the *Esperanza*=Vera Cruz:

Harburger & Stack	2,500	
Geo. A. Alden & Co.	2,500	
H. Marquardt & Co.	2,500	
Graham, Hinkley & Co.	2,000	
General Export Commission Co.	2,000	
J. W. Wilson & Co.	1,500	
E. Steiger & Co.	1,000	
W. L. Wadleigh	1,000	
Mecke & Co.	1,000	16,000

DECEMBER 9.—By the *Westerwald*=Colombia:

Caballero & Blanco	2,500	
A. Helde	2,000	4,500

DECEMBER 10.—By the *Advance*=Colon:

G. Amsinck & Co.	12,000	
Roldau & Van Sickle	3,000	
Schutte, Bunemann & Co.	2,500	17,500

DECEMBER 11.—By the *Chicago*=Havre:

In transit		45,000

DECEMBER 11.—By the *Prinz Joachem*=Colon:

G. Amsinck & Co.	8,500	
I. Brandon & Bros.	3,000	
Andean Trading Co.	2,000	
P. V. Rubie & Co.	2,000	
Suzarte & Whitney	1,500	17,000

DECEMBER 13.—By *El Alba*=Galveston:

Chas. T. Wilson		*40,000

DECEMBER 13.—By the *Mexico*=Frontera:

W. L. Wadleigh	5,500	
Meyer & Brown	2,500	
Willard, Hawes & Co.	2,500	
G. Amsinck & Co.	1,500	
German-American Coffee Co.	1,500	
Lawience Import Co.	1,500	
H. Marquardt & Co.	1,500	
E. Steiger & Co.	1,000	17,500

DECEMBER 14.—By the *Antilla*=Tampico:

Continental-Mexican Co.	*225,000	
N. Y. Commercial Co.	*70,000	
Arnold & Zeiss	*55,000	*350,000

DECEMBER 16.—By the *Baltic*=Liverpool:

Henderson & Korn		30,000

DECEMBER 16.—By the *Panama*=Colon:

G. Amsinck & Co.	2,000	
Meyer & Hecht	1,500	
Colombian Smelting Co.	1,000	
Gillespie Bros. & Co.	1,000	
Pablo. Calvet & Co.	1,000	6,500

DECEMBER 16.—By the *Albingia*=Colombia:

Maitland, Coppell & Co.	2,500	
Kunhardt & Co.	2,000	
Mecke & Co.	1,500	
Winter & Smillie	1,000	7,000

DECEMBER 16.—By the *Pennsylvania*=Hamburg:

Meyer & Brown	11,500	
Ed. Maurer	8,000	19,500

DECEMBER 19.—By the *Mesaba*=London:

General Rubber Co.		45,000

DECEMBER 19.—By the *Tagus*=Colon:

L. Johnson & Co.	6,500	
A. M. Capen's Sons	4,500	
Gould & Co.	3,000	
Mecke & Co.	2,500	
J. Sambrada & Co.	2,500	
Kunhardt & Co.	1,500	
I. Brandon & Bros.	1,000	
In transit	8,000	29,500

DECEMBER 19.—By the *Matanzas*=Tampico:

Continental-Mexican Co.	*180,000	
Arnold & Zeiss	*22,500	
Chas. T. Wilson	*10,000	*212,500

DECEMBER 19.—By the *Delgorgio*=Colombia:

A. Helde	7,000	
Pottsberg Ebling Co.	2,500	
G. Amsinck & Co.	2,000	
DeLima Cortissoz Co.	1,000	12,500

DECEMBER 21.—By the *Megantic*=Liverpool:

Henderson & Korn		11,000

DECEMBER 23.—By the *Allianca*=Colon:

G. Amsinck & Co.	2,000	
Wessels, Kulenkampff & Co.	2,000	4,000

DECEMBER 23.—By *El Occidenta*=Galveston:

Continental-Mexican Co.	*65,000	
Ed. Maurer	*30,000	
Chas. T. Wilson	*7,000	*102,000

DECEMBER 23.—By the *Monterey*=Vera Cruz:

Chas. T. Wilson	11,000	
Ed. Maurer	3,500	
Geo. A. Alden & Co.	1,000	15,500

AFRICAN.

POUNDS.

NOVEMBER 26.—By the *Kroonland*=Antwerp:

Arnold & Zeiss	38,000	
N. Y. Commercial Co.	27,000	
Robinson & Co.	20,000	
Henderson & Korn	13,500	98,000

NOVEMBER 26.—By the *Germania*=Lisbon:

Santos & Segurra	22,500	
Wallace L. Gough Co.	5,500	28,000

NOVEMBER 29.—By the *President Grant*=Hamburg:

Ed. Maurer	50,000	
Arnold & Zeiss	20,000	
Wallace L. Gough Co.	27,000	
Geo. A. Alden & Co.	11,500	
Raw Products Co.	5,500	114,000

NOVEMBER 30.—By the *Niagara*=Havre:

Meyer & Brown	150,000	
Arnold & Zeiss	34,000	184,000

NOVEMBER 30.—By the *Celtic*=Liverpool:

James T. Johnstone		7,000

DECEMBER 2.—By the *New York*=London:

Arnold & Zeiss	7,000	
Meyer & Brown	3,500	10,500

DECEMBER 2.—By the *Carmania*=Liverpool:

Henderson & Korn	45,000	
Geo. A. Alden & Co.	9,000	
Arnold & Zeiss	4,500	58,500

DECEMBER 2.—By the *Victoria*=Hamburg:

Ed. Maurer	30,000	
Wallace L. Gough Co.	3,500	
Raw Products Co.	3,500	37,000

DECEMBER 4.—By the *Zeeland*=Antwerp:

Geo. A. Alden & Co.	85,000	
Meyer & Brown	80,000	
Robert Badenhop	11,500	
Ed. Maurer	11,000	187,500

DECEMBER 9.—By the *St. Paul*=London:

Geo. A. Alden & Co.	9,000	
In transit	7,000	16,000

DECEMBER 9.—By the *Caronia*=Liverpool:

Henderson & Korn	34,000	
James T. Johnstone	9,000	
Geo. A. Alden & Co.	2,000	45,000

DECEMBER 12.—By the *Chicago*=Havre:

Meyer & Brown	80,000	
Ed. Maurer	30,000	
Arnold & Zeiss	4,500	114,500

DECEMBER 12.—By the *Finland*=Antwerp:

Meyer & Brown	20,000	
Rubber Trading Co.	9,000	
Arnold & Zeiss	7,000	
Charles T. Wilson	2,000	38,000

DECEMBER 12.—By the *Oceanic*=London:

Charles T. Wilson	9,000	
Arnold & Zeiss	4,500	14,500

DECEMBER 16.—By the *Baltic*=Liverpool:

Arnold & Zeiss		7,000

DECEMBER 16.—By the *Pennsylvania*=Hamburg:

Meyer & Brown	25,000	
Ed. Maurer	40,000	
Geo. A. Alden & Co.	13,500	
Wallace L. Gough Co.	11,500	
General Rubber Co.	7,000	
Arnold & Zeiss	4,000	
Robert Badenhop	3,500	104,500

DECEMBER 19.—By the *Vaderland*=Antwerp:

Meyer & Brown		22,500

DECEMBER 21.—By the *Platia*=Lisbon:

Santos & Segurra	15,500	
Geo. A. Alden & Co.	15,000	
Ed. Maurer	11,500	42,000

EAST INDIAN.

[*Denotes plantation rubber.]

POUNDS.

NOVEMBER 26.—By the *Minnehaha*=London:

New York Commercial Co.	*112,000	
J. T. Johnstone	*70,000	
Ed. Maurer	*35,000	
Meyer & Brown	*45,000	
Arnold & Zeiss	*22,500	
R. Badenhop	*11,500	
Henderson & Korn	*11,000	
Charles T. Wilson	*4,500	
L. Blitz	*4,500	*316,000

NOVEMBER 26.—By the *Kroonland*=Antwerp:

Meyer & Brown		*125,000

NOVEMBER 29.—By the *St. Louis*=London:

Henderson & Korn	*35,000	
Ed. Maurer	*15,000	
Arnold & Zeiss	*11,500	
R. Badenhop	*7,000	
In transit	*75,000	
New York Commercial Co.	*10,000	*153,500

DECEMBER 2.—By the *Minnewaska*=London:

General Rubber Co.	*280,000	
J. T. Johnstone	*30,000	
Meyer & Brown	*30,000	
W. L. Gough Co.	*11,000	
General Rubber Co.	30,000	381,000

DECEMBER 2.—By the *Schonfels*=Colombo:

Meyer & Brown	*65,000	
New York Commercial Co.	*50,000	
Ed. Maurer	*11,500	
L. Littlejohn & Co.	*4,500	*131,000

DECEMBER 2.—By the *New York*=London:

New York Commercial Co.	*40,000	
Meyer & Brown	*25,000	
W. L. Gough Co.	11,500	*76,500

DECEMBER 4.—By the *Zeeland*=Antwerp:

Meyer & Brown		*65,000

DECEMBER 5.—By the *Reichenfels*=Colombo:

Meyer & Brown	*45,000	
New York Commercial Co.	*22,500	
L. Littlejohn & Co.	*11,500	*79,000

DECEMBER 5.—By the *Indrasamha*=Singapore:

Ed. Maurer	*100,000	
L. Littlejohn Co.	*35,000	
General Rubber Co.	*25,000	
W. L. Gough Co.	*15,000	
Otto Isenstein Co.	*7,000	
Malaysian Rubber Co.	25,000	
Ed. Maurer	5,500	
Arnold & Zeiss	5,000	217,500

DECEMBER 6.—By the *Majestic*=London:

Arnold & Zeiss	*50,000	
Charles T. Wilson	*30,000	
Ed. Maurer	*25,000	
R. Badenhop	*16,000	
Rubber Trading Co.	*7,000	*128,000

DECEMBER 9.—By the *St. Paul*=London:

New York Commercial Co.	*35,000	
Robinson & Co.	*11,500	
Meyer & Brown	*11,000	
Henderson & Korn	*11,500	
In transit	*22,500	*91,500

DECEMBER 9.—By the *Caronia*=Liverpool:

Ed. Maurer		*11,000

DECEMBER 9.—By the *Minnetonka*=London:

New York Commercial Co.	*135,000	
J. T. Johnstone	*80,000	
Meyer & Brown	*75,000	
Ed. Maurer	*60,000	
Arnold & Zeiss	*56,000	
L. Blitz	*22,500	
Raw Products Co.	*22,500	*451,000

DECEMBER 9.—By the *Kazemba*=Colombo:

New York Commercial Co.	*125,000	
Meyer & Brown	*90,000	
Ed. Maurer	*25,000	
L. Littlejohn & Co.	*20,000	*260,000

DECEMBER 12.—By the *Finland*=Antwerp:

Meyer & Brown		*50,000

DECEMBER 12.—By the *Oceanic*=London:

Meyer & Brown	*45,000	
Arnold & Zeiss	*25,000	
Ed. Maurer	*40,000	
Henderson & Korn	*22,500	
Charles T. Wilson	*10,000	
In transit	*70,000	*212,500

DECEMBER 19.—By the *Vaderland*=Antwerp:

Meyer & Brown		*125,000

DECEMBER 19.—By the *Mesaba*=London:

General Rubber Co.	*135,000	
J. T. Johnstone	*55,000	
New York Commercial Co.	*18,000	
L. Blitz	*11,000	
Ed. Maurer	*8,000	
Rubber Trading Co.	*9,000	
Charles T. Wilson	*2,500	
R. Badenhop	*2,500	
W. L. Gough Co.	*9,000	
General Rubber Co.	20,000	270,000
Arnold & Zeiss	9,000	279,000

DECEMBER 20.—By the *Philadelphia*=London:

New York Commercial Co.	*120,000	
Henderson & Korn	*34,000	
Arnold & Zeiss	*33,000	
Robinson & Co.	*25,000	*212,000

DECEMBER 21.—By the *Indrani*=Singapore:

Ed. Maurer	*15,000	
L. Littlejohn & Co.	*9,000	
W. L. Gough Co.	*9,000	
Otto Isenstein Co.	*5,000	
General Rubber Co.	*2,500	
Malaysian Rubber Co.	11,000	
Ed. Maurer	22,500	
Haebler & Co.	5,500	
Arnold & Zeiss	4,500	84,000

BALATA.

		POUNDS.
NOVEMBER 27.—By the *Suriname*=Demerara:		
Ed. Maurer	11,000	
Middleton & Co.	3,500	
American Trading Co.	3,500	
Schutte, Bunemann & Co.	4,000	
George A. Alden & Co.	2,000	
Yglesias Lobo & Co.	2,500	26,500

DECEMBER 3.—By the *Marowijne*=Trinidad:

Schutte, Bunemann & Co.	15,000	
Yglesias Lobo & Co.	11,000	
American Trading Co.	11,000	
G. Amsinck & Co.	6,500	43,500

DECEMBER 9.—By the *Guiana*=Demerara:

Ed. Maurer		25,000

DECEMBER 16.—By the *Navarre*=Trinidad:

Ed. Maurer	22,500	
American Trading Co.	13,500	
Yglesias Lobo & Co.	10,000	
Middleton & Co.	3,500	
George A. Alden & Co.	1,500	51,000

DECEMBER 19.—By the *Mesaba*=London:

Wallace L. Gough Co.		11,500

DECEMBER 21.—By the *Grenada*=Trinidad:

Schutte, Bunemann & Co.	11,000	
Yglesias Lobo & Co.	7,000	18,000

GUTTA-JELUTONG.

		POUNDS.
DECEMBER 3.—By the *Victoria*=Hamburg:		
George A. Alden & Co.		55,000

DECEMBER 5.—By the *Indrasamha*=Singapore:

Wallace L. Gough Co.	300,000	
L. Littlejohn & Co.	550,000	
Haebler & Co.	125,000	
George A. Alden & Co.	110,000	1,085,000

DECEMBER 21.—By the *Indrani*=Singapore:

L. Littlejohn & Co.	250,000	
Haebler & Co.	200,000	
Wallace L. Gough Co.	125,000	
George A. Alden & Co.	50,000	625,000

GUTTA-PERCHA.

		POUNDS.
DECEMBER 5.—By the *Indrasamha*=Singapore:		
L. Littlejohn & Co.		45,000

DECEMBER 21.—By the *Indrani*=Singapore:

L. Littlejohn & Co.	65,000	
Haebler & Co.	22,500	
Arnold & Zeiss	5,000	92,500

BOSTON ARRIVALS.

		POUNDS.
NOVEMBER 1.—By the *Michigan*=Liverpool:		
Geo. A. Alden & Co. (Africans)		14,000
NOVEMBER 2.—By the *Winifredian*=Liverpool:		
Geo. A. Alden & Co. (Africans)		3,500
NOVEMBER 4.—By the *Devonian*=Liverpool:		
Geo. A. Alden & Co. (Africans)		5,000
NOVEMBER 15.—By the *Sachem*=Liverpool:		
Arnold & Zeiss (Africans)		11,500
NOVEMBER 15.—By the *Canadian*=Liverpool:		
Geo. A. Alden & Co. (Africans)		11,000
NOVEMBER 15.—By the *Iverclyde*=Singapore:		
State Rubber Co. (East Indian)		60,000
NOVEMBER 16.—By the *Anglian*=London:		
Geo. A. Alden & Co. (Africans)		2,000
NOVEMBER 16.—By the *Iverclyde*=Singapore:		
State Rubber Co. (Jelutong)	160,000	
Wallace L. Gough Co. (Jelutong)	150,000	
L. Littlejohn & Co. (Jelutong)	600,000	910,000
NOVEMBER 27.—By the *Basnia*=Hamburg:		
Geo. A. Alden & Co. (Africans)	4,000	
Wallace L. Gough Co. (Africans)	10,000	14,000
NOVEMBER 27.—By the *Sagamore*=Liverpool:		
Geo. A. Alden & Co. (Africans)		29,000
NOVEMBER 29.—By the *Indrasamha*=Singapore:		
L. Littlejohn & Co. (Gutta percha)	34,000	
L. Littlejohn & Co. (Jelutong)	320,000	354,000

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK, NOVEMBER, 1912.

Imports—	Pounds.	Value.
India-rubber	9,531,733	$7,847,688
Balata	80,753	40,949
Guayule	779,676	312,129
Gutta-percha	54,670	38,750
Gutta-jelutong (Pontianak)	1,799,082	80,269
Total	12,245,914	$8,319,785
Exports—		
India-rubber	81,265	$70,136
Balata	20,082	14,020
Guayule	4,498	3,599
Gutta-percha	.....	.....
Reclaimed rubber	85,634	15,992
Gutta-jelutong (Pontianak)	.....	.....
Rubber scrap, imported	1,735,052	$163,726
Rubber scrap, exported	480,347	45,625

EXPORTS OF INDIA-RUBBER FROM PARA FOR OCTOBER, 1912 (IN KILOGRAMS).

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Total.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Total.	GRAND TOTAL.
Zarges, Berringer & Co.	125,844	47,596	162,648	23,009	359,097	307,285	26,882	21,425	18,403	373,995	733,092
Ad. H. Alden, Ltd.	99,227	15,119	53,771	19,475	187,592	41,310	1,360	31,680	.....	74,350	261,942
General Rubber Co. of Brazil	138,723	17,748	104,691	11,750	272,912	21,590	5,459	2,030	750	29,829	302,741
Suarez Hermanos & Co., Ltd.	.....	.....	.....	.....	.....	50,828	3,157	2,622	11,195	67,802	67,802
R. O. Ahlers & Co.	56,017	3,506	29,447	44,442	133,412	128,722	9,258	9,958	14,371	162,309	295,721
De Lagotellerie & Co.	31,280	2,720	11,880	.....	45,880	.....	.....	.....	.....	.....	45,880
Pires Teixeira & Co.	8,840	680	9,240	.....	18,760	4,590	340	1,320	.....	6,250	25,010
J. Marques	66,476	7,833	61,712	7,312	143,333	44,370	4,590	20,130	19,040	88,130	231,463
Syndicate J. Marques	.....	.....	22,000	103,525	125,525	.....	.....	.....	.....	.....	125,525
Sundry exporters	25,850	1,360	13,860	1,680	42,750	1,503	545	3,307	1,400	6,755	49,505
Itacoatiara, direct	.....	.....	.....	.....	.....	19,950	3,150	9,960	450	33,510	33,510
	552,257	96,562	469,249	211,193	1,329,261	620,148	54,741	102,432	65,609	842,930	2,172,191
Manáos, direct	665,746	139,448	155,338	110,748	1,071,280	401,102	56,845	46,815	45,365	550,127	1,621,407
Iquitos, direct	2,205	.....	1,305	3,139	6,649	146,329	7,547	39,018	104,327	297,221	303,870
Total, October, 1912	1,220,208	236,010	625,892	325,080	2,407,190	1,167,579	119,133	188,265	215,301	1,690,278	4,097,468
Total, September, 1912	542,227	116,810	453,169	129,404	1,241,610	824,872	128,383	142,576	173,644	1,269,475	2,511,085
Total, August, 1912	706,115	141,209	533,033	170,294	1,550,651	771,671	81,869	186,983	167,370	1,207,893	2,758,544
Total, July, 1912	579,011	117,387	324,108	160,593	1,181,099	589,286	58,728	185,106	479,399	1,312,519	2,493,618
Total, January-June, 1912	4,409,232	1,064,132	3,562,570	2,071,223	11,107,157	6,251,126	744,600	1,479,253	3,316,123	11,791,102	22,898,259

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR OCTOBER, 1912 (IN KILOGRAMS).

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Total.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Total.	GRAND TOTAL.
Zarges, Ohliger & Co.	196,156	33,760	64,606	5,561	300,083	205,120	30,080	7,715	18,130	261,045	561,128
Adelbert H. Alden, Ltd.	151,203	28,980	28,410	18,407	227,000	.....	1,190	3,420	.....	4,610	231,610
General Rubber Co. of Brazil	116,834	23,267	28,652	18,904	187,657	25,995	2,805	1,346	4,338	34,484	222,141
Ahlers & Co.	71,034	15,592	2,352	6,063	95,041	83,578	9,417	31,248	20,041	144,284	239,325
De Lagotellerie & Co.	.....	.....	.....	.....	.....	102,236	12,087	12,495	950	127,768	127,768
Mesquita & Co.	.....	.....	.....	.....	.....	156	.....	486	28	670	670
Sociedade Anonyma (Armazens Andresen)	.....	.....	.....	.....	.....	2,760	740	1,337	.....	4,837	4,837
Théodore Lévy, Camille & Co.	.....	.....	.....	.....	.....	.....	.....	.....	657	657	657
W. Peters & Co.	.....	.....	.....	.....	.....	1,600	.....	2,480	450	4,530	4,530
	535,227	101,599	124,020	48,935	809,781	421,804	56,319	60,527	44,594	582,885	1,392,666
Iquitos, direct	.....	.....	.....	.....	.....	18,016	286	7,415	3,564	29,281	29,281
Total, October, 1912	535,227	101,599	124,020	48,935	809,781	439,820	56,605	67,942	48,158	612,166	1,421,947
Total, September, 1912	479,558	101,508	98,538	82,074	761,678	650,509	89,416	99,081	174,999	1,014,005	1,775,683
Total, August, 1912	194,739	34,654	44,691	38,668	312,752	388,198	32,359	60,654	90,698	572,409	885,161
Total, July, 1912	177,787	47,976	46,874	36,951	309,588	131,295	13,120	59,558	216,591	420,564	730,152
Total, January-June, 1912	2,523,525	633,319	1,019,142	860,626	5,036,612	2,791,987	465,094	665,339	2,108,191	6,030,611	11,067,223

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Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound—are practically unchanged.

	December 30.
Old rubber boots and shoes—domestic	9¾@ 9⅞
Old rubber boots and shoes—foreign	9⅜@ 9½
Pneumatic bicycle tires	4¾@ 5
Automobile tires	9¾@ 9⅞
Solid rubber wagon and carriage tires	9¼@ 9½
White trimmed rubber	11 @11½
Heavy black rubber	4¾@ 5
Air brake hose	6 @ 6½
Garden hose	1⅛@ 1½
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾

Antwerp.

RUBBER ARRIVALS FOR NOVEMBER.

Details.	1912.	1911.	1910.	1909.	1908.
Stocks, Oct. 31....*kilos*	568,819	578,208	598,774	464,831	662,104
Arrivals in November:					
Congo sorts	403,281	148,361	344,885	417,392	224,772
Other sorts	4,357	63,487	54,404	68,923	65,756
Plantation sorts	161,154	70,761	53,536	47,308	6,715
Aggregating	1.137,611	860,817	1,051,599	998,454	959,347
Sales in November	430,066	226,555	483,451	262,838	355,177
Stocks, November 30	707,545	634,262	568,148	735,616	604,170
Arrivals since Jan. 1:					
Congo sorts	3,061,697	2,854,412	2,870,684	3,276,349	3,807,830
Other sorts	131,291	433,347	369,227	807,364	600,393
Plantation sorts	1,258,777	596,740	518,062	286,248	106,939
Aggregating	4,451,765	3,884,499	3,757,973	4,369,961	4,515,162
Sales since January 1	4,408,758	3,838,549	3,731,335	4,230,080	4,917,886

RUBBER ARRIVALS FROM THE CONGO.

NOVEMBER 26.—By the steamer *Elisabethville:*

Bunge & Co	(Société Générale Africaine) *kilos*	55,500	
do	(Chemins de fer Grande Lacs)	6,000	
do	(Belgika)	1,200	
do	(Comptoir Commercial Congolais)	15,400	
do	(Alberta)	600	
do	(Comfina)	27,500	
Société Coloniale Anversiose	(Haut Congo)	18,450	
do	(Lomami)	14,100	
do	(Cie du Kasai)	83,500	
do	(Cie franc. du Haut Congo)	8,700	
Willaert Freres		4,000	
Société Générale de Commerce	(Alimaienne)	2,300	
Charles Dethier	(American Congo Co.)	490	
Divers		3,100	240,840

Plantation Rubber from the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

[From January 1 to November 18, 1911 and 1912. Compiled by the Ceylon Chamber of Commerce.]

	1911.	1912.
To Great Britain....*pounds*	2,811,151	6,477,696
To United States	1,568,339	3,572,959
To Belgium	641,783	999,707
To Australia	38,865	226,055
To Germany	44,338	156,364
To Austria	3,088	63,788
To Japan	49,308	55,118
To Canada	13,830	22,078
To Italy	8,460	5,909
To Russia	.....	2,288
To Holland	12,893	2,282
To France	117	2,017
To India	196	400
To Norway and Sweden	.....	39
To Straits Settlements	3,216	.....
To Africa	35	.....
Total	5,195,619	11,586,700

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To	Singapore, Nov. 5.	Penang, Sept. 30.	Port Swetenham, Oct. 15.	Total.
Great Britain..*pounds*	8,747,192	6,524,141	13,339,551	28,610,884
Continent	312,264	15,063	1,781,693	2,109,020
Japan	424,803	.....	.....	424,803
Australia	80,387	.....	.....	80,387
Ceylon	2,217	197,760	687,839	887,816
United States	2,194,684	933	2,081	2,197,698
Total	11,761,547	6,737,897	15,811,164	34,310,608
Total, 1911	5,400,798	3,565,100	9,141,828	18,107,726
Total, 1910	3,226,681	1,652,782	6,500,709	11,380,172
Total, 1909	2,181,097	1,739,291	.....	3,920,388

Amsterdam.

JOOSTEN & JANSSEN report [December 11]:

Today about 56 tons were offered for sale (principally *Hevea* and *Ficus*), of which 40 tons were sold at an advance over valuations of about 4 per cent.

Rotterdam.

HAVELAAR & DE VRIES report [December 11]:

In yesterday's sale there were offered about 60 tons Congo and about 6 tons *Hevea* which realized an advance of about 5 per cent. on valuations.

INDIA RUBBER WORLD

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THE RUBBER CLUB OF AMERICA.

THE annual dinner of the Rubber Club of America, recently held in New York, and described in some detail elsewhere in this issue, was such a successful function—in the large attendance, general atmosphere of good fellowship and in the excellence of the addresses—that it may with propriety serve as a text for a brief dissertation on the general idea and purposes of the club.

This club was organized (under the name of the "New England Rubber Club") fourteen years ago, for the purpose of promoting acquaintance and a feeling of fellowship among the members of the rubber trade. As the American rubber industry had at that time completed almost two-thirds of a century, obviously the time was ripe for such an organization. Its original purpose was solely a social one, and it has remained distinctively a social organization practically up to the present time—its meetings consisting of two annual events—a mid-winter dinner and a mid-summer outing. Both of these functions have always been marked, not only by a large attendance, but by the heartiness and zest with which the members have responded to the opportunities of social enjoyment which they afforded. In July, 1909, the name of the club was changed to the "Rubber Club of America," in order to make it national rather than local in its character, and to permit the admission of many members of the trade outside of New England who wished to join. Its strictly social character, however, was not changed.

But great developments have taken place in the American rubber industry in the last fourteen years. The annual product of manufactured rubber goods has during that time increased over 100 per cent. in value. In 1900 it was $100,000,000; in 1912, $220,000,000. And many of the leading members of the club have felt that this organization was fitted to do more than simply bring its members together twice a year in friendly fashion to share an inviting menu; they have felt that this organization could undertake and successfully accomplish serious work that would be of great and permanent benefit—not only to its members—but to the trade at large; and with this idea in mind at the last annual meeting, in April, 1912, the constitution and by-laws were revised, and an entirely new class of membership called "Firm Membership" was added to the club. The Firm Members were to retain all the social privileges previously enjoyed, but in addition, on the payment of slightly increased dues, were to share in benefits of a strictly commercial and industrial nature; the excess dues—over those paid by other members—to be used exclusively to meet the expenses of any work of a commercial character which, in the opinion of the Executive Committee, might advantageously be undertaken for the general benefit of the Firm members.

Space does not permit to enumerate here the various projects which this inner organization might profitably undertake, but two illustrations will be sufficient to show how wide is its field, and how pressing the problems to which it may apply itself. All the members of the rubber trade—and especially dealers in crude rubber and manufacturers—are interested in the simplification of crude rubber nomenclature. Again, practically all the members of the rubber trade—and especially manufacturers and distributors—are interested in maintaining such a level of duties as will protect the American rubber industry against competition from foreign countries, where labor receives materially lower wages, and where the conditions of living are much below those of the American workman. It will be obvious without further enumeration, that there are many enterprises that could be forwarded easily—and with slight expense to any one man or company—where 100 or 200 men were associated in an organization like the Firm Membership of the Rubber Club, while these same undertakings would be exceedingly expensive—if not impracticable—for any individual.

The Firm Membership class of the Rubber Club has enjoyed a substantial growth during the past year, and is

undoubtedly destined to reach large proportions, for self-interest and trade loyalty must both suggest to men identified in any important way with the rubber industry, that they can profitably co-operate with their fellow rubber men in such an organization, to the substantial advantage of each, and to the greatly increased good of all.

WHAT PARA THINKS OF THE EAST.

DR. JACQUES HUBER, director of the Botanical Museum at Pará, and generally recognized as the foremost South American authority on rubber, paid a visit a year ago to the plantations of the Middle East and devoted several months to the careful inspection of the rubber producing territory in Ceylon, the Federated Malay States and in Java and Sumatra. He was received everywhere with the utmost courtesy, as befitted his standing in the rubber world, and as comports with the reputation for hospitality which the Eastern planters enjoy. They treated him, not as a rival, but as a friend and a fellow-worker in the great field of rubber production.

After his return to Pará he wrote in Portuguese a detailed and comprehensive report of his visit, which has just come from the press, making a book of over 130 pages. This interesting story has been summarized in English, and will be found on another page of this issue.

He concedes that the *Hevea Brasiliensis* has become thoroughly acclimated in the East, and appears to be perfectly at home there, even though the topographical conditions are often quite different from those on its native Amazon. He also finds that the plantation industry has become established on such a sound foundation that nothing is likely seriously to menace its continued success. He concedes that the Eastern planters enjoy two great advantages over their Amazon competitors: first, the vast supply of cheap labor, and second, the large number of trained agricultural experts available for the management of rubber plantations. He finds that the cost of labor in the Middle East is only one-tenth the labor cost in the Amazon basin. When one reflects that Java alone has a population of 30,000,000, the vastness of this labor supply is immediately evident.

Dr. Huber mentioned, in his speech at the banquet which concluded the Rubber Exposition, recently held in New York, the almost absolute lack in South America of trained and experienced plantation superintendents. He dwells on this matter again in his report.

On the other hand, there is one advantage enjoyed by the South American planter, namely, unlimited land. Comparing the free land and very dear labor of South America with the dearer land and cheaper labor of the Middle East, Dr. Huber thinks that the only course for the South American planter to pursue is to place his trees far apart, giving them all the room they need, so that each tree may produce to the utmost. In that way, while the yield per acre would be considerably less than that of the East, the yield per laborer might compare favorably with results obtained in Ceylon and the Federated Malay States. He intimates that the Eastern planter—laboring under the necessity of producing dividends on invested capital—has pushed his trees unduly, and that in consequence these plantations may later be found to require considerable periods of rest. He admits that in the early stages South American plantations could not be expected to yield the large returns of those in the East, but might do so after reaching full maturity.

A HOSE MANUFACTURER STATES HIS VIEWS.

IN a letter which will be found an another page in this issue, a manufacturer of fire hose states his views on the contention of the underwriters that they be allowed to inspect all the ingredients and processes employed in the making of hose. He observes sententiously: "A tube made up of a certain percentage of pure new rubber, mixed with brains and experience will be much more durable than a specification tube composed of laboratory theory and inexperience. To obtain the best hose put the manufacturers on their mettle, and create among them the spirit of competition in quality." His conception is that the best way to get serviceable hose is to let each manufacturer make the best he can in the light of his ten, twenty or fifty years' experience, and then submit the finished result to the officials of the fire department, who from their own experience know what service they should get from hose. If, after testing his offering they reject it, the manufacturer will be content; and if after a thorough test they accept it, then let the manufacturer be held responsible for any defects in material or construction that may develop within the first three years of service.

To state the case briefly, the writer of this letter

believes that fire hose should be judged—not by the various stages through which it may pass in course of construction—but by the actual service it gives when put to use. This seems fair, business-like, and adequately to cover the requirements. Where the results are satisfactory the methods of attaining them are immaterial: and conversely the best theoretical methods in the world are of little value if they do not produce the results. When a man gets into litigation all he wants of his lawyer is to win his case. Whether his brief is written on an Underwood typewriter or a Remington: or whether in addressing the jury he gesticulates with his right hand or with his left, would not to the normal mind appear to be matters of vital concern.

A BOSTON CHEMIST ON SYNTHETIC RUBBER.

LIKE most discussions that arise over the advance of science along the border-land which divides the known from the unknown, where the battle of progress continually rages, the discussion of the problem of synthetic rubber has its flood and its ebb, sometimes engrossing the attention of the scientific world, and sometimes lapsing into a condition of profound quiet. This has been the situation ever since Sir William Tilden, over thirty years ago, made the discovery that rubber could be made out of isoprene.

The synthetic discussion was renewed with great vigor last year by the disclosures made by Professor Perkin, of Manchester, England, in an address given before a body of scientists, showing what marked progress had been made in the solution of this problem by a group of English chemists on one hand, and another group of German chemists, both working independently and both arriving simultaneously at practically the same conclusion.

Dr. Lothar E. Weber, a Boston chemist of recognized authority in rubber circles, contributed a very interesting paper on this subject to the discussions held at the Third International Rubber Conference which took place in New York last September. This paper is produced in full in this issue. Dr. Weber views the situation judicially and dispassionately. He is not disposed to join the chorus of chemists who proclaim that natural rubber—whether from the wilds of the Amazon or from the cultivated plantations of the East—will soon be given its *quietus* by the worker in the laboratory. He recognizes the great triumph of the chemical researchers, in being able to produce rubber as good as comes from the South American forests, but he does not believe that they will be able—for years to come at least—to produce it on a scale that will seriously compete with natural rubber. He combats the theory of those who argue from the success of synthetic indigo to the success of synthetic rubber, showing that the two problems are totally different; stating that, while the producers of synthetic indigo had a perfectly definite task set before them, the composition of indigo being uniform and recognized, producers of synthetic rubber are compelled to work more or less in the dark, because the process of polymerization has not yet been brought under chemical control and is seriously lacking in uniformity; and he contends that synthetic rubber in commercial quantities will not be possible until the polymerization of isoprene is much more clearly understood than it is at present. While he thinks commercial synthetic rubber a possibility of the future, he does not believe that anyone now engaged in the rubber industry will see synthetic rubber in open competition with the natural product.

Of course, the exact time when synthetic rubber will arrive at a commercial basis is only a matter of conjecture, but many competent observers will be greatly surprised if it does not do so within the lifetime of those now engaged in rubber activities. With the tremendous advances made in the solution of this problem during the last three or four years, it does not seem possible that its final success can be many years away.

THE WORLD'S OUTPUT OF MOTOR CARS—WHICH RUBBER HAS MADE POSSIBLE.

IN point of attendance—volume and value of exhibits and artistic setting, the Automobile Show held during the latter half of January in New York, was a triumph. Nearly half a million people attended it. This is not to be wondered at when one considers the tremendous hold that the automobile has taken upon our American life. There are at present nearly 900,000 motor cars in use in this country—practically one car for every 100 people; and there will very soon be over a million cars. The year 1912 added 250,000 cars to those already in use, and the aggregate of the estimates made by the manufacturers for the present year reaches 600,000. Deducting one-third of that as rep-

resenting possible undue enthusiasm, we have 400,000 which probably will come close to the number of new cars that will make their initial appearance on our roadways during the present year. It is quite safe to predict that the million mark will be reached within the next few months.

What a tremendous boon the automobile has been to the world! What an addition to the efficiency and fulness of our modern life! In the first place its contribution to the pleasure and satisfaction of living is incalculable. While some people succumb to the speed-mania—certainly destructive of the nervous forces—viewing the auto, by and large, it has been a great help to the health of the community. What more wholesome for the tired business man, or the woman jaded with her household cares, or social exactions, than to jump in a car for an hour's spin over smooth roads by green pastures and through fragrant woods!

The motor car has not only made it possible for the city dweller to get into the country, but it has made it equally possible for the country dweller to get into the city. It has brought almost the first joy into the farmer's life. In the old days a trip to town, five miles away, behind the faithful but sluggish farm horses was an all-day enterprise—now it is but an incident in the day's activities. Moreover, it has not only permitted the town dweller to make swift excursions into the country, but it has enabled him to live in the country six months of the year. The rocky farm ten miles from town, which twenty years ago was not worth the cost of a new front gate, and was abandoned because it was impossible to extract a living from it, now makes a most wholesome and delightful family home from May till November.

In addition to the great number of pleasure cars already mentioned, one must also consider the commercial vehicle, of which there are now some 36,000, and which are bound to grow in number with tremendous rapidity. These are a boon not only because of their commercial efficiency, but as a humanizing agency. They have done more to relieve the burden of the over-worked draft horse than even the lamented Henry Bergh, who devoted his whole life—his time, energy and fortune—to that worthy cause. It is probably a very safe conjecture that in two decades draft animals will disappear from the streets of our large cities—greatly to the advantage of the animals as well as of the streets.

There is no space here to consider the vast addition that the motor car has made, in one way or another, to our national wealth, or the great army of people who find profitable employment in its construction and distribution.

But all the blessings, many as they are, which have come to the human family from the motor vehicle have all been made possible by the rubber tire. Remove that and those million pleasure cars would rust in the garage, and the motor trucks would soon jolt themselves into the junk heap.

CONCERNING CALENDARS.

WITH the coming of every glad New Year comes the annual crop of calendars. Large and small; plain and ornate; with pictures of fair faces embowered in roses, and severe factory fronts with dense smoke (indicative of extreme activity) rolling up into the sky; with figures large enough to stare one in the face across the street, and so small as to require microscopic research to decipher them—calendars of infinite variety; but all welcome, for they serve a purpose and fulfill a mission.

Occasionally some profound person rises to remark: "Why does anybody get out a calendar? People have been getting calendars for 50 years and they are tired and sick of them." Which is fully as wise as it would be to say: "Why does anyone start a restaurant? People have been eating for 6,000 years and they are bored to death with it." Anything that supplies a constantly recurring want will continue popular as long as the want recurs. The great public will still be asking for calendars in the year 19013, provided those hot internal flames (which the geologists assure us are at work in the bowels of the earth) have not by that time broken through the thin crust, and consumed the printing presses.

Many rubber companies issue calendars every year, others issue them from time to time; but they can all rest assured that, if their calendars are attractive and the figures thereon comfortably legible, none of them will go to waste. To be sure, all the calendar offerings sent to a company may not find a conspicuous place immediately over the president's desk; but, unless they are hopelessly devoid of grace or utility, they will all find lodgment somewhere, on wall or table, where they will continue industriously at their job—Sundays and holidays included—for at least 365 days.

Commercial Possibilities of Synthetic Rubber.

By Lothar E. Weber, Ph.D.

A PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD AT GRAND CENTRAL PALACE, NEW YORK, SEPT. 24 TO 30, 1912.

IT is rather peculiar that although the conversion of isoprene into a rubber-like substance has been known for upwards of twenty years, further progress in this direction has been practically stagnant until recent date. This is not altogether due to lack of effort, but rather to the enormity of the problem. The synthesis of rubber, however, received a new impetus about three years ago when two German chemists, Hofmann and Harries, working independently, succeeded in obtaining almost simultaneously products which gave the chemical reactions of rubber and had certain physical resemblances to the natural

DR. LOTHAR E. WEBER.

product. Since then, considerable progress has been made in this direction and, more recently, stock companies have been formed and capital subscribed with a view to actually placing synthetic rubber on the market. The daily press both in this country and especially in Europe, gave this latest development of synthetic rubber wide publicity, sharing the optimism of the promoters and inventors of the new process, and as a result, the general public and, to a very large extent, rubber manufacturers themselves, have been led to believe that synthetic rubber can in the near future be manufactured in competition with the natural product.

I do not want to give the impression of holding in light regard the magnificent work which has been accomplished by European chemists in their efforts to synthesize rubber. I almost think that a certain amount of chemical training is necessary to appreciate the innumerable difficulties and pitfalls which face the investigator in these fields. These men deserve the profoundest admiration for their painstaking and laborious efforts, but it is greatly to be deplored that the public was given to understand that synthetic rubber is today a commercial possibility, since, if the promise is not fulfilled, the attitude of the public will scarcely be one of admiration.

Synthetic rubber enthusiasts have been very fond of comparing the synthesis of rubber with the synthesis of indigo, asserting that the same fate awaits natural rubber that befell natural indigo. These two problems, however, have very little in common and differ from each other in such striking respects that the two syntheses are not capable of comparison. I should like to take up this comparison in more detail because I think in this way the difficulties which will prevent commercial synthetic rubber becoming a realization during the next few decades can be more clearly shown. Before doing so, however, I would ask your indulgence in attempting to make clear to those of you who are not chemists, the meaning of a rather formidable looking word which is always in evidence whenever there is any mention of synthetic rubber. I refer to the word "polymerization."

We are being continually informed that isoprene polymerizes to rubber and that the process of converting isoprene into rubber is one of polymerization. The process of polymerization briefly stated, is one whereby a large number of small units combine to make a single large unit. It is essentially a process of agglomeration. This process of agglomeration takes place between the molecules, the latter, as you know, being regarded as the smallest amount of substance that is capable of existence. The molecules of isoprene, at least 100 of them, unite and polymerize into one single molecule of rubber. Unfortunately, we have not the least idea exactly how many isoprene molecules go to make one molecule of rubber, and it is probably certain that the natural rubbers themselves vary very widely in the respect of their degree of polymerization. It does, however, seem probable that the higher the degree of polymerization; that is to say, the more the number of isoprene molecules that unite to form one rubber molecule, the better are the physical properties of the rubber. In other words, two rubbers of exactly the same chemical composition, with different physical properties, owe this latter difference to their different degrees of polymerization. It follows then, that a uniform degree of polymerization would be the first requirement for a synthetic rubber.

Unfortunately, the chemist of today is absolutely powerless in determining this degree of polymerization experimentally and, to a certain extent, of controlling it. For instance, it is not possible to go into a laboratory with a quantity of isoprene and polymerize the latter to any desired extent. In fact, we have no means of feeling sure that we can on two different occasions bring about the same degree of polymerization. With the chemical methods available today it would be absolutely impossible to make a product with an assured uniform degree of polymerization, and until this is possible, I fail to see how there can be any possibility of commercial synthetic rubber. The first requirement of such a product is uniformity of polymerization, but as we have no means of determining this uniformity, or lack of it, variations would be bound to occur which would make the employment of such synthetic rubber by the manufacturer altogether too precarious. We all know to what disagreeable results variations in the uniformity of the natural product lead and in the latter case the possibilities for uniformity are infinitely more favorable than in the case of the synthetic product.

Now let us briefly consider the case of indigo. Here the problem was to manufacture an article of absolutely definite characteristics and properties. It undoubtedly required a vast amount of chemical skill before the composition of indigo was determined, but once this important feat having been accomplished, the chemist had a definite conception of the substance to be synthesized. Furthermore, there could never be the least doubt as to whether the investigator had actually succeeded or not in obtaining indigo. It is the work of only a few moments to be able to definitely decide whether a product is indigo or not.

In the case of rubber the state of affairs, as we have seen it, is totally different. In the first place, the methods of polymerization are still in their infancy; we have no means of controlling its magnitude, or of assuring its uniformity. The chemical methods of today are wholly insufficient for the solving of this problem.

Synthetic rubber enthusiasts have either overlooked or ignored with supreme indifference the very important fact, that in the year 1916 the price of raw rubber must of necessity drop very considerably. It is estimated (and from all accounts the estimate is a conservative one) that by the year 1916 the Eastern plantations alone will be able to produce 100,000 tons per year, although there are two factors which have not been taken into account in making the estimate, which might have a very serious effect on the future of the plantations. These two factors are: first, diseases of the trees, and secondly, the labor problem.

The chances of the trees becoming infected either with a disease or insect pest is probably very small, as the bulk of the plantations are under very careful supervision, and special precautions are being taken to prevent such an occurrence. The labor question seems to be of more serious consequence, as the Malay coolie is of a rather independent nature. Nevertheless, it is highly probable that the estimate is not exaggerated. Even today one repeatedly hears statements being made that the plantations that are producing rubber could, if necessary, put their product on the London market at 25 cents per pound. This is possibly slightly exaggerated, but not very much so. One has only to look at the dividends now being paid by some of the Eastern plantations to realize that there is a certain amount of truth in this statement. As things stand today, supposing it were possible to market synthetic rubber at 50 cents a pound in great quantities, the competition with plantation rubbers would not be very noticeable, as their output is relatively small; but in 1916 the case will be quite different. Even supposing that the demand for rubber keeps on increasing, the plantations will still be in a position to supply at least half of the demand. There are, furthermore, enormous opportunities for the plant physiologist in the cultivation and production of rubber. So far very little has been done in this direction, as the plantation industry is still in its infancy; but it seems more than probable that careful experimentation will enable means to be devised whereby the yield of rubber per tree can be materially increased.

In the case of the sugar beet this increase in the yield has been accomplished with surprising success. It has been possible by careful methods of cultivation and selection of the most advantageous conditions of soil, to raise the yield of sugar in the beet from 3 to 18 per cent. Undoubtedly, in the case of rubber, the problem is more complex than in the case of the sugar beet, but this field of investigation is still waiting for the pioneer, and I cannot help feeling that the possibilities are indeed large.

It must be seen, even on the supposition that synthetic rubber were today a commercial possibility, and that an article could be produced equal to the plantation product, that the struggle for commercial supremacy would necessarily be a fierce one, with the advantage very much in favor of the plantation product.

In the case of indigo, the synthetic product had practically no competition to meet whatsoever. The production of natural indigo had been carried out under the crudest possible fashion, and the methods of obtaining the dye from the plant were even more crude. For some extraordinary reason, although the production of this dye stuff was of such extreme value to the textile industry, it always remained in the hands of the ignorant natives. Had the same amount of energy and skill been applied to the indigo plant that is now being applied to plantation rubber, the victory of synthetic indigo would probably still be in doubt. It must be granted that the commercial synthesis of indigo was the crowning technical achievement of the nineteenth century, but it must also be acknowledged that its fight for supremacy over the natural product was materially aided by the shortsightedness of indigo planters. Rubber planters, on the other hand, have been keenly alive to the large possibilities which are to be derived from scientific methods of cultivation and production, and they have got such an infinite lead over the efforts of the synthetic chemist, as to be in little danger of being vanquished for many decades to come.

I hope I have not been altogether unsuccessful in making plain some of the difficulties that confront commercial synthetic rubber. With our present-day chemical methods it would be well nigh impossible to assure a uniform synthetic product. Within the next few years the Eastern plantations will be in a position to supply half the demand for rubber, and accordingly would be in a position to wage a very stubborn fight against any synthetic product. Finally, it seems more than probable that scientific investigations will enable the planter to increase the yield of rubber per tree, and thus put him in a still better position to combat the synthetic article.

I do not want to make such a rash statement as to assert that synthetic rubber will never be a commercial possibility, but I should be greatly surprised if there is anybody engaged in the rubber industry today who will have the opportunity of seeing synthetic rubber in open competition with the natural product.

GERMAN ANALYTICAL RUBBER PROGRESS.

Several interesting booklets have been received from the Henriques Laboratory, Berlin, dealing with subjects which have been recently dealt with by that institution.

One of these, reprinted from the "Gummi-Zeitung," describes a process for defining the nitrogenous sub-components and impurities in crude rubber.

In a reprint from the "Tropenpflanzer," Dr. Frank's views on synthetic rubber are reproduced. These had been dealt with in THE INDIA RUBBER WORLD of September, 1912, page 580.

Another reprint from the "Tropenpflanzer" contains a paper by Dr. F. Wohltmann, Director of the Agricultural Institute of the University of Halle, upon "South American and East African Rubber Soils." This interesting paper reproduces the analyses of clays from the left and right banks of the River Acre; as well as from Tanga and Longusa, Ngambo, Magunga, Morogoro, and other East African points.

THE WORLD'S EFFORTS TO RAISE COTTON.

It is very natural with a staple like cotton, which is so necessary to the welfare of mankind, that every considerable government should seek, if possible, to raise its own supply. The various European governments have long tried to devise methods of being independent—to some extent at least—of the American product. One-third of the world's supply of cotton comes from Egypt and India; but notwithstanding this fact, England has made constant efforts to develop a profitable production of cotton in various other territories under English control, and Russia has expended a great deal of effort in the attempt to produce cotton profitably in Central Asia. These various attempts have been successful as far as producing cotton is concerned, but they have not been altogether successful in producing it at a figure that can compete with the cost of its production in the United States; and when the price of cotton in our Southern States has been low these rival efforts in other countries have been attended with much discouragement.

In the last 25 years the average export price of cotton from the Southern States has been 9.3 cents—the lowest price was 5.5c. in 1899, and the highest price during the last 25 years was in 1910, when the export price rose to 19.7 cents.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude and Compounding Ingredients."

FOURTEENTH ANNUAL BANQUET OF THE RUBBER CLUB OF AMERICA

AT THE WALDORF-ASTORIA, NEW YORK, JANUARY 23, 1913.

The Fourteenth Annual Dinner of The Rubber Club of America.

THE dinner of the Rubber Club of America, held at the Waldorf-Astoria, New York, on the evening of January 23d—which, by the way, was the fourteenth annual gathering of this kind in the history of the club—was a thoroughly successful function, highly creditable to the officers and to the members of the committee which had the event in charge, and altogether enjoyable to all who attended.

In the first place the attendance was large—190—which, considering the scattered nature of the club's membership—some from New England, some from the Middle States and many from distant points in the West—is a very satisfactory number out of a total membership of 320.

Another feature that contributed to the enjoyability of the occasion was the fact that so many members availed themselves of the social opportunities afforded by the preliminary reception. The large reception room was well filled a half hour before the dinner by members who utilized the occasion to exchange greetings with old friends, and to make new acquaintances—often with men whom they had long known by reputation but never before personally met. Incidentally, this preliminary reception afforded the out-of-town members a chance to acquaint themselves with the fact that the word "Bronx" does not stand for a geographical location, but rather, in a preparatory way, for a state of mind.

At the appointed hour—or within a reasonably few minutes thereafter—the diners filed into the big Astor gallery and took their seats. The menu, which is given below, was exceptionally well chosen, and showed the handiwork of connoisseurs, and it stopped just at that golden line between just enough and not too much. The dinner was accompanied by a wealth of music. There was an excellent orchestra, and in addition a singing leader with a robust voice. But these were only incidents; there is probably not another club in the country that can boast of so many fine baritones, exceptional tenors, and powerful basses. As a consequence there was a full hour of voluminous harmony, which seemed to make even the waiters temporarily forget their chronic grievances.

MENU.

Huîtres Smith Island

Tortue verte claire

Radis Olives Céleri Amandes salées

Médaillon de bass, sauce Margery
Tomates et concombres

Champignons frais à l'Eugenie

Mignon de filet de boeuf, sauce Colbert
Petits pois à la Paysanne

Poitrine de pintade à la Hongroise
Salade romaine à la Francaise

Pommes de terre farcies, sauce de vanille
Petits fours Fromages assortis
Café

Sauterne

The Waldorf-Astoria le 23 janvier, 1913

The after-dinner addresses covered a variety of themes, and covered them in an interesting and informing fashion. The speaking moved very briskly under the influence of President Hood, whose introductions were models of what introductions should be—brief, direct, and just enough to present the speaker properly to the audience. The president's own address was exceedingly practical and business-like, being largely concerned with the marked developments in the work of the club during the past year. It was listened to with deep interest by all the members of the club and made a specially favorable impression on those who are most interested in the club's expansion and growing usefulness.

After everybody—but the most hardened laggards—had finished his coffee, the president arose and when quiet prevailed, proposed the following toast: "Let us all stand and drink a toast to the President of the United States." His request was carried out with a heartiness and unanimity that indicated that the asperities of the recent election had been entirely forgotten. When the diners were comfortably settled in their seats again Mr. Hood began his address.

THE ADDRESS OF PRESIDENT HOOD.

Fellow members and guests.—At the dinner held in this room a year ago I mentioned my belief that a club, to be permanent, must be useful. My talk this evening is intended to give you a short resumé of the past and some suggestions for usefulness in the future.

In February and March last year there was a very serious agitation in Washington to place an import duty on crude rubber, because additional income was needed, and one line of argument in support of this agitation was that crude rubber was used in automobile tires; automobiles are a luxury, and luxuries should be taxed.

A proper acknowledgment should be made and deep appreciation should be shown the New York members of this club, several of whom gave a large part of many days in preparing statistics and *data* to refute the insidious arguments of certain Congressmen, and many more days were cheerfully given to the preparation of a brief for the Ways and Means Committee. This brief convincingly showed that crude rubber is a necessity and not a luxury.

For this unselfish work, done by a few, but benefitting every user of crude rubber and manufactured rubber, they have our grateful and hearty thanks.

At last winter's dinner I urged a revision of our constitution and by-laws, in order that your directors might have the power to be useful in case an opportunity arose for possible usefulness. The old constitution provided only for sociability. And at the annual meeting of the club, held last April, the new constitution was unanimously adopted. The directors approved a vote delegating to a small executive committee of five the authority of the directors during the interim between directors' meetings, and at last there was a responsible body small enough and so geographically located that they could meet and consider the many problems and the many opportunities for usefulness.

And, fellow members, after attending many executive meetings—of which the president is a member only *ex-officio*—I fell that this club has arrived at another mile-stone in its career where it should desire to do much more.

The unselfish work of your Executive Committee, and especially its chairman, and the hours and days of work given by your secretary and assistant secretary, are deeply appreciated by us all.

But it is too great a favor to ask of these men, to do our

work for us without giving them the tools to properly work with.

Last year the club had a membership of 254 members, including active and honorary. This year there is a total membership of 321, of which 36 are firm members, 228 active members, and 57 associate and honorary members. It has been estimated that there are over 400 firms eligible for firm membership, and your Executive Committee have many assurances of more firm members as well as active members. New firm membership does not begin until the beginning of the next fiscal year, April 1 next.

GEORGE B. HODGMAN, VICE-PRESIDENT.

FREDERIC C. HOOD, PRESIDENT.

HAROLD P. FULLER, SECRETARY.

The opportunities for usefulness of the club that are purely *pro bono publico* are so many and so varied in kinds that I can mention here only a few.

How many of us understand the magnificent work of the *tire group* of the Motor & Accessories Manufacturing Association—an extremely husky and financially strong association—and the Druggists' Sundries Association, the Reclaimers' Association and the Mechanical Association? The mainspring of each of these groups is crude rubber, and our club, the *pater familias* of the crude rubber industry associations, should co-operate with and cordially supplement the work of all of these rubber associations.

Isn't this recital sufficient to show clearly the needs of the club for more support, both numerically and financially, on the part of all firms dealing in rubber? And is it strange that your president strongly urges the employment of a paid secretary, and strengthening of the power of the next president and next executive committee by giving them the facilities for executing the work considered advisable or expedient by them, instead of forcing them to do their own work at great sacrifice of energy and time? And because your Executive Committee is composed of men representative of the best of us, and consequently carrying great responsibilities, sometime the work itself is sacrificed simply because of exhaustion of physical energy and lack of unemployed hours.

The adage, "If you want a thing done get a man who has all he can do," applies to this club. But such men must have tools to do with.

Just a few words on another association—the National Boot & Shoe Jobbers' Association—which has a rubber section. Some of us know that the simple meeting in open conference has tended to stop the secret misrepresentations of quality which are usually the twin sister of price-cutting and other unbusinesslike and wasteful methods. But their traffic departments and credit departments alone justify the existence of the association

Louisiana has lately passed a pure-leather-shoe law which goes into effect next July, and requires that all leather shoes sold in Louisianna shall be made of nothing but pure leather. This is not quite so ridiculous as if a State passed a pure rubber shoe law, a pure rubber tire law, a pure rubber belting, hose, water bottle and clothing law. But who knows, now that four States here have passed or are considering passing laws requiring the date placed on certain kinds of rubber goods sold in those States, but that some States will pass a pure rubber law and imagine they are doing good similar to a pure food law? We must have some organization to meet these issues, and there are enough real issues now to keep us all busy without suggesting imaginary issues.

Now another viewpoint:

The sales of rubber goods manufactured per annum, variously estimated, figured at prices received by the manufacturer, are $225,000,000 to $250,000,000. Of this amount in 1912 the pneumatic tire business was over $100,000,000—a development for the most part of the last ten years.

The United States and Canada consume over one-half of the world's production of crude rubber, and estimates give the consumption in crude rubber for 1909 at, say 33,000 tons; while in 1912 the consumption in this country and Canada is estimated rising 50,000 tons. Of course this increased consumption has come principally from the manufacture of tires, but rubber footwear has increased also from about forty millions in 1902 to fifty millions in 1912.

How fortunate for us all that rubber plantations have increased the supply of crude rubber! Estimates of Pará plantations production also help us to view our opportunities for usefulness. In 1910 the plantations produced about 9,000 tons; in 1911 they produced over 18,000 tons, and in 1912 they produced over 28,000 tons. The estimates for 1913 vary with different people from 38,000 to 40,000 tons, while most people agree that in 1915 the production will exceed 65,000 tons, far exceeding the production of wild rubber from Brazil, especially when it is remembered that statistics for Brazil are figured on green weight, and, for comparison with the Plantation group, must be cut down an average of 20 per cent. for the wild rubber shrinkage.

And, fellow members, think of upwards of 50,000 tons of rubber being bought by manufacturers in this country, valued at somewhere about $125,000,000, and the various kinds of rubber not being even named or having a definite description. This nomenclature of crude rubber has been a difficult problem and

has been the subject of discussion in many an executive committee meeting, and of many patient hours' conference on the part of a sub-committee appointed by your president. It is gratifying to report that we are all in harmony and agreements have been reached on three points.

1. A uniform contract for the sale of crude rubber.

2. An arbitration clause in the contract. But this will be a subject for further talk this evening.

3. A definite nomenclature; that is, a definite name shall be given which shall have a definite meaning.

The first difficulty arises over preparing the name and definite description of the kind which the name shall mean. From a certain river in the Amazon come several kinds of *Hevea* rubber which must be named and described. For example "Up-river Fine," "Up-river Weak Fine," "Up-river Medium," "Up-river Seconds Medium," "Up-river Coarse," "Up-river Nuggets," etc., etc.

The dealers in New York trade constantly with each other and they understand, as between themselves, what they will accept as a delivery on a contract under a name, notwithstanding there are often two names for the same thing, as, for example, "Seconds Medium" and "Mixed Pará"; and there are often two different sortings of rubber under the same name, as, for example, "Up-river Coarse"—some take out the nuggets and others leave the nuggets in.

It all seems so extraordinary that such a condition can exist that the mere recital of such customs, especially when we remember that rejected lots often give an opportunity for unscrupulous dealings, should awaken us all to the necessity of a correct nomenclature of kinds.

And then think of the numerous kinds of Plantation rubber masquerading under the names of "First Latex Crepe," "Smoked Sheet," etc.

The Rubber Club of America can be and should be able to accomplish this nomenclaturing of crude rubber and bring about an integrity of quality which works for a standardization of the principal item in the goods we manufacture. And, gentlemen, what helps the whole helps each part, and this is true of the goods we manufacture and of the members of this club.

We were fortunate in having a Crude Rubber Exposition last fall. The Brazilians were particularly patriotic in sending the best collection of representative kinds of rubber ever exhibited and ever gathered together. It is a pity that representative kinds could not be filed in a museum for reference and study. Each kind was named, but, unfortunately, not all the poorer qualities of each kind were exhibited.

Beautiful exhibits of plantation rubbers were shown, and the public spirit of the exhibitors was always in evidence.

Two things interested me the most. First, the conferences. Many carefully prepared and intelligent papers were read, and much attention was paid to the solution of the nomenclature problem and to the adoption of a standardized method of coagulation. The conferences will all work for the integrity of the industry.

The second thing was the exhibition of old, used rubber scrap. I think there were 168 different kinds exhibited, all properly named and described. This nomenclature of rubber scrap was accomplished by the Reclaimers' Association, simply by the adoption by them of a circular describing the kinds of scraps and the conditions of packing and sorting. Can anyone say that their action in adopting the nomenclature has not worked for the integrity of their business, for economical manufacture and for the benefit of the whole industry? And especially for the protection of the honest dealer as against the "piker"?

Thus, a crude rubber nomenclature will work for the benefit of the industry, and will benefit each person engaged in the rubber business, as a dealer, manufacturer or user. The values of an exact nomenclature will seek their proper levels; and what pleases me most is that all the large dealers in crude rubber in New York City agree that there should be a proper nomenclature and seem more keen for an adoption of it than even the manufacturers, whom it will benefit most.

But, as I have mentioned before, the only reason it is not accomplished is because of the lack of tools to properly do the work.

London does its business in crude rubber better in some ways than New York. As this country uses more than half the world's production, why should not New York have more than half the "say"? If any action can increase the integrity of the industry right here in New York, it is the firm belief of your president that it will tend to build up the importance of New York as a center of the crude rubber industry, just as New York is *the* city of the world today in so many lines of industry, and just as we all fervently hope the United States of America will be in *all* lines of industry.

J. FRANK DUNBAR, TREASURER.

WM. E. BARKER, DINNER COMMITTEE.

CHAS. A. COE, CHAIRMAN DINNER COM.

After the applause that greeted President Hood's address had

died away, he presented the first invited speaker of the evening as follows:

"There is no name more familiar to the rubber trade than 'Goodyear.' Charles Goodyear left us a heritage, not only his name, but his patents and his accomplishments. Contemporaries seldom do true justice, for historians have a clearer perspective, and it is not strange that the movement for a memorial to Charles Goodyear is fast becoming a reality.

"I have the honor to introduce Professor Franklin W. Hooper, the director of the Brooklyn Institute of Arts and Sciences."

PROFESSOR HOOPER'S TRIBUTE TO CHARLES GOODYEAR.

I speak with great hesitation, realizing as I do, not only the importance of my theme, but the fact that I am speaking to representatives of the great rubber industry of the world. You represent an industry, the raw material of which amounts to $250,000,000 a year; while its manufactured product exceeds half a billion a year in value. It is an industry, moreover, whose applications to our modern life have increased with tremendous rapidity during the last two or three years. And yet, if it were not for one man this great industry would not exist, and neither you nor I would be here tonight. Therefore, we must contemplate, not only with a profound personal interest, but with most thankful hearts, the life of this great American.

Charles Goodyear is at once the greatest American discoverer, the greatest American inventor, and a man whose character and career place him in the foremost rank of men in all time. His father before him had shown the genius of the inventor as a hardware merchant in New Haven where he made and sold for the first time in this country farming tools made of steel. Charles Goodyear's education was very largely received in his father's store. Shortly after he reached his majority he established for himself a hardware store in Philadelphia where he sold for the first time goods manufactured only by American industry. In a few years he built up a large and successful business, a business which he sold to others and which was the foundation of the present large hardware business of Philadelphia. But Charles Goodyear, like Louis Agassiz, was not content simply to make money. He had within him an unquenchable desire, an all impelling purpose to be of some great service to humanity. He would have been glad to be able to acquire an education and to enter the ministry, but failing that he sought some material means of benefiting his fellowmen.

He had observed a good deal of crude rubber, in the use of a poor kind of shoe, made in the tropics, worn by very poor people. He conceived the idea that this material, existing in enormous quantities, might be made of the greatest possible service, not only in the manufacture of shoes and of wearing apparel, but of boats, sails and of life-saving apparatus. He studied its qualities, its solubility, and he sought to make out of the crude rubber a material that would resist ordinary heat. He made machinery with which layers of crude rubber of varying thicknesses could be produced. He applied nitrous fumes to the surfaces of the films so that they were less easily melted by heat. He mixed magnesia, lime, oxide of lead, and many substances with the rubber in most intimate ways, and was able to manufacture fabrics very beautiful in appearance, but nevertheless fabrics which softened and decayed in warm weather. For ten long years, 1834 to 1844, he experimented, giving his entire time and energies in his search for some means of converting rubber into a permanently usable and useful article.

But it was not until 1844 that Charles Goodyear discovered, during the course of his researches, that by heating crude rubber, mixed with sulphur, to a high temperature it was converted into vulcanite—the rubber of modern commerce. This discovery was the triumph of long years of the most painstaking and most manifold experiment during which he had suffered in health, had experienced extreme poverty and privation, and through the failure of others to meet their obligations had been involved in debt, and according to the custom of the time had with unbroken spirit endured the hardships of the debtors' prison in Philadelphia.

The discovery once made, Goodyear gave the remainder of his life, 1844 to 1860, to the invention of ways in which the vulcanite could be used. At the time of his decease it had been applied to some two hundred different and distinct uses, and of these over ninety per cent. were the direct product of his inventive genius. In fact, there has been since his decease no important invention for the use of rubber that was not known to Goodyear. The rubber tire which now consumes so large a part of our annual production is but a modification of the rubber tube which Goodyear made. Throughout his entire career he entered into no manufacturing business with the ulterior motive of making money. He invented the machinery with which more than two hundred vulcanite products were manufactured and used the income from his patents and from his sales of manufactured goods in further invention and in making further machinery for manufacturing.

In 1851 he exhibited at the Crystal Palace, at Sydenham, many products of his skill and invention, and in 1854, at the International Exposition in Paris, he was not only awarded the Gold Medal of the Exposition, but he also received the decoration from Napoleon III. of the Legion of Honor—the highest combined compliments that have ever been paid to any American at an International Exposition in Europe.

But in Europe, as in America, Goodyear was unfortunate in making collections due to him, was unable to meet his notes, and the honors conferred by the Exposition and the Emperor were delivered to him in the debtor's prison in Paris.

Charles Goodyear, I have said, was the greatest of American discoverers and inventors. But great as was the work of Goodyear as discoverer and inventor, the character and career of the man are even more remarkable and exceptional. He was simple, earnest, patient, long-suffering, heroic, magnanimous, and he gave himself as fully for his fellow-men as any patriot or martyr in any time. And it is especially because of the quality of the man, added to his pre-eminent discovery and inventions, and to his great and lasting services that a suitable memorial to Charles Goodyear should be erected for the instruction and the uplifting of all the generations of men that follow.

A few years after the decease of Charles Darwin, I visited for the first time the great Natural History Museum at South Kensington. The buildings were new and stretched several hundred feet on either side of the main entrance. I had been a student of Charles Darwin for twenty years and had come to feel the power of his simple life—the far-reaching value of the theory of evolution as a mode by which the Creator had brought the universe to its present condition. I felt then as I feel now that Charles Darwin was the greatest genius and benefactor of the nineteenth century. With this feeling I entered the vast vestibule of this Museum and there unexpectedly found resting on the first landing of the main stairway, in the place of honor in the entire Museum, the statue of Charles Darwin. England and the entire world had ridiculed this student of nature, and yet within a third of a century of the date of his great work on the "The Origin of Species," the whole world had recognized the character of the man, the value of his great contribution to the sum of human knowledge, and had honored him by giving to his statue a place of supreme worth.

Our country is soon to erect on the banks of the Potomac a beautiful temple, inspired by the genius of Greek art, in memory of Abraham Lincoln, and in that temple will stand alone, in enduring bronze, the strong figure of the savior of his country and of her institutions.

So likewise in the City of Washington, as one of the group of buildings destined to become our great National Museum,

most comprehensive in scope, most useful in purpose, most commanding in plan, will stand a museum in memory of Charles Goodyear; a museum in which may be placed, not only the history of the discovery and of the manifold inventions of Charles Goodyear, but in which may be exhibited all of the inventions, examples of manufactured products, illustrations of the many and great uses to which vulcanite has been put in these latter days. And in the grand vestibule of this Museum shall stand a statue of Charles Goodyear, the greatest American discoverer and inventor, a man whose character places him with Socrates, with Savonarola and with Abraham Lincoln.

Professor Hooper's eloquent tribute to Goodyear called forth a hearty demonstration of approval. President Hood then introduced the next speaker:

"THE INDIA RUBBER WORLD had a most excellent article on commercial arbitration in its January number, and the article suggested two thoughts to me: First, the wisdom of having our assistant secretary attend our executive committee meetings; and

H. F. J. PORTER.

PROFESSOR FRANKLIN W. HOOPER.

SERENO S. PRATT.

"Second, the realization of the sincere effort and purpose of so many representative men to use peaceful and progressive methods of settling differences by turning on the bright light of open publicity and broad good fellowship.

"We are very fortunate in having with us tonight the secretary of the New York Chamber of Commerce, to talk to us on Commercial Arbitration. I have the pleasure of introducing Mr. Sereno S. Pratt."

MR. PRATT ON COMMERCIAL ARBITRATION.

Arbitration has seven distinctive, important advantages for business men in the settlement of their commercial disputes. These advantages are:

Speed, Economy, Efficiency, Privacy, Simplicity, Adaptability and Good Will.

1. SPEED. Nothing is more destructive to justice and, therefore, dangerous to civilization, than the law's delays.

In saying this, do not interpret my language as an attack on the courts and the legal profession. In spite of all criticism, reasonable and unreasonable, to which they have been subjected during the past hundred years, it is impossible to measure the length and breadth, the height and the depth of the services they have so splendidly performed for the maintenance of law and order in this country. But justice is inherently slow. Even the mills of the gods grind slowly, though they grind exceeding fine.

Commercial arbitration as proposed by the Chamber of Commerce does not undertake to abolish courts, and it is no attack upon the legal profession. Its practicability is demonstrated by the fact that it seeks the co-operation of lawyers, and it has the commendation of the judges. The best practice of the law today is directed to the avoidance of litigation rather than to the trial of actual cases of litigation; and a lawyer may well advise his client to submit his dispute to arbitration in any case that is especially adapted to trial by arbitration. One of the proofs of the practicability of this system is that lawyers themselves have submitted disputes to it; and we have on file a letter from a leading firm of lawyers thanking our Arbitration Committee for its offices of conciliation in bringing about the settlement of an important dispute without trial.

This arbitration system does not undertake to settle cases which ought to go to a court of law; for instance, cases which involve intricate points of law. The cases which it is willing to take are questions of fact having some real relation to the conduct of business.

Court proceedings are necessarily subject to many inevitable delays, and in addition, the normal course of justice is often defeated by various legal expedients by which litigation can be protracted.

In commercial arbitration there is no opportunity for such causes of delay. Quick action is the rule from which there is no exception. There is no succession of postponements, adjournments or appeals. The procedure is so simple that a decision is speedily reached. In one case tried in the Chamber of Commerce the issue was joined, the submission made, the arbitrator appointed, the trial held, the decision rendered and the judgment paid, all in one week, and both the successful and the defeated party to the case thanked the arbitrator for his courtesy and good judgment.

2. ECONOMY. The time saved by arbitration means, of course, expense avoided. Controversies are to business what friction is in a machine, or waste is in the application of power. By reducing the amount of friction and waste involved in commercial disputes, arbitration increases the efficiency and, therefore, the economy of business. In addition to this indirect gain, the direct costs of arbitration are very small.

In the Chamber of Commerce each party to the dispute is obliged to deposit $60 with the clerk of the committee, and this $120 commonly covers all expenses of the litigation. It is possible that for less than $100 a dispute involving tens of thousands of dollars may be settled in a week's time and without ill feeling—a dispute that if carried into the courts would cost thousands of dollars, a year or more of litigation and, it may be, a lifetime of hatred.

3. EFFICIENCY. Commercial disputes necessarily involve questions of commercial usage, the quality of goods contracted for, the interpretation of trade agreements, etc. Equitable settlements of these disputes call for a knowledge of trade terms and customs. Imagine what a reputable merchant risks when he submits an issue of this kind to a jury made up of men who it may be do not know the difference between a bill of lading and a *billet doux*.

Under the Chamber of Commerce plan one can choose an arbitrator, or arbitrators, from a list of 200 to 300 of the best-known business men of the city—men who have achieved success in their lines of trade, and who know the rules, the customs and the language which prevail in the markets of the world. This makes for high class efficiency.

4. PRIVACY. Publicity is absolutely necessary to the administration of justice in a court of law. There can be no star chamber proceedings in the operation of justice in these modern days.

But, publicity, which is a necessary safeguard in the courts, is not necessary in the conduct of a case voluntarily submitted by disputants to arbitration. In an arbitration committee, a business man may secure the guarantee of justice, with the additional and great advantage of privacy.

Every business man, and certainly every credit man, understands what losses may be sustained through the publicity given to litigations. This is one of the reasons why the National Association of Credit Men are establishing arbitration tribunals in their organization. So greatly does litigation often impair credit that the time may come when one of the questions which the commercial borrower may have to answer before obtaining loans will be: "Do you make a practice of submitting your differences to arbitration?"

A striking illustration of the value of privacy is afforded by a recent case tried in the Chamber of Commerce between a business man who disputed the charge made by his attorney for professional services. The lawyer desired the privacy of arbitration because his professional ability was attacked. The merchant desired the privacy of arbitration because the credit of his concern was involved in the proceedings.

5. SIMPLICITY. No elaborate machinery is necessary for the conduct of arbitration, and this is one of its great merits, for it would inevitably break down if arbitration simply substituted a private court for a public court; and undoubtedly this was one of the reasons why the former Court of Arbitration failed of entire success. That court was established because the earlier arbitration method of the Chamber had in the course of time become inadequate to the changing requirements of business, and yet that early method which was established by the Chamber at its first meeting in 1768, and which lasted for nearly a century, was infinitely better than the Court of Arbitration which followed it, because it worked on a simple rough-and-ready plan, and hundreds and probably thousands of cases were decided by it. I recently discovered in the New York Public Library the minutes of the Arbitration Committees of the Chamber from 1779 to 1792, and they make a large manuscript volume.

6. ADAPTABILITY. The present method of arbitration of the New York Chamber has the merit of adaptability to varying conditions and classes of cases. For instance, it makes it possible for the two parties to have one arbitrator, or three arbitrators, or, in certain important disputes, to have the entire Committee on Arbitration sit as arbitrators.

The system is adapted not only to disputes between members of the Chamber, but also to persons not members; and it can settle controversies between citizens of different countries. It will interest you to know that the first case tried under the present rules was between a manufacturer in England and a contractor in New York; and the impartiality of the proceedings is demonstrated by the fact that the American arbitrator decided in favor of the English manufacturer. Moreover, as the system works, it serves not only to decide definitely submitted disputes, but it also serves to bring about settlements by conciliation without any trial whatever. This is even better than arbitration. Scores of disputes have already been brought to an amicable settlement through the conciliatory offices of the Chamber's Committee on Arbitration which, without that method of mediation, would inevitably have gone to litigation. In one case between two of the most noted merchants in the city, the dispute involved the sale of a large amount of merchandise. At first they determined to submit this case to litigation in court. Then they agreed to submit it to the Arbitration Committee of the Chamber, and an arbitrator was appointed. A day was set for the trial, when, by the good offices of the committee, the two merchants were brought together and they settled their dispute privately and without arbitration.

7. GOOD WILL. The conduct of a trial in a court of justice necessarily involves much irritation and bad feeling. It can hardly fail to do this. Even innocent parties to the dispute, as for instance, witnesses who have no interest whatsoever in the controversy, may be irritated by the trial and leave with a feeling of dislike for the administration of justice. Any one who has undergone the ordeal of cross-examination will understand something of what I mean.

Now, in an arbitration proceeding, while bad feeling may not be entirely eliminated, there is nothing in the conduct of the case which involves any breach of courtesy, any violent attack upon the opposing party, any irritating cross-examination of witnesses, any exhibitions of bad temper. This is a very great advantage of arbitration proceedings. In one case at the Chamber of Commerce, the two parties to the dispute, after the decision had been rendered, left the building practically arm in arm, both entirely satisfied that they had obtained justice.

In conclusion let us not claim too much for arbitration, whether applied to international disputes, labor disputes or commercial disputes. Arbitration will not always settle. But because arbitration is not applicable in every case, that is no reason for not establishing arbitration tribunals. There is an international court at The Hague, yet there have been two big wars in Europe during the past year. But shall we therefore abolish international arbitration, when we know that there has been an average of one important dispute between nations settled by arbitration every year in the last half century? Shall we abandon arbitration in labor disputes because in some cases the contending parties prefer the arbitrament of industrial war?

Commercial arbitration is not always the wisest course of action in business disputes; but in ordinary questions of fact arising out of mercantile transactions it is the best, speediest, most economical and simple method of effecting settlements.

The man who consciously or unconsciously feels that he is in the wrong will go to litigation every time, preferring to take his chances before a jury. Arbitration establishes the honest intent of both parties to a dispute; and I believe the time will come when business public opinion will put upon the merchant who refuses to arbitrate his dispute the burden of giving a clear and convincing reason to justify his action.

As many members of the Rubber Club have taken a deep interest in the system of arbitration established by the Chamber of Commerce, Mr. Pratt's clear and concise statement of the scope and advantages of that system was listened to with close attention. At its conclusion President Hood arose and stated

that a friend noting his fondness for limericks, and also his continued persistence for a rubber nomenclature, had sent him the following limerick:

THE OPTIMIST.

Said a cheerful old bear at the Zoo:
"I never have time to feel blue.
If it bores me, you know,
To walk to and fro,
I reverse it and walk fro and to."

"But this limerick," he continued, "also suggests a subject for the next speaker, namely, The Elasticity of Rubber. I have the honor to introduce Mr. Lawrence Sharkey."

MR. SHARKEY ON RUBBER—AND OTHER MATTERS.

Mr. Sharkey proved to be a humorist. He admitted that his only knowledge of rubber was attained through a recent visit to an old friend of his—one named John. He stated that he had called at his friend's place of business and was hardly seated when his friend was called to the 'phone, and he heard him give an order for a certain number of tons of pickles—nuggets—crepe—sheets and blankets. When the receiver was hung up Mr. Sharkey exclaimed: "In Heaven's name, John, what business are you in?" and his friend replied, "The rubber business." Subsequently, John took him over his mill and showed him the processes of converting crude rubber into manufactured product; but the chief impression made on the speaker's mind was of the extreme—not to say excessive—fragrance of the crude material, which he averred "had limburger backed into the corner and begging for mercy." But while Mr. Sharkey's knowledge of the rubber industry was not very profound, it served for a string on which to hang a great many diverting anecdotes, which were not only good, but, better than that, were new; as a consequence of which, when the speaker sat down, he did so amid much applause.

PRESIDENT HOOD.—"Most arguments arise from misunderstanding of the meaning of words used. The meanings of the words 'parsimony' and 'economy' are often confused, but a true definition of 'efficiency' once established clearly will make us all want to 'get together for efficiency.'

"And this is the subject of the talk by our next speaker, who is the Secretary of the Efficiency Society of this city, a society composed of live wires with high voltage. I have the pleasure of introducing Mr. H. F. J. Porter."

MR. PORTER ON GETTING TOGETHER FOR EFFICIENCY.

We do not always realize how natural the processes are through which we are passing when we do certain things. For instance, we do not realize that the natural tendency which is innate in all human beings to segregate in groups is what occurs when a meeting such as this takes place.

Man is a social animal. By that I mean that he has an innate tendency to associate himself with others who have the same common purpose, and this purpose may be either for self preservation or for aggression, or for some common characteristic.

This was the force which operated in early days to form the tribe, and later to bring the tribes together to form a nation, and we see the same force operating in the formation of groups for business and social purposes. Now when these groups form, another action takes place which we do not always recognize as perfectly natural and automatic, and that is the development out of the group of some special personage who is best qualified to lead the movement in hand. Thus, in olden times we had the patriarch or the chief selected for his wisdom or his prowess, and later we had the shrewd or capable business man, or other person best suited to act as leader. This man having been so selected receives the guarantee of the group that they will support him.

After a while another natural process occurs when the group gets so large that the leader cannot keep in close touch with all its members. He appoints others to direct smaller groups into which the larger one is divided, and here the psychology of the situation changes, for these men so appointed are not the selection of the groups over which they are placed, but on the contrary are the selection of an outsider, to whom they are responsible and whose interest they are subserving, and in order that they may get these people to carry out his wishes, they may have to use force instead of depending upon their voluntary service. Now force always develops resistance, and all groups, whether in the past or in the present, as they grow from small to large, pass through this stage and the man once a leader of the smaller group becomes the dictator to the larger. In this way came monarchy, and in this way when the monarch's dictation became too arbitrary the resentment of his people overthrew him.

In this country, up to the middle of the 18th century, our national and state groups were too widely settled to feel the oppression of the ruler who was located in a distant land, but finally the time came when through the importunities of his emissaries they felt the pressure of his rule and they simply threw it off, and came back to the old group association and selected their leader; and this time in order not to make the mistake which their experience had taught them, they limited the leader's term of service, and so we got democracy. At this time we were an agricultural nation and our national, state, county and municipal groups did not require much administrative machinery to carry out their purposes. But about the beginning of the 19th century, there came machinery and the steam engine, and the man whose home was his castle built an adjunct to it, installed machinery and an engine, invited in his neighbors to help him manufacture this or that product, and thus established the industrial group. As long as this group remained small enough for the master workman to keep in touch with all his people, just so long did they all work together in harmony, but when it grew larger and the master workman appointed superintendent and foreman, then came about the psychological change before referred to, and the subordinate officials having no knowledge of the principles of organization and management, applied their self-devised methods, and when the latter did not work, applied force to accomplish their purposes.

So in the growth of industrial groups we have developed small monarchies with dictators in control. This force they applied aroused resistance, and we have allowed the antagonism between employer and employe to grow to such proportions as to constitute open warfare.

It is by knowledge of the psychology of situations such as this that the manager is able, by tact and the application of principles of efficient management which are now becoming known, to hold himself in the relation of leader rather than that of dictator or driver, and maintain such amicable relations between his employes and himself as to keep administrative mechanism operating smoothly.

By efficient management I mean accomplishment with the least amount of effort, for effort causes friction and friction means cost, and when a manager can succeed in his accomplishment of operating his business with the least amount of friction he is operating efficiently. The principles which are now recognized as those which conduce to efficiency are those which take advantage of innate human tendencies. The manager lays out his organization in departments so as to develop a team where each individual is so harnessed as to pull his part of the administrative mechanism in parallel with that of his fellow in the next department, and the harness must be so adjusted to all of the participants in the service that the latter do not overlap each other's traces and so interfere with each other's movements.

In our industrial field we must endeavor to search for the principles of efficient organization and management, for manage-

ment means simply the operation of the organization when properly developed.

When we have a grouping of employer and employe in any industrial enterprise so as to permit the operation of efficient organization and management, we have an approach to democracy in industry, and the nearer we can approach to the principles which we have found to be successful in political democracy the less the friction will be and the higher the efficiency.

In order that the manager may obtain the best results along modern lines of efficient operation, he should get the most advanced members of his group to co-operate with him in organized team work, each specialist taking charge of his own department and studying its features so as to secure the highest refinement in the direction of the special business. Too often do personal animosities and selfish business interests interfere in this efficient development, but the principles of efficiency are becoming more and more generally applied, and when they become thoroughly established we shall obtain a better relationship between the members of the groups and a better condition of affairs in industry and business.

At the conclusion of the speaking, one of the members arose and proposed a vote of thanks to the president and to the members of the Dinner Committee for the unqualified success of the dinner and the great pleasure that had been afforded the members and their guests. Vice-President, George B. Hodgman put the vote, which was carried unanimously.

A new feature was then introduced, namely, a rubber moving picture show, in two parts. The first part showed the growing of rubber in the Middle East plantations, depicting the whole process from the clearing of the jungle to the placing of the cases of rubber on the ocean liners bound for European ports; while the second part of the show covered the gathering, preparation and shipping of wild rubber in the Amazon Basin. The pictures descriptive of the Eastern Plantations were secured especially for this entertainment through the courtesy of Mr. A. Staines Manders, of London, the manager of the Rubber Exposition, recently held in New York.

When, at the highly conservative hour of 11:30 all the diners arose and sang "America" as the concluding chapter of the evening, and then made their way toward the coat room—guarded by the usual number of young but remorseless financiers—it was universally agreed that in no one's experience had any evening been spent more pleasurably or to better profit.

THE MEMBERS AND GUESTS PRESENT.

At the Speaker's Table.

Sawyer, Homer E.
Williams, E. S.
Porter, H. F. J.
Hodgman, George B.
Pratt, Sereno S.
Hood, Frederic C.
Hooper, Prof. Franklin W.
Bourn, Hon. Augustus O.
Apsley, Hon. L. D.
Appleton, Col. Francis H.
Sharkey, Lawrence.

Alphabetical List of Those Present.

A

Apsley, L. D.
Arnold, Chas. H.
Archer, Calvert B.
Alden, G. Edwin.
Arnold, W. H.
Appleton, Francis H.
Alden, John Victor.
Appleton, L. E.
Anderson, J. D.
Archer, A. W., Jr.

B

Barker, Wm. E.
Barnard, Orin A.
Bass, William F.
Baird, Robert B.
Bourn, Augustus O.
Brunn, A. W.
Badenhop, Robert.
Byles, W. E.
Brown, A. H.
Baird, William T.
Baird, Collier W.
Bushnell, F. O.
Bates, Edgar A.
Blackwell, Wilson H.
Barnes, Charles W.
Bryant, George G.
Boyd, James

C

Conlin, Andrew J.
Carberry, John D.
Caldwell, R. J.
Chandler, George D.
Courtenay, J. H.
Clark, John H.
Chipman, R. L.
Coe, Chas. A.
Cutler, D. A.
Chandler, J. J.
Conlin, D. .
Cottle, G. T.
Cornell, A. Boyd.
Callaway, Fuller E.
Cavanaugh, Mr.
Chichester, I. K.
Cranor, D. F.

D

Dunbar, J. Frank.
Dunbar, Frederick W.
Devine, Joseph P.
Dunn, H. T.
Dannerth, Frederic.
Dorr, Roy L.

E

Eckhardt, P. O.

F

Fuller, Harold P.
Feinburg, D.
Faber, Eberhard.
Faber, Lothar W.
Firestone, H. S.
Feltes, N. R.
Fox, Frank F.
Frissell, F. H.

G

Glidden, A. A.
Gough, Wallace L.
Gardner, Geo. A.
Garretson, C. D.
Gordy, J. A.
Goldman, Herman
Greutert, Henry.
Gove, Fred G.

H

Hall, Geo. E.
Hicks, Ellsworth H.
Hodgman, Geo. B.
Hodgman, S. T.
Hood, Frederic C.
Hawkins, J. J.
Hopkins, M. G.
Huber, Edward E.
Hubbard, H. B.
Hering, Henry F.
Hooper, Prof. Franklin W.
Hawkins, D. A.
Hichborn, George F.
Hillman, William.
Henderson, Frank.
Henderson, Bancroft.
Howard, William H.

I

Inwood, W. A.

J

Jacoby, Ernest.
Johnstone, James T.
Jewett, F. J.

K

Kelly, Wm. J.
Kelley, Edward B.
Kenyon, George.
Kent, William J.
Kush, Gustave.
Kubie, Samuel.
King, B. S.
Kaufmann, C. B.
Korn, Ernst.
Kinkel, J. S.

L

Lewis, Tracy S.
Lyons, John P.
Lowman, J. S.
Lahey, Frank T.
Luddington, G. A.

M

Maurer, Ed.
Mayo, Wm. H.
Meyer, Otto.
Muehlstein, J.
Muehlstein, Herman.
MacMichael, L. P.
Montgomery, Henry.
Mayo, Geo. H.
Meacham, John J.
Manchester, A. A., Jr.
Moon, Daniel.
Moon, A. E.
Mendel, W. H.

N

Neale, E. L.

O

Odell, Jas. E.
Oakley, C. H.
Owens, R. J.

P

Palmer, Wm. H.
Pfaff, Edward F.
Procter, Wm. L.
Poole, Wm.
Perlish, Henry.
Peaty, F. H.
Porter, H. F. J.
Pratt, Sereno S.
Pell, George E.
Panke, Ferd. Christian.
Polack, H. W.
Parsons, W. G.
Price, P. B.
Parker, J. R.

R

Reeve, Arthur.
Rice Robert L.
Rodenbach, Wm. T.
Ryckman, W. G.
Robinson, George B.
Robinson, H. E.

S

Schaffer, F. F.
Schlosser, George.
Scott, Hugh D.
Stone, J. Everett.
Stowe, Griswold.
Swasey, Walter 1.
Saehs, Robert Paul.
Schwab, F. M.
Schwab, Otto J.
Stearns, E. Ward.
Spadone, Henry.
Sharkey, Lawrence.
Sweet, W. A.
Saterlee, R. S.
Stedman, H. B.
Smith, George E.
Sachs, Adolph R.
Stokes, R. T.
Schweinert, M. C.
Stokes, M. C.
Stimpson, Harold.
Stiles, W. H.
Sawyer, Homer E.
Sheldon, J. H.

T

Thomas, Lewin H.
Tweedy, O. S.
Thornton, A. D.
Thompson, Kennedy M.
Thom, W. W.
Tallman, A. V. W.

V

Van der Linde, H. T. G.
Van Etten, John de C.
Vanalst, Mr.
Van Cleaf, John C.
Vanderbilt, George E.

W

Wadbrook, Elston E.
Wilson, Charles T.
Warren, A. W.
Watson, Byron S.
Weber, Hermann.
Weston, John D.
Williams, Warren.
Weiss, George.
Wood, Charles.
Weber, Edward.
Weiss, A. S.
Wildman, B. J.
Williams, E. S.
Wuchter, W. W.

Z

Zeiss, Albert.

Dr. Jacques Huber's Visit to the East.

CLOSELY following his able paper read at the late Rubber Conference, there has appeared an interesting report by Dr. Jacques Huber, the well-known Pará authority, dealing with his visit early last year to the Middle East. In his journey of investigation he was accompanied by Messrs. H. Akers, Alfredo Ufenasi, and Franciso Lugones, the last-named gentlemen representing various Pará shipping interests.

Sailing from Marseilles on December 13, 1911, they reached Colombo on December 31. Their first visits in Ceylon were to the Botanic Gardens of Heneratgoda and Peradeniya, where they saw the parent rubber trees from the *Hevea* seeds introduced in 1876. Dr. Huber acknowledges the courtesies received from various officials, including Messrs. Lock, Kelway-Bamber, and Petch, at Peradeniya, as well as Mr. Alexander Wardrop (since deceased), secretary of the Ceylon Planters' Association.

In the course of his investigation, he then visited the plantations of North Matale, Tapton Wood, New Peradeniya, and Pallekally. Returning to Colombo, he and his colleagues spent a day at the Culloden estate; subsequently visiting, amongst others, those of Devituraí and Gikayanakanda.

After spending nearly three weeks in the Island of Ceylon, which constituted the first stage of their journey, the party embarked on January 19 for Singapore, which became their center of action on the Malay Peninsula, where they passed five weeks. On arriving at Singapore, Dr. Huber's first step was to try to get into communication with Mr. H. M. Ridley, Director of the Botanic Gardens of that city, whom he qualifies as the man to whom, above all, the Malayan planting industry owes its development and prosperity. Mr. Ridley having retired into private life, some days before Dr. Huber's arrival, he was courteously received by Mr. Derry, one of the veteran promoters of the cultivation of *Hevea* in the East, under whose guidance he visited the Gardens.

Having decided to visit, in the first place, the plantations of the Federated Malay States, where rubber cultivation is the most highly developed, the party embarked on January 27 for Port Swettenham, on their way to Kuala Lumpur, the capital of the Federated States. In the course of the short railway journey from the port referred to they had an opportunity of seeing the noted Klang district, which has been transformed into a vast forest of rubber trees. The following days were devoted to automobile excursions, in the vicinity of the capital and in the district of Klang. Among the estates visited were: Batu Caves, Kent, Wardieburn, Damansara, Bukit Rajah, Vallambrosa, and West Country.

The Malacca Territory occupied their attention from February 3 to 6; during which time they visited the Cumendore plantations, belonging to the Malacca Rubber Plantations, Limited, as well as Ayer Panas, Pegoh Estate, Linggi Plantations, Marjorie, Linsum and Labu Estates. On their return to Kuala Lumpur they paid a visit to the Kuala Lumpur Experimental Station, headquarters of Mr. Lewton-Brain, Director of Agriculture of the Federated Malay States. Dr. Huber refers with appreciation to his cordial reception by Mr. Brain and his scientific staff.

On February 10 they left Kuala Lumpur for Teluk Anson, in the State of Perak, from which point they visited the Cicely Estate, as well as the Nova Scotia, Rubana and Bernam Perak Plantations. On subsequent days the party visited the Kamuning, Changkat Salat and Lauerdale Estates; finally inspecting the Museum of Taiping, capital of the State of Perak. From the last-named point they took the train, on February 15, for Penang, which became their headquarters for the balance of the month. The chief points visited were the Malakoff and Sempuh Estates, where valuable information was gathered as to the cultivation of rubber, mandioca and cocoanuts. Owing to the Chinese New Year's, business was more or less generally suspended during the latter part of February.

On March 1 they embarked for Sumatra, where they spent almost three weeks at the capital, Medan, making excursions in various directions, and visiting, among others, the plantations of Bangoen Poerba, Gallia, Bandar Maria and Cilinda. On succeeding days they took in other plantations, including that of Dolok Baros, situated about 3,000 feet above the level of the sea, being thus the highest point at which *Hevea* grows in the Island of Sumatra. Among other plantations visited were the Dolok Estates, Sunger Mangkei, Batoe Rata and Simahé.

Returning for a few days to Singapore, Dr. Huber and his colleagues took steamer from there to Batavia, Java, where they arrived on March 26, visiting on the following day the Botanical Garden of Buitenzorg, where they received much valuable information from Dr. Tromp de Haas and other scientists of that institution.

Among the Java plantations visited were the Dramaga, Tjukados, Pasir Oetjing and Sengon Estates. The testing station at Malang and the Garden of Acclimatization at Vonger contributed valuable information. The party returned from Batavia to Singapore on April 18.

Before returning from Singapore to Europe, they inspected the plantations on that island belonging to the Hollandsch Americansche Plantage Maatschappij (Holland American Plantation Co.).

GENERAL CONDITIONS OF COUNTRIES OF RUBBER PRODUCTION.

This itinerary is followed by a discussion of the general conditions affecting the subject. Dr. Huber expresses the opinion, that while rubber cultivation has been developed in the Malayan Peninsula, as well as in Ceylon, Sumatra, Java and Borneo, the other Eastern countries in which it has been introduced, such as Southern India, Burma, Cochin-China, the Philippines, New Guinea and Samoa, will probably never exercise a preponderating influence upon the world's rubber production.

As to climate, it is added that the above countries are relatively uniform in temperature, while the amount of rainfall varies considerably, according to the districts. Regarding topography, the Eastern rubber producing countries are distinguished by their character being more varied than that of the Amazon region. Ceylon is relatively mountainous in the center and southern half of the island, culminating in Adam's Peak, 7,379 feet in height. The cultivation of *Hevea* extends to a portion of the mountainous region, in some cases attaining a height approaching 3,000 feet above sea level. In the Malayan Peninsula a mountain chain extends from northwest to southeast, with an undulating plain extending along the west coast. In Sumatra there is likewise a mountain chain from northwest to southeast; while in Java plains alternate with mountains of a massive character, some of which are volcanic, with rich soil, and others of tertiary calcareous formation, poorer in quality. Borneo is also to a great extent mountainous, with large rivers, the alluvial plains of which are covered with virgin forests, partly marshy in character, thus more or less resembling Amazonian conditions. Burma, Siam and Cochin China are marked by extensive plains, varied by low hills.

With respect to population, Dr. Huber is of opinion that the Eastern rubber producing countries are in a favored situation as compared with Amazonia. The former countries have a relatively large native population, essentially agricultural in its

character, which has served to carry out European enterprise. The Singhalese of Ceylon, the Malays of the Peninsula and the Sunda Islands, as well as the Javanese, are easily accessible to European civilization.

The population of the five principal Eastern rubber producing countries is estimated as follows: Ceylon, 4,000,000; Java, 30,000,000; Federated Malay States, 1,000,000; Sumatra, 3,200,000; Borneo, 1,700,000. Of the four million population of Ceylon, about two-thirds belong to the Singhalese race, while the coolies on the plantations are almost all Tamils from Southern India. On the Malayan Peninsula the number of coolies employed in 1910 was 179,030, composed of: Tamils, 98,988; Chinese, 45,663; Javanese, 17,760; Malayans, 14,258; others, 2,361. In Malaya the Tamil coolies are generally found on the older estates, having a prejudice against new estates. Tamil coolies, in addition to being cheaper, are more obedient than Chinese and Javanese coolies.

Regarding hygienic conditions, they are in general satisfactory in Ceylon, except in times of epidemic, while in Malaya and Sumatra they leave a good deal to be desired, particularly in new plantations.

HISTORY OF HEVEA CULTIVATION IN THE EAST.

In a section devoted to the above branch of the subject Dr. Huber recalls the well-known facts which have led to the present development. The total area planted in the Middle East is estimated at 1,125,000 acres in 1911, divided as follows:

	Acres.
Malayan Peninsula	550,000
Ceylon	215,000
Sumatra	150,000
Java	125,000
Other Sunda islands	40,000
Southern India and Burma	30,000
Cochin China	15,000
Total	1,125,000

PRODUCTION OF EASTERN PLANTATIONS.

The figures of 1911 exports from the two principal sources in the Middle East are quoted as: Ceylon, 3,194 tons; Malaya, 10,700 tons; total, 13,894 tons. With respect to Malayan production for the five years 1912 to 1916, Dr. Huber makes the following estimate: 1912, 20,000 tons; 1913, 32,000 tons; 1914, 45,000 tons; 1915, 60,000 tons; 1916, 70,000 tons. That these figures are not exaggerated is confirmed by the independent estimate for 1916, of 65,000 tons from 360,000 acres, by the Director of Agriculture of the Federated Malay States.

PLANTATION ORGANIZATION.

This subject is comprehensively dealt with, from the acquisition of the ground to the packing of the rubber for shipment. The question of the cost of production is then taken up and finally the cost of establishing a *Hevea* plantation.

FUTURE OF ASIATIC PLANTATIONS.

The portions of Dr. Huber's report referred to, chiefly deal with the past and the present of Eastern rubber cultivation. In the last two sections he discusses the future of Asiatic and Amazonian plantations. He remarks as to the former, that an industry so highly developed and so richly capitalized will not allow itself to be easily overcome by unfavorable circumstances, and to a certain extent guarantees its own success. At the present price of rubber, a well-managed plantation in full bearing is, he remarks, in a position to yield fabulous profits, if the capitalization is not too high. He asks whether these conditions may not be altered by external or internal causes, the former including the question of labor and its price.

The chief danger confronting the Asiatic plantation industry, however, arises from its organization, and depends upon financial considerations. The careful observer will remark in this rapid evolution, symptoms of precipitation and errors inherent to an industry still at an early stage.

After discussing the cultivation of *Hevea* in comparison with that of cereals, tobacco and cotton, Dr. Huber adds, that in accordance with the nature of the plant, its cultivation should be slow but steady, while under the exacting requirements of capital, it has to give a maximum yield. Probably the time will come when planters will recognize the necessity of letting the trees rest at regular intervals.

Dealing with the question of the number of large trees to an acre, he refers to the opinions expressed in favor of planting 50 or 40, giving his own view that under the most favorable circumstances not more than 20 should be allowed. For 400 pounds to the acre each tree would then have to give 20 pounds.

As to the general question, Dr. Huber remarks that there is no longer any doubt of the acclimatization of *Hevea* in the East, public opinion in Amazonia having, moreover, begun to be enlightened on that point.

EASTERN AND AMAZONIAN PLANTATIONS.

In the final passages of his report, Dr. Huber remarks that one of the principal factors in the rapid development of Asiatic plantations has been the abundance and cheapness of labor in contrast with its high cost in Amazonia. "But," he adds, "we are in need above all of a *directing staff* of skilled agriculturists, with sufficient experience to organize an important agricultural enterprise with satisfactory results. In the East such men are never lacking, particularly those trained in Ceylon and Java as administrators of plantations."

The opinion is expressed that the complete abolition of duty on plantation rubber exported (even for a certain number of years) would be the most efficacious means of stimulating Brazilian plantations, especially those heavily capitalized.

As has been already pointed out. The cost of establishing in Brazil a plantation upon the Eastern model would be higher, on account of the dearer labor, which costs in Amazonia, it is estimated, ten times what it does in the East. But, apart from the question of establishment, is that of operation, in which Dr. Huber sees no chance of competing with Asiatic plantations, at least during the earlier years of existence, when the yield of latex is small. The whole problem depends on the yield obtained by the individual laborer. If he is paid ten times as much as in the East but gathers ten times as much rubber, he can compete.

In conclusion Dr. Huber thus sums up the case of the East vs. Amazonia: "In the East, where labor is relatively cheap, and where a tax is paid on the land, the return for a given area is of great importance. On the other hand, here (in Amazonia) where land is relatively abundant and cheap, but labor very dear, this factor is of subordinate importance to the yield per laborer. Consequently we ought to strive in our plantations to prevent the trees planted from being exhausted before their time, by premature and unprofitable tapping, so that at least a good part of them may attain large dimensions; this being the only means of insuring profitable working, notwithstanding the high cost of labor."

Such are a few of the most salient points in Dr. Huber's valuable and interesting report (in Portuguese), which in pamphlet form occupies 116 pages. While principally intended for the Brazilian planter, it contains much matter of general value to the industry. Told in Dr. Huber's lucid and comprehensive style, the story of his Eastern journey is a distinct acquisition to rubber literature.

M. J. Kabayashi has been appointed editor-in-chief of the Japanese rubber paper, "The Gomu Shimpo Sha," published at Tokyo, Japan.

MR. H. A. WICKHAM AND ONE OF HIS TREES.

PROBABLY everybody in the rubber industry is more or less familiar with the story of Mr. H. A. Wickham and the cargo of *Hevea* seeds which he gathered along the Amazon in 1876 and carried to Kew Gardens in London. Charles Goodyear

MR. WICKHAM AND ONE OF HIS ORIGINAL SEEDLINGS.

may properly be called the father of the rubber industry, but Mr. Wickham is certainly the father of the rubber plantations. It was 50 years ago—when he was a considerably younger man than he is at present—when he first conceived the idea of planting *Hevea* trees on soil under English control. He was exploring the Amazon Basin, not particularly well known in those days, when he saw the great forests of *Hevea* trees, and it occurred to him that these trees could be made to grow under the very similar conditions that obtained in India.

He went back to England and tried to interest his friends, but they thought his scheme much too visionary. However, finally he interested the India office and returned to the Amazon in

1875 with a commission to get the seeds in any way he could. It was not so difficult to get the seeds—but it was extremely difficult to get them out of the country, as obviously the Brazilian authorities would not view with composure this attempt to rob them of their monopoly. But by great good luck in the following year he was able to charter an English steamer that appeared on the Amazon, and by the assistance of a small army of natives he soon collected over 70,000 seeds, and was off down the Amazon and out on the ocean headed for England. The seeds were planted immediately on his arrival, and two weeks later thousands of little rubber plants were to be seen in Kew Gardens. These were later sent to Ceylon, and there started the great plantation industry. The above picture shows Mr. Wickham (who is still hale and hearty and interested in rubber growing) leaning against one of his seedlings sent out to Ceylon thirty-seven years ago. This tree produced 240 pounds of dry rubber in the two years 1909 to 1911.

CEYLON HARD FINE PARA.

According to latest advices, Mr. H. A. Wickham, the father of the Eastern plantation industry, expects to remain until July next in Ceylon, where he has been more than six months developing his process for producing plantation rubber on the lines of Hard Cure Pará. His previous work on these lines was referred to in THE INDIA RUBBER WORLD of November, 1912, on page 112.

From reports quoted in the local Ceylon press, it would seem that the samples of rubber treated by Mr. Wickham's process have been pronounced in New York and London to be the nearest approach to Fine Hard Brazilian Pará as yet sent from Eastern plantations.

In order still further to test the matter, it is proposed to ship half a ton of this smoke-cured rubber at an early date. Manufacturers are prepared, it is said, to pay a premium of 4*d*. per pound for this rubber treated by Mr. Wickham's process.

A FRENCH VIEW OF AMAZONIAN ECONOMIC DEVELOPMENT.

IN an interesting article in the "Bulletin of the French Society of Commercial Geography" M. V. Cayla (Agricultural Engineer) deals with the general question of the economical development of the Amazon territory. While much of the matter contained in the article is already familiar to our readers, it seems well worth while to review it briefly, in order to show the conclusions reached by a trained European observer, who has carried on his investigations in that territory in a thorough and painstaking manner.

He recalls the fact that the Amazon, while doubling its production of rubber within 20 years, now only furnishes about 49 per cent. of the world's supply, instead of 61 per cent. a score of years ago. The increased Malayan production will doubtless, it is added, lead to a continuance of the present comparatively low prices of rubber. These conditions are only to be met by a reduced cost of Brazilian production, to which end the recent Federal legislative measures have been directed.

The problem of Brazilian rubber includes two varieties, *Hevea* and *Castilloa* (caucho), the former being of chief interest. It is obtained by the Brazilian method, which under present conditions is preferable to that used on the plantations of the Middle East. The Amazonian production has, in fact, marked advantages over the Malayan plantations. Virgin forests, rich in rubber trees, cover extensive surfaces along the Amazon and its affluents. *Heveas* are there found in the condition best adapted to their development. By the fact that the *seringueiro*, when making up his "estrada," only takes in sufficiently mature trees, in itself constitutes a selection. These undoubted advantages, which have rendered Amazonian rubber the standard of the market, are outweighed by the high prices of labor and provisions; particularly in the districts furthest from the seacoast. On the Rio Xingu, moreover, the situation is complicated by the irregularities of the bed of the river, which impede navigation. As a result of this situation, the cost of rubber transport from Iriri to the port of Pará represents about 22½ cents per pound.

Among the causes of dear labor is the insalubrity of the climate, which prevents the workers, almost all from the State of Ceara, from bringing their families to Amazonas.

The export and other duties imposed by the States of Amazonas and Pará reach a total of 25.93 per cent. on the value. In addition there is a municipal tax levied on rubber at the point of production, so that it is estimated that including the various duties and freight, the cost of bringing rubber to Pará represents about 53 per cent. of the selling price at that point. It is added that the freight from Pará to Europe and to the United States is too high and might be materially reduced.

In view of the inexhaustible wealth of the Amazon basin in rubber and other products, the improvement of the methods for developing Brazilian industry acquires preponderating importance. Reference is specially made to cacao, rice and tobacco as of possible interest in this connection.

In addition to facilitating the wild rubber industry, the importance is urged of developing the planting of *Hevea* in Brazil, its natural home; following out the successes which have marked its introduction from Brazilian seed in the Middle East. This principle has been understood by the Federal Government; the legislative measures adopted, while favoring the wild rubber extraction by reductions in export duties, affording much greater advantages to the plantation industry, ranging from premiums for planters, to total exemption from export duty, and from duty on the necessary working installation. Owing to the legislation only dating from January, 1912, plantations are as yet few in number, being principally situated along the lower Amazon and in the large island of Marajó.

Nor is the economic development of the Amazon in danger from difficulty in the shipment of its products. The important port of Pará has recently completed improvements which will permit of its accommodating at its quays steamers of 7,000 tons.

These facts are brought out by M. Cayla in the paper he has prepared in anticipation of his proposed visit to the Brazilian *Hevea* plantations. In his concluding words he thus expresses the French view of the situation:

"The production of the Amazon is therefore not in the desperate situation which might be inferred from certain pessimist opinions. Doubtless, it finds conditions not so easy as formerly, competition having intervened for its chief product—rubber.

"It becomes necessary to modify the processes used, . . . and to turn from the period of exploitation to that of colonization. This is the program which Brazil has traced for her Northern states, for which competition is the best stimulant."

THE BYRNE SMOKING MACHINE.

The "Times of Ceylon" quotes a cable report from London to the effect that the Byrne smoking machine has been thoroughly tested, with the result that the curing produces a distinct improvement in the quality of the rubber. Figures obtained are said to show that the resiliency is better than that of Bukit Lintang crepe, while the resistance and recovery are higher.

RUBBER SHIPMENTS TO THE UNITED STATES FROM SOUTHAMPTON.

An official report from Consul Albert W. Swain shows that the shipments of crude rubber from Southampton to the United States represented in 1910, $8,230,125, and in 1911, $7,436,690. In contrast with these large exports of crude rubber are the relatively small amounts of $60,040 and $60,200 for manufactured rubber goods shipped from that port to this country.

SPECIFICATIONS THAT HINDER PROGRESS.

EDITOR OF THE INDIA RUBBER WORLD—SIR: Fire departments of this great and wealthy country must necessarily continue to be equipped, as they now are, with the best products of the American factories; with particular reference to hose it is the earnest desire of the manufacturers to obtain recognition for their best output. They are, however, practically unanimous in the belief that this opportunity cannot be offered through the medium of specifications. This is due to the fact that specifications covering any product of which rubber is a constituent part, cannot be drawn in detail so as to assure obtaining the best quality. Manufacturers of hose having a varying experience of from ten to fifty years have acquired a knowledge of compounding rubber, warranting their belief that by their particular process they have obtained the best present compound of rubber for a fire hose tube. This is not necessarily of delicate refined texture, but must possess strength, resiliency and durability.

Each manufacturer thinks that after experimenting practically all his life, he is making a rubber tube a little better than the others, and each is striving to place in the fire departments the very best result of his experience and factory facilities. As these processes vary it is not natural to expect any established manufacturer to divulge the ingredients of his rubber compound. In fact in most cases it would be impossible to formulate specifications providing for a chemical test that will be in even a moderate degree accurate in showing the value of the tube. The ability of the chemist to determine by his art the rubber component part of a vulcanized compound is not a lost art, but one which has never yet been discovered. Hence the inconsistencies in all specifications.

It is a mistaken policy for any city to adopt or dictate theoretical specifications to which no manufacturer of experience and integrity of purpose can commit himself. It is perhaps, hardly within the province of propriety for the seller to attempt to dictate to the buyer, but the manufacturers may venture to offer the suggestion that if fire engineers and municipal officials continue to make conclusions based upon experience they will make no mistakes.

We say again, the best rubber products today are not susceptible of accurate chemical analysis. A tube made up of a certain percentage of pure new rubber, mixed with brains and experience, will be much more durable than a specification tube composed of laboratory theory and inexperience. To obtain the best hose put the manufacturers on their mettle, and create among them the spirit of competition in quality, not competition in price alone.

If the combination of insurance interests wishes fire departments to buy apparatus and hose of its own makes, why does it not maintain fire departments from its own profits. The large revenue even at present rates of insurance would warrant this and leave ample funds for fat dividends.

What is the actual cost of fire insurance, as compared with the insurance trust charges?

The average cost per annum for real actual fire insurance as shown by six years' results in the mutual or co-operative companies, doing business where they are not restrained, was just eight and six-tenths cents per annum on each one hundred dollars. If the so-called straight line companies succeed in obtaining control over the tax-payers' fire department property, will the reduced rate be anything like eight and six-tenths cents per one hundred dollars? If not, why not?

Large fires and the consequent large losses are seldom the results of imperfect hose and apparatus, or inefficient fire department service, but are most frequently due to causes beyond the control of human or mechanical effort, or within the scope or ordinary fire department organizations to meet; and labels on hose or apparatus attesting its popularity with the Underwriters Laboratories would not save the property.

A large fire in any community is seized upon by the insurance interests and used as a club to pound the fire department. As for instance in the case of the City of New York, having the best equipment obtainable and the best organized fire department in the world. Is it supposable that a school of theorists should be competent to reform that great modern fire department? It is said that large fires periodically are productive of great profit to the insurance companies, as they furnish the means of throwing a scare into the people for another juggle with rates—to send them up or keep them where they are, when they dare not put them higher.

The best method of selecting hose for fire department purposes is to allow the manufacturers to offer prices and samples of their very best products, the departments to reserve the right to reject any or all bids, and the samples thus submitted under the supervision of the chief executives of the fire department, would show to the people of the cities that their fire department is self-contained, and well able to select the best tools for protecting property. A city should rely upon the records of its own fire department for the quality of brands of fire hose it has used in the past. It should also try new brands of the very best quality in material and manufacture that may be offered. This course will create a rivalry among the manufacturers on the test of quality alone. Furthermore, it should hold the manufacturer responsible for any defects in material or manufacture that may develop in three years.

By distributing their business, buying only the best, the fire departments will soon obtain the absolute confidence of the public, and prove that there can be no better criterion to go by than the judgment and experience of the trusted officials of the fire department and their record of past performances.

The insurance interests claim that they wish to elevate the efficiency of fire departments. Whence comes their knowledge of fire fighting ability, and standards of quality justifying their sweeping condemnation of methods now in vogue? Theory and practice have always been at variance. The insurance laboratory has the theory. Our fire departments have the experience. Which should command the greater respect?

Municipalities should, and will, protest against the arbitrary inspection and dictation of self-appointed and self-interested censors. City government under our American system is not a failure, and men selected to serve on its boards as fire commissioners or chief engineers, are capable of making their own judgment, and of following legitimate business methods.

MANUFACTURER.

EDITOR OF THE INDIA RUBBER WORLD, Sir.—Coaltar Pitch has recently been offered to us as a compounding ingredient to be used in place of the expensive Earth Pitches. Now the price is very attractive at twenty dollars per ton. What I would like to know is this: Have any of your readers any experience with this material in the mixing of compounds for mechanical rubber goods? Do these compounds "bloom" or "dry out"? Thanking you for any information which you can give me, I am.—WALTER FERGUSON.

The English Society of Dyers and Colorists are offering a prize equal to $100 for an investigation of the maximum amount of copper in dyed cloths for rubber proofing. Papers have to be sent in before June 30, 1913. Another prize of same amount is being offered for a printing machine cylinder obviating the necessity of using blankets or lapping. The use of rubber-covered rollers has been suggested and tried, but results have not been decisive.

The Thirteenth Annual Automobile Show.

THE Thirteenth Annual Automobile Show, held in New York from January 11 to 25, might with great propriety be called a multitudinous success, for it was crowded beyond precedent. This Show has outgrown any one building in New York, and consequently this year it was held in the two largest show buildings in the city—the venerable and capacious Madison Square Garden and the spacious new Grand Central Palace. It not only was held in two buildings, but was divided into two parts; part one consisting of pleasure vehicles and occupying the first of the two weeks of the Show—from January 11 to 18—and part two being devoted to commercial vehicles and covering the second week—from January 20 to 25. The management had hoped for an attendance of 300,000 during the first week and 100,000 during the second week. Both of these hopes were more than realized, and probably half a million people attended during the two weeks.

About 500 exhibitors took part during the two weeks and 1,000 distinct exhibits were shown—the value of which has been estimated at close to $6,000,000. This is certainly a wonderful growth from the little initial show of 13 years ago, when there were practically only 20 exhibits, and when such visitors as attended were prompted rather by curiosity as to what these "buzz wagons" might be, than by a lively sense of personal interest—which was the actuating motive that took most of the several hundred thousand visitors to the recent exhibition.

Too much praise cannot be given to the scenic experts who prepared the Garden and the Palace for the 1913 exposition. In the Garden the roof of the edifice—not in itself a very sightly spectacle—had been covered by thousands of yards of sky-blue draperies dotted with thousands (to be more exact something over 7,000) electric bulbs, which, flashing out of the dull background, gave a wonderfully fine starry effect. In addition to all this individual illumination there were three large crystal chandeliers hung in a line through the center of the big building, around which there was an oval of twenty smaller crystal lights, the whole giving a particularly brilliant effect. The rest of the Garden was decorated in white and green, while the names of the exhibitors—all in a uniform character of display—appeared in red or white. Everything was done to make the general appearance harmonious and to eliminate any suggestion of incongruity.

The Palace naturally lent itself to fine decorative effects, and here the scheme of ornamentation ran to mural paintings and trellises covered with running roses.

The tire exhibitors, of whom there were 40, had their display at both places, on the upper floors. In the Garden they occupied a very considerable part of the first and second galleries, while in the Palace they had much of the space on the third floor. Practically all the leading manufacturers were represented, and represented very adequately, occupying generous space, in which, avoiding all appearance of crowding, they showed only their leading lines. One feature that could not help impressing any visitor was the liberal volume of literature provided by the tire makers for the general education of the public. For instance, the B. F. Goodrich Co., on a stand at the front of its exhibit had twenty different booklets, pamphlets and folders, varying in size and volume of contents, but all attractive in appearance, and some of them obviously representing considerable expense. The Diamond Co., the United States Tire Co., the Firestone Co., and the rest were not far behind. Anyone who made a judicious collection of this literature—free to all—and took it home and digested it carefully and intelligently, ought to know more about the tire industry than has ever yet gone into any encyclopedia.

There were not many absolutely new tire offerings exhibited at the show; and logically one could hardly expect that there would be, as the tire industry has long since reached a conservative basis where distinct innovations are not to be expected in rapid succession.

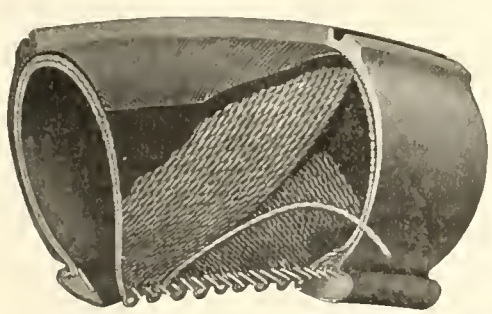
One tire was shown, however, that is new to this country—

MAIN FLOOR AT MADISON SQUARE GARDEN.

although it has been familiar to the Englishman for several seasons—the tire made by the Silvertown Cord Construction. The Diamond Rubber Co. rented a spacious corner just across the avenue from the Garden, at the corner of Twenty-seventh street, and there, where its operation could be commanded through two large windows from the sidewalk, a machine was in motion constructing this "Silvertown Cord" tire. There was always a crowd of spectators on the walk and another crowd of spectators inside watching this machine at its evolutions. Briefly the tire is made as follows: An inner lining of rubber is laid over a wooden form; the form is then placed in the machine. A long arm seizes an endless cord (flat, about ⅛ inch wide, made of many strands of the best cotton and impregnated with rubber) and swings it over the tire form, when two steel hands clutch the cord, bringing it in a double loop down diagonally over the form, fastening each loop to a steel peg on the inner side of the form and releasing it just as two sets of steel fingers reach around the cord and press it tightly into place. In watching this operation one is lost in admiration at the ingenuity of this machine; it is uncanny in its intelligence. As one observer said: "It can do everything but talk." As the long arm swings back to get another double fold of cord, the form moves slightly forward, and is ready for the next double loop.

After the form has completed a revolution, and the rubber lining been entirely covered with the cord, another thickness of rubber is put over it and the process repeated—except that the cord now runs diagonally the other way. When this layer is completed the tire is ready for its tread. These tires are extremely resilient, rebounding several times when dropped on the floor, and will stand ten times the air pressure to which a tire is normally subjected. They cost a little more than tires constructed of layers of fabric, but are said to give a materially longer service.

Main Floor at Grand Central Palace.



"Silvertown Cord Construction" Tire.

Here is a somewhat detailed description of the exhibits made by the tire manufacturers. Some of these exhibits were new; some were shown a year ago; but all are interesting as showing the trend of tire development in this country.

The Fisk Rubber Co., of Chicopee Falls, Mass., had on exhibition a line of heavy-car type tires, including a clincher "Q-D," Fisk-Dunlop and bolted-on types, the Fisk Removable-Rim and Pure Pará inner tubes. The Fisk "Town-car Tread Tire" is the latest production. The knobs on this tire are in addition to the regular thickness and are arranged in three rows running around the tire, the largest row of studs being in the centre. This shoe also has a ring on either side to take care of the slipping in turning sharp corners.

The Ajax-Grieb Rubber Co. showed both their smooth tread and their anti-skid, which consists of cross-cuts in the rubber, and is noted for its thick treads and great road-gripping power.

The Pennsylvania Rubber Co., originators of the "Vacuum-Cup" tread, had a line of their new oil-proof tires, which they claim are not injured by oily roads.

The New Jersey Car Spring & Rubber Co. tires are made by the one-cure wrapped tread process. The "Clingtite" tread is a depression instead of a projection construction. The depressions are cup-shaped with protruding centres at the middle of the tread, while at the sides they are semi-circular. The cups with raised bottoms are designed to form a vacuum as the rubber is pressed against the road-bed, and the claim is that, as the pressure is released; the convex bottom automatically breaks the vacuum.

The Thermoid Rubber Co. showed a full line of brake lining, bumpers and hose, red inner tubes bearing the trade name "Merit." Their "Thermoid *de Luxe*" tire is the company's leader. They also manufacture the "Nassau" tire.

The Miller Rubber Co. has developed a new tread. It consists of angle-shaped depressions arranged in two rows, one on each side of the centre of the tread. They are manufactured by the one-cure wrapped tread process.

The United States Tire Co. showed the "G. & J.," Morgan & Wright, Continental, and Hartford tires. The tread with two chains running around the tire was on the stand, and the "Nobby" tread was seen on an extra large tire designed for truck use—38 x 8—easily the largest tire there. This company also showed a new red inner tube.

The Republic Rubber Co. makes the "Staggard Tread," which has a series of finger-like projections running around the tire. There are six rows of these so set that the space between two of these come opposite centres of the adjoining row.

The Empire Rubber & Tire Co. showed a new line of red tires in smooth and non-skid treads. They claim that this wears better and heats less than grey tires.

The Diamond Rubber Co. exhibited the "Squee-Gee" tread as their safety; and the "Diamond Silvertown Cord" tires, the making of which is described in the first part of this article. The "Squee-Gee" tread consists of a series of five finger-like projections joined together through their centers by a strip of rubber running across the tread. This design repeats itself around the tire. These tires are made of vitalized rubber.

The Goodyear Tire & Rubber Co. showed tires with straight sides, and also oversized tires. The "No-rim cut" features mark this line. The anti-skid tread is made up of triangular shaped studs. These tires are made by the double-cure process.

The B. F. Goodrich Co. displayed a large line of tires, among which were the "Goodrich Safety Tread" and "Goodrich Cord Tires" for electrics. In the latter cord replaces fabric. These are both new developments of this company. They also showed a new plug for mending punctures, resembling a collar button in appearance and method of insertion. This instantly closes a puncture. They also had a self-vulcanizing patch.

The Seamless Rubber Co. had a straight-side or clincher tire. They are made plain or safety tread. They have a series of cuts at each side of the centre of the tread, resembling a scaling ladder. The seamless tubes are of red and of grey rubber and are built without a seam.

The Firestone Tire & Rubber Co. had a new red inner tube. Their line of tires is marked "Non-Skid" diagonally across the tread. The abrupt angles and hollows of the letters grip the road and prevent slipping. Firestone cushion tires for electric pleasure cars have double tread and internal cavities.

The Portage Rubber Co. makes a heavy pneumatic tire of four and five-inch sizes, having from eight to ten plies of fabric. Durability and not speed is claimed of this style. Its non-skid tread has many edges and angles which grip the road in all directions. This is known as the "Daisy Tread."

The "Brown Scientific Non-deflating" tube, made by the Voorhees Rubber Manufacturing Co., is made in some respects similar to a casing. It is made upon a mandrel, the outer, or tread, half being of double thickness. On the inner side is placed a strip of extremely high-grade non-elastic fiber. It is then vulcanized, blown off the mandrel and turned inside out, thus placing the rubber inside, causing the rubber to compress sufficiently to effectually close any puncture.

The Double-Fabric Tire Co. makes the "Interlock" inner tire, which is made to be placed between the inner tube and the shoe. It consists of a substantial casing-like structure, which has a thicker portion where the interlock comes in contact with the shoe, and at the beads has two wide over-lapping flaps which serve to lock the device when the tube is inflated.

The Walpole Rubber Co. guarantees its tire against stone bruises and defects in manufacture. The construction, which is the basis for the stone bruise guarantee, consists of placing a gum breaker strip between the fabric and the tread one-eighth of an inch thick, tapering it down at the bead.

The Federal Rubber Manufacturing Co. makes the "Rugged-Tread." This has three rows of strong studs set equidistant upon the body of the tire.

The Continental Rubber Works, makers of the "Continental-Erie," "Liberty" and "Tribune" brand of tires, had an exhibit of these tires in plain and anti-skid treads, fitted for the Q. D. Clincher, and straight-side rims. Their tires are noted for their wearing capacity.

The Essex Rubber Co. showed a line of automobile and tire sundries such as blowout patches, inner sleeves, hook-on and lace outer boots, "Perfection" rubber goggles, red rubber tubing, radiator hose, gas-engine packing, brake lining and rubber spring bumpers.

The L. J. Mutty Co. had a line of "Numotor" fabrics in single texture for automobile seat covers, and also double texture with Pará rubber interlining for tops. These fabrics are made of cotton yarn, dyed in the fiber with a special dye, "Indanthrene" which will not fade. The single cloth comes 54 inches wide, and the double 60 inches wide, so as to eliminate the center seam in tops. It comes in all colors and is guaranteed absolutely waterproof.

The Standard Woven Fabric Co. showed the "Multibestos" Brake lining. This comes in all sizes and is interwoven with copper wire. Oils do not injure it, and it will not burn.

A. Schrader's Son, Inc., had their Universal tire gauge on exhibition, also the pencil type, which is very small, only 2½ inches long. Both of the gauges remain fixed so that they can be removed from the valve stem for easy reading.

The Overman Tire Co. exhibited a cushion tire of generous proportion and of new design. It is based on the flow of rubber. Such a tire requires a special rim to which the tire is bolted in the center near the base. There is a triangular cavity extending around the tire. This permits a flow of rubber inward. The tread is cut with alternating wedge-shaped indentations around the edge, which prevents skidding and allows the rubber to give under pressure.

The Racine Rubber Co. makes a "Trusty Tread," composed of three rows of elongated studs; those in the centre being set straight on the tread, the outer ones arranged irregularly; so that the breaks between studs do not come opposite each other.

The Swinehart Tire & Rubber Co. makes the "Keaton Depression" tread. These are kite-shaped depressions grooved in centre, and act like a sharp skate on the ice, making it impossible to slide sidewise. They also make the "Electrical Cellular" tire, which consists of a series of deep holes in a solid tire, forming a suction upon the road bed.

The entire Marathon line was new, for the Marathon Tire and Rubber Co. is a late entry into the tire field. The "Angle" tread is its most marked feature, and designed for non-skidding purposes; plain treads are also furnished. The company's inner tube is of red rubber, for which much is claimed by the tire-makers as an inner tube material.

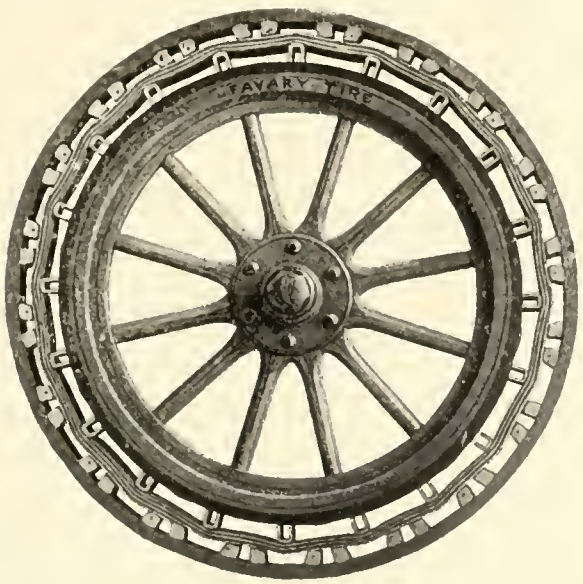
A puncture-proof tire made by the Lee Tire and Rubber Co. was mounted on a bed of spikes, weighted with over half a ton upon the wheel. This tire has several layers of small round metal disks imbedded in the tread and interlapping each other with a thickness of rubber between. This is to prevent sharp objects from entering the tire. They also make the "Zig-Zag" tread, which grips the road with all the tenacity of chains. When the middle wears down the sides prevent the car from skidding.

The American Tire and Rubber Co.'s patented tube is reinforced on the side which comes next to the rim; the rubber being considerably thicker at that point, which affords protection against possible injury from pinching or friction with the rim. Their tubes are of red and grey rubber. They showed a line of blow-out patches, tire protectors, reliners, and their five-minute cure vulcanizing cement, which they claim will cure in that time, nor over-cure if left much longer. There was a large pneumatic tire without an inner tube. A new type of solid tire is about to be added to the line.

The Kelly-Springfield Tire Co. makes a "Kant-Slip" tread which is a new design, consisting of a bead running around the tire's greatest circumference, with small, raised crosses at each side and at close intervals. They have a full line of truck tires all of which are solid.

The Dayton Airless Tire construction consists of a tier of rubber blocks spaced apart within the casing, and supporting the tire. Freedom from puncture and blowout is claimed without loss of resiliency.

The Motz Tire and Rubber Co. displayed solid and cushion tires; the latter made with slant-wise bridges and undercut sides and used for electrics.



FAVARY CUSHION TIRE.

The Favary Tire and Cushion Co. had new cushion tires for pleasure cars and trucks. The former is made up of several layers of water-proof fabric supported by rests at frequent intervals around the rim. This in turn supports a double set of rocker blocks, which are mounted midway between the others to form a cushion. The solid tire, either smooth or non-skid, is fastened to this. The truck tires are made up of chains in place of fabric.

The Englebert Tire Co. makes the flat chevron non-skid, and leather steel studded tread. This is a part of the tire itself. This tire presents a flat surface to the road. These tires are made in Belgium.

The United and Globe Rubber Manufacturing Co. makes the "Globe Interlock" tires. These are made with the double bias in the construction of the carcass and are said to be exceedingly strong. They also make the "Globe Red" inner tube, which is guaranteed against oxidation.

The Russian Tyre Sales Co. exhibited the "Provodnik" tires in flat steel-studded or "Columb Tough Tread." This is composed of a section of tough black rubber at the wearing point of the tire.

The Braender Rubber & Tire Co. was distinguished by its "Bull-Dog Tread" tire, which is of a peculiar design built up on the regular tread, across which it forms an angled groove. This when pressed down to the road is said to form a vacuum and on wet or oily roads the raised bars secure a firm grip.

The Tyer Rubber Co. are makers of the "Hold-Tite" anti-skid. This tire is made up of two rows of T-shaped depressions, the heads of the T's abutting on an uncut section which extends circumferentially about the casing, and forms a great gripping power.

THE ANNUAL AUTO. IMPORTERS' SHOW.

THE Ninth Annual Exhibition of the Importers of foreign-made automobiles was held from January 2 to January 11, in the handsome and spacious ball room of the Hotel Astor. Some twelve exhibitors took part and about 35 cars were displayed. These exhibits, together with the crowd of visitors that daily frequented the show, filled the room, large at it is.

The wire wheels seemed to be generally used on these foreign cars. All of these wheels were of the clincher-rim type. Detachable wheels instead of detachable rims predominated. Both Rudge-Whitworth and Dunlop wire wheels appear to be in favor with the European makers. In addition to these wire wheels of foreign make the McCue wire wheel, made in this country, was also noticeable.

There was one wheel that was particularly worthy of attention—the Italian Isotta car with a metal wheel, entirely new to this country, stamped out of sheet metal in halves, welded together by electricity, forming a very strong wheel; lighter and more durable than wood, and practically indestructible. This is a detachable wheel with a clincher rim. The Renault car has a new wood wheel which detaches at the hub—a great improvement over the old demountable rim.

There was a variety of tires on those foreign cars, three of them of foreign make, the Michelin, with the straight sides; the Faure "Never-Skid" tire, reinforced with anti-skid plugs and intervening cross bars; and a red Russian tire, the Provodnik, with a novel tread of herring-bone effect.

At least half of the cars, however, were equipped with American-made tires, among them Firestone, with both smooth and "Non-Skid" treads; Goodyear, smooth and anti-skid; Morgan & Wright clincher, with chain pattern running around the tire; Hartford, smooth; United States quick-demountable rims, with "Nobby" tread; Republic, with "Staggard" tread, and Diamond, with smooth tread. Tire sizes ran from 36 x 5 inches to 30 x 3½ inches—or in metric measure, from 935 x 135 to 760 x 90.

MORE RUBBER IN AMERICAN THAN EUROPEAN TIRES.

According to United States Consul Albert Halstead, the sales in England of American tires have been less important than might have been expected from the fact, that there is more other rubber in the American article than in the British or European product. In the latter there is only 7 to 10 per cent. of rubber in the outer casing, and 35 per cent. in the inner tube; rubber substitutes and fillers being extensively used.

Mr. Halstead recommends preliminary investigations as to the exact requirements of the English market, followed up by extensive advertising and other introductory measures. Results of hill climbing and other tests form valuable material for such campaigns.

Trained organization in England, following the tactics of British and other European makers, is absolutely necessary for American firms wishing to introduce their tires in England. Success, though possibly delayed by the hold of British and Continental tires on the market, will, it is urged, eventually be attained, if American tires are as good as has been claimed.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

BUSINESS generally has started on the new year with a confidence in the future which belies the prophecies of the pessimist, who is superstitious of the number thirteen, as well as the dejected individual who augurs calamity because of the coming change in the political control of the government. The outlook in all lines of rubber manufactures seems excellent, with only the footwear industry feeling an uncertainty. As a rule, the purchases of rubber boots and shoes last spring and summer were very large and highly satisfactory, and stocks held by jobbers and retailers were full. The mild winter that has prevailed in New England has been far from satisfactory, and while stocks have been moved to some extent, it will take several good storms to reduce these stocks to a satisfactory basis.

But if the shoe men have not been favored, the waterproof clothing manufacturers have certainly profited by the state of the weather, and practically every factory is rushed with orders, and salesmen now out are refusing orders unless a longer time than usual is allowed to fill them. Mechanical lines are going better than last month, perhaps because the mill industries, after inventory, found need of new material. Druggists' lines of rubber goods are in excellent demand; in fact, some of the larger syndicate drug stores are competing with each other in a specially lively manner, and running large advertisements, almost exclusively of rubber goods, offering these at cut prices. Certainly all lines with the above mentioned exception, are in excellent shape for a good business this year.

* * *

W. H. Palmer, of the United States Rubber Co., after years of service in Malden and Boston, was transferred to a higher position in New York late in 1911. Mr. Palmer had taken a very active interest in Mount Vernon Lodge, F. A. M., of Malden, and was "in line" for the chair of Worshipful Master. The lodge elected him to this office, and during 1912 Mr. Palmer made monthly flying trips to Malden to preside at the regular communications of the lodge. When his term expired, and he was succeeded in office by another, the Lodge, in recognition of his unusual exertions in fulfilling his duties, voted him a life member and presented to him a beautiful jeweled Past Master's badge, of which he is deservedly proud.

* * *

Captain Francis H. Appleton, president of the Rubber Reclaimers' Club, in a recent interview tells of the success of that organization:

"At the mettings general business has been discussed, and each member has become so well acquainted with his competitors that the result has been most advantageous to the trade at large.

"The discussions have resulted in formulating ideas which have been of advantage to the entire rubber business, so that today there is an understanding between the seller of rubber scrap and the buyer, so that the old troubles which formerly existed in regard to poor packing, have been almost entirely eliminated. For instance, today a live dealer understands that a 'no-name' or 'unguaranteed' tire will not be accepted as a good delivery; therefore, I have to say, as I have said on many occasions, that these trade organizations are decidedly beneficial in every way.

"The year 1912 has been a phenomenal one, not alone for the Reclaimers of Rubber, but for the rubber trade in general. The volume of business has been great, but the percentage of profit, owing to the high prices which have prevailed in the scrap market, has been smaller than in previous years; but in the aggregate, I think I can say in all truthfulness, that never has there been so much business done, and never were the manufacturers in a more healthy condition."

* * *

James H. Stedman, treasurer of the Monatiquot Rubber Works Co. was the donor recently of a fine pipe organ to the Congregational Church at New Sharon, Maine, as a memorial to his mother. It was dedicated with impressive exercises, the Rev. Dr. Beach, president of the Bangor Theological Seminary, officiating. The church was built by ancestors of Mr. Stedman and is located in the town, the home of his people for many generations.

* * *

Boston is having an epidemic of small burglaries and sneak-thieving. One of the breaks was at 60 Pearl street, where the Manhattan Rubber Co. has its office and stores. Thieves forced the door with a jimmy, broke the glass in the door leading to the inner office, pried open six or eight desks, searched the entire office, even going through the pockets in the office coats left there, yet there seemed to be nothing carried away of any importance.

* * *

The many friends of Arthur W. Stedman, of this city, will sympathize with him in the lost of his wife, Mary P. Stedman, who died on Saturday, the 18th of January, after an operation. She was the daughter of the late S. Prescott Shepard, a well-known dry goods dealer of Boston, and Lucy P. (Innes) Shepard. She was married to Mr. Stedman in 1883, and for several years lived in Brookline, but later the family removed to the celebrated "Weld Farm" in West Roxbury. She leaves, besides her husband, one son, Arthur W. Stedman, Jr., who is now at school, preparatory to entering Harvard College.

* * *

Another well-known rubber man was similarly afflicted last month. Mrs. Emily J. Pike, wife of Chester J. Pike, died at her home in Medford on January 17, after a long illness. For several years she was afflicted with Bright's disease, and last September was so stricken that she only occasionally rallied, and only for short periods. The interment was at Oak Grove Cemetery on Sunday, the 19th. Mr. Pike has a host of friends in the trade who will condole with him in his affliction.

* * *

Will G. Snow, the bright advertising manager of the International Silverware Co., prints every month a paper containing extracts and reprints from the daily and weekly newspapers of the year 1847. It is an interesting little sheet, and contains many facts which might otherwise be lost to memory. One item Mr. Snow unearthed from a Connecticut local reads:

"The editor of the New London 'Star' has been shown a one dollar bill, of the New Haven County Bank—genuine—the paper of which was of India rubber, manufactured in Lisbon. It was slightly elastic, but little thicker than the ordinary paper, and perfectly impervious to water. Indeed, to so great perfection had it been brought, both in the filling up, and in the ink used for the signatures, that it seems to have defied the common, and even some uncommon methods of obliteration. It had been soaked and boiled in strong potash lye, with scarcely any perceptible effect."

We all know about that famous book of Goodyear's, printed on leaves of soft rubber, but how many of us ever heard of a rubber bank note?

* * *

Richmond L. Chipman, for nearly 15 years with George A. Alden & Co., Boston, has been transferred to the New York office of the concern, where he will occupy a still more important position than that which he has hitherto filled. Mr. Chipman is a bright, active young man with a pleasing personality, who will doubtless make for himself as large a circle of friends in the big Metropolis as he leaves in the Hub. He has not yet moved his family to New York, but is

already "at home" at the New York headquarters of this well-known crude rubber house.

* * *

W. H. Reilly, for sixteen years with the Boston Rubber Shoe Co. at its Boston office, was transferred to the office of the Hubmark Rubber Co. on January 1. On leaving his old position, his associates in the Essex Street office presented to him a handsome gold Waltham watch, suitably engraved, and a fine gold chain. Mr. Reilly is, naturally, proud of the gift, but more so of the letter from Selling Agent Charles A. Coe, which accompanied it.

* * *

I notice that the Davidson Rubber Co. is advertising for a "progressive man as technical superintendent, who must be experienced in rubber analysis of all kinds and practical factory control," and also desires "a cost expert with first-class experience in manufacturing costs."

* * *

Interest is increasing each week in the work of the Rubber Tire Bowling League, which is nearing the end of its season. Ten teams, representing twelve tire concerns, have been bowling each week since the first of November, and the tournament will end March 6, the eighteenth week, each team rolling off two matches with each of the others. Some wonderful records have been made. Of course, it is too early to name the winners. The prizes are $25 for the highest team; $15 for individual high average, and $10 each for individual three string and individual single string. A banquet will be given the entire membership at the end of the season.

* * *

The Patterson Rubber Co. factory at Lowell is up four stories at present writing, and President John S. Patterson predicts that the factory will be making tires by the middle of this month. It will be a good deal of a hustle to fulfil this prophecy, but the men of this company know what it is to hustle. The factory nearing completion will be 250 by 63 feet, and plans are ready for a similar building to be erected next fall. The company owns ten acres of ground, and will have plenty of chance to expand as business warrants.

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The Walpole Rubber Co.'s factories are all running at full capacity. The company has declared a regular quarterly dividend of 1¾ per cent. on preferred stock and 1 per cent. on common stock, payable January 15.

* * *

The B. & R. Rubber Co., of East Brookfield, is making important improvements in its factory at North Brookfield, Massachusetts, installing elevators, and removing the shipping room to a more convenient location, thus facilitating both the manufacture and shipment of goods.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

THE Miller Rubber Co. has placed on the market a new inner tube to meet the present demand for a very high grade article. They are also placing on the market a new non-skid tread, which consists of a series of projections on the outer side of the tire, with a construction in the middle of the tire which gives it the wearing service of an ordinary flat tread tire; thus giving an increased amount of mileage and at the same time retaining an excellent non-skid feature based on the interlocking action of a cog wheel.

This company has opened a new sales agency in New York under the name of the Miller Tire Sales Co., Inc. It is in charge of H. C. Mills, who for ten years was New York sales manager for the Diamond Rubber Co., and H. C. Miller, who was formerly connected with the Diamond Sales Agency in New York, and for two years had charge of the Diamond Sales Agency at St. Louis.

* * *

The Portage Rubber Co. of Barberton held its annual stockholders' meeting Jan. 20, electing the following directors: James Christy, Wm. Leary, W. W. Wildman, A. S. Mottinger, D. A. Doyle, M. S. Long, J. W. Miller, J. D. Raw, Fred H. Snyder, Edward Langenbach, John Kerch, Dr. O. S. Weldy. The following officers were elected: Jas. Christy, president; J. W. Miller, vice-president; A. S. Mottinger, secretary; W. W. Wildman, treasurer and general manager.

The yearly report of the General Manager showed the business of the past year to be good and the outlook was of the best for a record-breaking year. The company has firmly established its tire trade, and its orders more than fill its limited capacity. The new building which was recently completed will be occupied in a few days, and it is believed by the directors that it is only a matter of a few months, before business will compel the erection of more buildings.

* * *

A. H. Marks, of the B. F. Goodrich Co., who has been in Johns Hopkins Hospital, Baltimore, Md., with acute nervous trouble and heart complications, was announced to be in a "fairly satisfactory condition" on January 21.

* * *

The Electric Reclaiming Co., of Barberton, recently held its annual stockholders' meeting. The following were elected directors: E. M. Gammeter, F. A. Brodbeck, Fred W. Albrecht, Chas. Fastnight, Jos. Dangel, Wm. Byrider, F. R. Moore, Geo. W. Blackburn, E. R. Albrecht, J. M. Sumner, E. E. Crook. The following officers were elected: Emil Gammeter, president; Francis A. Brodbeck, vice-president; Fred W. Albrecht, secretary and treasurer; C. E. McLain, assistant treasurer; and R. W. Haines, general manager. E. R. Albrecht of Massillon, and J. M. Sumner of Akron were elected to fill vacancies on the board caused by resignation of Shreve Clark and H. A. Backderf.

* * *

The Mohawk Tire and Rubber Co. has been organized and has bought the Stein Double Cushion Tire and Rubber Co. plant and machinery, patents and good-will. The new company is organized with a capitalization of $350,000; $250,000 common stock and $100,000 7 per cent. cumulative preferred stock, redeemable at 110 with accrued interest after January 1, 1916. The Stein plant is located in East Akron, near the factory of The Goodyear Tire and Rubber Co. It consists of a 2½ acre tract of land, a brick factory in good condition, with switching facilities, and water; having a present capacity of between 75 and 100 tires per day. The company is to be organized without any water in the stock.

The president of the new company will be R. M. Pillmore, who for a number of years was general manager of The Akron Grocery Co., and is at present Director of Public Service of the City of Akron. The superintendent of the plant will be S. S. Miller, for many years connected with the manufacturing end of The Kelly-Springfield Tire Co., known in Akron as The Buckeye Rubber Co. Among the directors of the new company are C. K. Sunshine, president of the Sunshine Suit & Cloak Co., Cleveland, Ohio; C. D. Paxton, Cleveland, Ohio, State Agent for the Jackson Auto Co.; R. M. Pillmore and J. K. Williams of the J. K. Williams Foundry and Machine Co., Akron, Ohio., noted rubber machinery manufacturers; S. S. Miller and F. J. Mishler, vice president of the Citizens Savings & Loan Co. The company expects to be able to place tires on the market to take care of the spring trade.

* * *

J. W. Mowe has resigned as manager of the Detroit branch of The Firestone Tire & Rubber Co., where he has become well acquainted with the tire trade, and has become associated with

the sales force of the Goodyear Tire & Rubber Co. He is quiet and unassuming and has been very successful.

H. A. Coffin, a man of experience in the automobile business, has been given charge of the Detroit branch of the Firestone company. The company has opened new branches in the following cities: Columbus, Ohio, Geo. Richards, manager, formerly with the Chicago branch; Houston, Texas, H. W. McFadden, manager; Milwaukee, Wisconsin, John E. McGinnis, manager; Cincinnati, Ohio, E. F. Firestone, manager; Memphis, Tennessee, W. C. Ward, manager; Salt Lake City, Utah, M. L. Turbush, manager. The needs of the trade demanded larger quarters in Philadelphia, Buffalo and Chicago. The new offices of the company in Philadelphia are located at 304 North Broad Street; in Buffalo, on Main street, in the automobile section; and in Chicago at the corner of Nineteenth street and Michigan Ave.

* * *

The Y. M. C. A. of Akron is offering several special courses for rubber workers. The courses are designed to give the rubber worker an opportunity to obtain a fundamental knowledge of the appliances and materials with which he works. These lectures are being conducted by some of the most noted manufacturers of the city; among whom are J. H. Vance and W. R. Miller, of the B. F. Goodrich Co., and L. M. Bourne, Dr. Millard and E. R. Hall, of the Goodyear Tire & Rubber Co.

The following is an outline of one of the main rubber courses:

PART I.—INSTRUCTION IN POWER AND APPLIANCES USED IN MANUFACTURING IN GENERAL.

I. Power Elements.—Instruction in methods of producing, and characteristics of
- a. Steam.
- b. Electricity.
- c. Air.
- d. Hydraulic pressure.

II. Transforming power elements into usable horsepower power plant:
- a. Boilers.
- b. Steam engine.
- c. Dynamo-generator to motor.
- d. Air compressor.
- e. Pumps, accumulator.

III. Transmitting horsepower to factory machines:
- a. Mechanical drive.
- b. Electric drive, switchboard.

IV. Miscellaneous appliances:
- a. Elevators, conveyors, trucks.
- b. Blocks and tackle, chain blocks, air and electric hoists, cranes.
- c. Safety devices, fire extinguishers.
- d. Lighting, heating, ventilating.

PART II.—INSTRUCTION IN RUBBER AND COMPOUNDING PIGMENTS.

I. Rubber:
- a. Description of various grades.
- b. Where and how grown.
- c. Value and importance of careful handling of scrap, etc.
- d. Scrap rubber, reclaiming, etc.

II. Compounding pigments:
- a. Description of various materials.
- b. Their action in connection with rubber.

PART III.—INSTRUCTION IN THE THEORY, USE AND CONSTRUCTION OF THE VARIOUS SPECIAL APPLIANCES USED IN THE RUBBER INDUSTRY.

I. Washing and drying.

II. Compounding, and mixing, or milling.

III. Calendering, cementing and impregnating.

IV. Preparing stock and vulcanizing the various rubber products:
- a. Tires and automobile accessories.
- b. Molded goods, rubber belting, etc.
- c. Insulated wire, hose, etc.
- d. Boots and shoes, druggists' sundries.
- e. Hard rubber, balata and gutta percha products.

PART IV.—CONCLUDING LECTURES.

I. Factory hygiene with special reference to rubber factory conditions.

II. Review of the course.

III. Lecture on the present status and future outlook of the rubber industry.

The Cleveland Automobile Show, held the week of January 4-11, 1913, on the lower floor of the new Wigmore Building, was the most successful and best patronized auto show ever held in Cleveland. The value of the cars and equipment on display was placed at over $2,000,000, and the various salesmen representing the automobile factories report large sales. The various Akron rubber companies were well represented. The success of this show depended to a large extent on the general manager, Fred Caley, and on Fred Wood, both of whom were formerly Akron men, who have had years of experience in the automobile business.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

AFTER a brisk trade covering the fall months and the holidays the rubber business locally has put on the brakes and slowed down, though not more than is usual at this time of the year. Local houses, despite the temporary lull in trade, are taking advantage of the slack season and making preparations for the opening of trade in the spring. Indications point to a banner year for the rubber industry, and naturally efforts are being put forth to meet the unexampled trade which is promised. Many of the managers of the branch houses of the big rubber companies are of the opinion that the opening of spring trade will find the consumption overtopping the production.

* * *

C. J. Butler, vice-president of the United States Tire Co., was a visitor to the city the past month, stopping over for an examination of local conditions and prospects and inspecting the new branch house of the company which was recently opened. Mr. Butler expressed himself as pleased with local conditions and after a brief stay left for the South for a period of recuperation with his family.

* * *

It is reported in local financial circles that the Grasselli Chemical Co., which had its origin in Cincinnati, but which now operates more than 15 plants throughout the country for the manufacture of heavy chemicals and zinc products used by the rubber industry, will soon call a meeting of its stockholders to authorize an increase in its capital stock, which is now $7,500,000. The company recently gratified its stockholders by handing out a melon consisting of its unissued common stock.

* * *

A recently formed establishment, which is new in its line in this city, is that of the Automobile Tire & Tube Hospital. The hospital is located in the rubber tire and automobile sales district, being located at 907 Race street—head physician, W. M. Galt; chief interne, H. V. Hague. Both men are practical rubber men, having had wide experience in the manufacture of rubber tires.

* * *

The Republic Tire & Rubber Co. has moved its local sales rooms from 915 Race street to 907 Race street, occupying part of the rooms which have been leased by the Automobile Tire & Tube Hospital.

* * *

Much interest is being manifested by local rubber tire men in the automobile show to be held by the Automobile Dealers' Association of Cincinnati. While the tire manufacturers will not have individual exhibits at the show, they will, however, be represented by the local supply and auto accessories dealers

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To meet the heavy demand for rubber clothing and rubber footwear brought on by the flood of the Ohio River January 12, the Schaefer Rubber Co., which operates one of the largest retail rubber stores in the Middle West, kept its salesrooms open Sunday and every night in the week during the high water,

in order to supply the needs of those who were affected by the flood. This enterprise on the part of this company merited high praise from those who were obliged to equip themselves with necessary clothing to combat the flood to save their property.

* * *

The L. & M. Rubber Co., of Carrollton, Ohio, filed notice with the Secretary of State that it had increased its capital stock from $120,000 to $500,000.

* * *

R. J. Firestone, general manager of the Firestone Tire and Rubber Co., recently spent several days in this city looking over the new branch opened by the company in this city. M. E. Palmer, traveling auditor of the Firestone Tire and Rubber Co., is spending several weeks here assisting in the arrangement of the office of the new branch of the company which was opened the first of the year.

This company has selected generous quarters for a direct factory branch in this city. The new branch is located at Ninth and Sycamore streets. It will look after the business of the company in Southern Ohio, Southern Indiana, Kentucky, West Virginia and Tennessee and is in charge of E. S. Firestone. The company in its new branch has a floor space of 5,000 square feet. A section of this space is given over to a modern-equipped office, while another section is devoted to a fully equipped shop. The balance of the space is used in carrying stock, which is said to be the largest stock of rubber tires and rubber accessories carried by any local branch house. The operation of a shop in connection with the branch is a distinct feature in this city and bids to be a popular move on the part of the company, as it is arranged so that automobiles can be run into the shop and tires and rims attached without the necessity of owners taking them to repair shops.

"The outlook for the automobile industry was never so bright as it is right now," said Mr. E. S. Firestone. "Cincinnati is one of the best cities in the country for a branch and we intend carrying a $150,000 stock of tires with other accessories."

THE RUBBER TRADE IN RHODE ISLAND.

(By a Resident Correspondent.)

A NOTICEABLE slacking up in some branches of the rubber trade in Rhode Island developed during the early part of this month. The all-night force in the wire department of the National India Rubber Co.'s plant was discontinued, and the Consumers Rubber Co.'s plant was closed recently for a week to permit the making of repairs anl numerous improvements.

Manager Le Baron C. Colt, of the former plant, stated that as soon as inventory-taking was finished work would be rushed in the wire plant. He said he expected increased demands for the product. "The fact that there are no wire working forces in the open during the winter weather in the northern states cuts off much of the business," he said. "Later the lack of orders from northern business men will be counterbalanced by the extension of wires in tropical countries."

Although 300 men were let go from the night shift, the day force was kept busy.

* * *

Col. Samuel P. Colt was reelected chairman of the board of directors of the Industrial Trust Co., one of the largest banking institutions in Rhode Island, at the annual meeting of stockholders, held January 21. The meeting was the second anniversary of the fight which he had in 1911, in trying to regain control of the institution.

* * *

United States Circuit Court Judge LeBaron B. Colt was elected United States Senator by the Rhode Island Legislature on January 21. His selection was a foregone conclusion several weeks before. The vote in the Senate was 32—5 in his favor, and in the House 56—37—7. In the Senate he had one opponent, and in the House two. His term will begin March 4. He succeeds George Peabody Wetmore. Judge Colt is a brother of Samuel P. Colt. He was born in Dedham, Massachusetts, June 25, 1846, and has been a Federal judge for more than 30 years.

* * *

Agent LeBaron C. Colt, of the National India Rubber Co., was the recipient of a handsome Davenport couch Christmas. It was a present from the heads of the selling departments. James W. Franklin, superintendent of the shoe and arctic departments, was given a book case by his foremen and clerks.

* * *

The Consumers' Rubber Co., at Bristol, has resumed the work of manufacturing insulated wire. In November the work of getting the old departments at the factory on Wood street ready for use was begun. This was formerly an important part of the product of this concern, and it is expected that it will be made so again by the people who are now in control. This company has also started to make its own cardboard packing boxes, instead of letting contracts for the work. The industry is being operated on a small scale at present, but plans are under way for its enlargement.

* * *

After exhaustive examinations, conducted by experts, because of complaints from people in West Barrington, the International Rubber Co. in that town is making a vigorous effort to prevent unpleasant odors from issuing from its plant. A filtration plant for the dyeing waters is to be installed, and a drain pipe is to be laid across Park avenue to connect with another drain pipe which leads to the shores of Narragansett bay a quarter of a mile to the westward. Other improvements are being installed by this concern. A 350-horse power steam engine is being put in as a substitute for a 75 horse power machine which has been furnishing power for a part of the plant.

* * *

Arthur L. Kelley, president of the Mechanical Fabric Co., who is also head of the Narragansett Electric Lighting Co., is making a strong fight to retain the exclusive right of that company to furnish power and light in Providence. A hydro-electric concern is seeking a franchise in the city. Recently the following rubber companies petitioned the City Council to accept an offer of lower rates made by the Narragansett Co.: Mechanical Fabric Co., Revere Rubber Co., Improved Seamless Wire Co., and Glendale Elastic Fabrics Co.

* * *

Because of the rapid increase in its business the Davol Rubber Co., has started the construction of a big addition to its plant at the corner of Point and Eddy streets, Providence. The new structure, which is to be 281 ft. x 50 ft., is to be of brick and steel. It will cost $60,000, and will be located on the Eddy street side of the plant, where a long row of cottages was razed several months ago to make room for street-widening. The building will be three stories high. Work has been started, and, because of the open weather, much progress has been made in putting in the concrete foundations. The building will probably be completed during the late spring.

Charles J. Davol, president and treasurer of the Davol Rubber Co., was elected to the directorate of the Homeopathic Hospital at the annual meeting, held January 15.

* * *

The Revere Rubber Co. closed the year 1912 doing a tremendous business. In addition to a variety of lines this concern is the Providence branch of the United States Tire Co. For a long time it has been operating 24 hours a day and has been increasing the number of employes as fast as capable men could be obtained. Many additions and changes have been made to the property, and at present the power plant is being improved. A new boiler room is being put up. It is on the Valley street side of the plant.

J. Murray Percival, who was for many years assistant foreman of the cutters at the Alice Mill of the Woonsocket Rubber Co., left that position early this month. A watch and fob were presented to him by his fellow employes.

* * *

Mrs. Isabella E. Norris, daughter of the late Francis M. Dimond, Governor of Rhode Island in 1853, and mother of Samuel Norris, of New York City, secretary of the United States Rubber Co., died at her home in Bristol, R. I., on November 26. She was in her 86th year. Her last illness was short, death being due principally to old age.

Mrs. Norris was born in Providence. She went to Bristol to live when a girl. She was long active in work of St. Michael's Episcopal Church in that town.

* * *

Clifton A. Hall, 87 years old, died at his home, 380 Benefit street, Providence, January 12. He was one of the oldest architects in New England, and was the originator of modern well-lighted manufacturing establishments. One of his early productions was the plant of the National India Rubber Co., Bristol.

* * *

T. O. Doyle, overseer of dyeing at the British Hosiery Co.'s plant, has accepted a position with the International Rubber Co. at West Barrington.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

IN all but two lines of the rubber industry in Chicago, manufacturers, jobbers and dealers report good business for the month of January. Despite the fact that the weather has been decidedly inclement since the middle of the month, which is due to a heavy snowstorm and subsequent rains, footwear has been moving sluggishly and this condition of affairs has caused keen disappointment in all quarters. It was the general belief that the footwear market would show a degree of activity after the advent of the heaviest snowstorm of the season, but jobbers and dealers report that there has been but a slight improvement over December, and they do not look for much activity until the advent of spring.

Rubber hoof-pads is the other line that has failed to show any evidence of activity, and dealers do not hesitate to say that the sales are not near so good as for the same period last year. However, they do not overlook the fact that severe cold weather was the programme in Chicago for a period of six weeks last year, while during January of this year the temperature at no time reached a low mark. But the dealers in hoof-pads say that the market has shown a gradual improvement since the middle of January, and if the weather would change to colder and remain that way for a week or more, there would undoubtedly be an activity that would to a degree make up for the sluggish condition of the market since the beginning of winter.

Incidentally it may be stated that the Society for the Prevention of Cruelty to Animals and two prominent Chicago newspapers have been active of late in urging upon drivers the necessity of providing hoof-pads for their horses. The newspapers have pointed out that the horses lose at least 60 per cent. of their energy in trying to maintain their feet on the slippery cobblestones and asphalt, and that consequently drivers are alone to blame because of the fact that so many of them neglect to provide foot pads. Hoof-pad dealers feel that if the teamsters can be made to realize the truth of the assertions made by the newspaper, the market should show an unusual activity during the remainder of the winter.

But the real feeling of cheer appears to be monopolized by the mechanical rubber goods manufacturers, jobbers and dealers, who report that they could not be better satisfied with the sales that they have made of almost every item since the first of the year. Furthermore, they state that the mechanical rubber goods market is showing constant improvement and they anticipate a heavy spring business. Reports from all of the steel mills in the vicinity of Chicago are that orders are coming in much faster than anticipated for this season. Another pleasing feature is that none of the mills has been laying off men, but on the contrary are working full time. This state of affairs is very encouraging to mechanical rubber goods men, and they assert that they are receiving larger orders from the steel mills at the present time than at the same period last year. There is also much activity in western mines, which is largely responsible for the present prosperity of Chicago mechanical rubber goods manufacturers.

"So far as our house is concerned, the demand for the various items of mechanical rubber goods is about the same as for this period of last year," said a representative of the Quaker City Rubber Co. "Orders for tires have been coming in stronger than we had anticipated, and this is due to the more general use of automobiles in Chicago during the winter season. Mining business is good in certain sections, and a most gratifying feature is that the large steel mills at Gary, Ind., South Chicago and other points contiguous to Chicago are working full force."

* * *

The fact that automobiles are in such general use in Chicago during the present winter has caused much rejoicing among those who make a specialty of repairing tires. It is said that the number of automobiles in daily use in Chicago since the advent of the present winter far exceeds that of last year, and as a result repairers have about all the work that they can handle conveniently. One prominent repairman has found it necessary to increase his working force, and he asserts that his business is about twice as large as last winter. In the past it had been the belief of automobile owners that the machines were merely a dry-weather convenience, and that it would be the height of absurdity to drive them through the slush and snow of winter. But investigation at most garages reveals that few owners of machines have abandoned them for the winter, and that the number in storage is much smaller than last year. Garage men point out that an automobile can be used in the worst winter weather when it would be a crime to use a horse.

* * *

The recent seasonable weather has caused unusual activity in clothing and druggists' sundries. Business in these two items is reported as much better than for the same period last year. The prospects for heavy trade in clothing were not particularly bright at the beginning of the new year. Most dealers were well stocked and manufacturers and jobbers did not look for large orders until the middle of February at the earliest.

* * *

The scrap rubber market held its own during the month of January, and from no quarter is complaint heard that the outlook for a heavy spring business is not good. The scrap rubber industry has been developing rapidly in Chicago during the last twelve months, and most of the concerns have found it necessary to employ additional help.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

NOTHING could have been more cheering than the rains which have been falling during the past two weeks. This has brought the rainfall for the season well up to the average throughout the state, and its timely coming has assured good crops for the farmers, to say nothing of the increased demand for rubber shoes and clothing. The rains were so late in coming this year that merchants in the interior had scarcely drawn at all on their stocks of rubber clothing and shoes. But during

the past few weeks they have been making up for lost time. They are also coming in with some payments which in some cases have been long past due. They always prefer to do business on the jobbers' capital if possible. Consequently the jobbers feel that conditions are much better than they were a few weeks ago, and that the outlook is favorable.

* * *

The Gorham-Revere Rubber Co. held a big gathering of Pacific Coast salesmen at San Francisco on the 20th and 21st of last month. There were 65 men in attendance and it was the largest gathering of its kind ever attempted on the Pacific Coast. There were salesmen from the company's branch stores at Spokane, Seattle, Tacoma, Los Angeles, Portland and other points; including one salesman each from Australia and Alaska. C. C. Case, vice-president of the Revere Rubber Co., attended the meeting and addressed the men.

* * *

The Cradley Rubber Supply Co. has moved from the store at the foot of California street to a new and better location at 315 Market street. Here the firm is looking more to the retail trade than before, owing to the prominence of the location, and many lines of handy retail articles have been added to the stock, including rubber boots and shoes.

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W. E. Griffiths, the secretary of the American Rubber Manufacturing Co., died on Saturday, the 11th of January, very suddenly and unexpectedly. He was a very popular man in the trade and his death is greatly regretted by all who knew him.

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Mr. R. H. Pease, senior, president of the Goodyear Rubber Co., and Mr. Watson, the treasurer of the company, started last week for Portland to make their regular winter tour of inspection. Mr. R. H. Pease, Jr., reports that the present rains will make a big difference in the boot and shoe business for this year.

* * *

W. T. Powell, Pacific Coast district manager for the Goodyear Tire and Rubber Co., has returned to San Francisco from his business trip through the Northwest territory. He reports that the branches located in Portland, Seattle and Spokane are enjoying a flourishing business. His company has four branch houses in California. "We expect to soon open branches in Fresno and Sacramento also," he said, "and this will give us a larger number of agencies in active operation than any other tire company on the coast."

* * *

The Chanselor & Lyons Co., a well known automobile supply house, has recently incorporated with a capital stock of $200,000.00. The incorporators are W. G. Chanselor, W. A. Avery, P. H. Lyons and H. D. McCoy.

* * *

Henry Auger of the Chanselor & Lyons Co., has left with his wife for a trip to the manufacturing centers of the east. Mr. Auger was recently made the head of the purchasing department of this company, and the fact that the company has incorporated for the purpose of centralizing its business management in San Francisco for all of the branch stores, makes this position all the more important.

* * *

The Fire Commissioners of San Francisco have accepted the bid of the Bowers Rubber Works of this city for 20,000 feet of 2¾ inch hose, the total cost being about $17,000.00.

* * *

The Diamond Rubber Co. is making an important advertising feature of the immense new electric sign which the company has recently erected on the top of the Hughes Building on Market street. Th advertisement shows a great revolving wheel, and advertises the non-skid qualities of the Diamond tire. Then in the Sunday papers the company has taken full pages showing a photograph of the electric sign standing high in the air. To further draw attention to the tires an offer of $100.00 cash is made to the person who can guess the number of electric lights actually used in the display.

* * *

The statement was made in this column in the December issue that Mr. Henry Byrne was no longer connected with the Quaker City Rubber Co., having recently accepted a position with the Plant Rubber and Supply Co. Mr. Byrne writes from Los Angeles that the only change that has been made in the Squire & Byrne Rubber Co. is this: that Mr. Squire has taken charge of the San Francisco office, while Mr. Byrne has taken the management of the Los Angeles branch. The firm still represent the Quaker City Rubber Co., in California.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

PRESIDENT-ELECT WILSON'S statement anent "Big Business" at a recent dinner in Chicago, and his later utterances against Wall street, have not had any material effect on the rubber industry according to the declarations of local manufacturers who, now that the anxiety attendant upon a Presidential election has subsided, have settled down to business in earnest. The opinion prevails that the year will be fully as prosperous for the local rubber industries as was 1912, and many of the factories are reaching out for trade in new and untried foreign territory. Practically all of the local plants are running full-handed and many are working day and night shifts of operatives. The Thermoid Rubber, United and Globe Rubber, Woven Hose Co., Empire Rubber and Tire Co., Essex Rubber Co., Home Rubber Co. and Joseph Stokes Rubber Co. are working day and night to keep abreast of the volume of orders.

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Representatives of the Department of Labor at Washington who made inspection of the local manufacturing plants recently, declared through the newspapers that the factory laws as regards sanitation, blowers and employment of boys and girls were obeyed more closely in this city than in most manufacturing centers.

In practically all of the local plants much attention is given to sanitation and safety of the operatives. The Employers' Liability Law, which has been in force in this State the past year, has caused many concerns to exercise great care in the safeguarding of the employees. The majority of the plants have installed lunch rooms for the operatives and provided other accommodations which are appreciated by the employees.

* * *

The Empire Rubber and Tire Co. has marketed a new tire which bids fair to be a tremendous seller. The factory managers have been working to perfect this new tire for the past six months, and hard road tests have convinced the designers that the tire is a success in every particular. Much favorable comment on it was heard at the recent Garden Show.

The large number of orders booked for this new make of auto tire will engage the running capacity of the local plant for some months to come, and with the orders for other makes of tires and accessories means a solid year's work ahead for the operatives, it being necessary to work day and night shifts in some of the departments to get out the orders for early delivery.

In the manufacture of the new "Red Tire" the Empire company adopted the same compound that made the "Imperial Empire Tire" famous in the auto world. While the new tire commands something like 15 per cent. above the price asked for ordinary tires, the demand for the "Red Tire" gives the company the impression that the trade is perfectly willing to pay the additional cost; realizing that the durability of the tire warrants the additional outlay.

The life of the compound used in the new tire is regarded as phenomenal. Tubes six years old made by the Empire company are still in good condition and giving satisfaction. Auto dealers and others interested in the industry are firm in the belief that the Empire company has a "winner" in the new tire.

* * *

The Hamilton Rubber Co. is working full-handed in the effort to keep pace with orders. The three-story new addition to the plant is being used to its full capacity.

* * *

One of the busiest of the local manufacturing rubber plants is that of the Essex Rubber Co., which concern employs close to 200 operatives. The plant is being operated day and night, with orders enough to insure the operation of the factory with day and night shifts for the next six months.

The Essex Rubber Co. makes a specialty among other lines of automobile accessories, and at the recent automobile show in Madison Square Garden, New York, booked a large number of orders. The display of the Essex Co. at the Garden auto show attracted considerable attention. The company also exhibited at the recent rubber show, being one of the few rubber concerns of this section to make an exhibit.

The Essex company the past year made a successful bid for foreign trade, particularly in the Latin countries of South America. Large shipments to Cuba, Porto Rico, Panama, Brazil and Equador attest the success of the company in this territory. Rubber shoe heels and soles are some of the many specialties manufactured by this concern. Shipments are made to all sections of the world. Molded specialties are also included in the list of articles made by the Essex Co. In the past year the company has materially improved its plant.

* * *

Though working day and night shifts the firm of John E. Thropp's Sons is unable to keep pace with the many orders which are coming in for the new patent automobile tire-making machines. The patents on the machines are held by the De Laski & Thropp Circular Woven Wire Tire Co. of this city, the machines being invented by J. K. De Laski. These machines for the making of automobile tires have been on the market only a short time, but judging from the demand for them, are a success in every particular. One of these machines will turn out more tires in a single day than it is possible for four men to make in the same space of time.

Advices received at the local plant of the Thropp concern are to the effect that one of the machines in use in the plant of the Dunlop Tire and Auto Goods Company, Toronto, Canada, turned out seventy tires in ten hours with one man operating the machine. The Dunlop concern declared that the services of five men would have been required to make the same number of tires in ten hours. Seven of the patent machines are in use in the plant of J. Ellwood Lee, Philadelphia. In addition to the tire-making machine, the Thropp company is making a machine for the wrapping of tires and one for manufacturing tire molds.

* * *

The Thermoid Rubber Co. is making large shipments to France of automobile tire brake linings, used on the rear wheels of the machines. For the Paris market alone it is said the local concern has orders for close to 20,000 feet of brake lining. The tire department of the Thermoid plant is a particularly busy place these days. The company has arranged for a big display at the Chicago automobile show. The concern exhibited at the recent Garden show.

O. K. Patton, office manager of the Thermoid Rubber Co., has been promoted to the post of assistant manager of the Chicago branch, handling mechanical rubber goods. Frederick Wilson is in charge of the Chicago office. E. B. Knowles, of the Ray 'Bestos brake lining concern, Bridgeport, Connecticut, succeeds Mr. Patton as office manager of the local plant.

General C. Edward Murray, the guiding spirit of the Empire Rubber and Tire Co., tendered a dinner to the managers of the branch stores. The dinner was given in the Hotel Astor, Monday evening, January 20. Those present were Ray Paddock, of the Buffalo branch; W. H. Chadwick, of Boston; L. V. Richardson, of Philadelphia; J. B. Frisbie, of Cleveland; Charles Wyland, of Indianapolis; Howard Zelley, of Newark; E. B. McKay, of Chicago; W. M. Perrett, of Detroit branch.

The representatives attended the Garden auto show and made an inspection of the Empire plant during their visit to this section of the country, reporting the outlook for a big season's business as most promising.

British Crude Rubber Imports.

OFFICIAL statistics for calendar years, stated in pounds:

YEAR.	Imports.	Exports.	Net Imports.
1898	54,833,072	33,023,536	21,809,536
1899	50,360,912	34,284,320	16,076,592
1900	57,593,312	32,864,832	24,728,480
1901	52,245,088	32,904,704	19,340,384
1902	46,970,000	32,676,112	14,293,888
1903	54,443,760	37,658,768	16,784,992
1904	55,555,584	33,415,536	22,140,048
1905	66,464,944	37,464,112	29,000,832
1906	67,992,624	36,988,336	31,004,288
1907	74,736,928	39,090,912	35,646,016
1908	64,407,392	40,153,792	24,253,600
1909	78,406,944	44,567,488	33,839,456
1910	98,220,528	52,401,664	45,818,864
1911	101,466,400	63,978,768	37,487,632
1912	123,252,752	81,308,528	41,944,224

GUTTA-PERCHA.

YEAR.	Imports.	Exports.	Net Imports.
1898	7,082,656	1,151,136	5,931,520
1899	9,239,664	840,224	8,399,440
1900	14,118,608	1,709,792	12,408,816
1901	9,905,056	1,224,832	8,680,224
1902	9,395,568	1,190,784	8,204,784
1903	5,198,032	741,664	4,456,368
1904	3,056,256	890,624	2,165,632
1905	5,088,608	1,020,880	4,067,728
1906	5,966,352	973,952	4,992,400
1907	6,516,048	1,268,624	5,247,424
1908	3,575,936	521,920	3,054,016
1909	5,064,864	680,736	4,384,128
1910	10,870,048	762,608	10,107,440
1911	7,392,000	1,074,976	6,317,024
1912	6,435,072	681,968	5,753,104

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of the values of exports of manufactures of india-rubber and gutta-percha for the month of November, 1912, and for the first eleven months of five calendar years:

MONTHS.	Belting Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
November, 1912....	$217,405	$96,439	$681,900	$995,744
January-October ...	2,125,333	1,148,716	6,623,334	9,897,383
Total, 1912.....	$2,342,738	$1,245,155	$7,305,234	$10,893,127
Total, 1911.....	2,085,613	1,565,146	6,528,022	10,178,781
Total, 1910.....	1,918,611	2,094,016	5,193,806	9,206,433
Total, 1909.....	1,637,018	1,474,559	3,978,186	7,089,763
Total, 1908.....	1,131,272	1,224,799	3,255,507	5,611,578

The above heading "All Other Rubber," for the month of November, 1912, and for the first eleven months of two calendar years, include the following details relating to tires:

		For Automobile.	All Other.	TOTAL.
November, 1912....	*Values*	$275,360	$58,569	$333,929
January-October		2,759,339	485,908	3,245,247
Total, 1912.....		$3,034,699	$544,477	$3,579,176
Total, 1911.....		2,257,727	526,653	2,784,380

OBITUARY RECORD

THE DEATH OF EDWARD R. RICE.

A GREAT shock came to the whole rubber trade—and especially to those more intimately associated with the footwear branch of the industry—when on the evening of Wednesday last, January 29, a telegram was received at the New York office of the United States Rubber Co., announcing the death of Edward R. Rice, at Portland, Oregon. Nothing so unexpected and startling has occurred in rubber circles for a long time.

Mr. Rice left New York on January 17, in the same excellent health that he had always enjoyed, except that for some days he had been troubled with a painful tooth; but this was extracted shortly before his departure. It was his intention to be gone about a month, in which time he expected to visit the various interests of the company on the Pacific Coast. On reaching Chicago he suffered so much pain that he kept to his room in the hotel for a day, and wrote the home office that he felt much more like going back than like going on, but that he thought it best to continue his journey.

He reached Portland, Oregon, on the 22nd, and still complained of considerable distress where the tooth had been extracted. He telegraphed on the morning of the 29th, that he expected to go into one of the Portland hospitals and undergo a slight operation in the hope of getting relief. The next telegram was received at nine o'clock the same evening from the hospital authorities, saying that while under the anaesthetic his respiration ceased, and that all the efforts of the staff to resuscitate him had proved unavailing.

Edward R. Rice.

While Mr. Rice was only in his 57th year, he was one of the veterans of the rubber trade, having been connected with it for forty years. He was born June 21, 1856, and while still a young boy he became connected with the wholesale house of L. P. Ross, Rochester, N. Y., soon developing into a successful salesman. In 1887 he became the selling agent at Buffalo of the Woonsocket Rubber Co., under the firm name of Edward R. Rice. When the Woonsocket Rubber Co. became part of the United States Rubber Co., in 1893, Mr. Rice's Buffalo agency became one of the branch stores of the big corporation. When in 1896 the Joseph Banigan Rubber Co. was formed, Mr. Rice was made its manager of sales, remaining in that position until that company also became a part of the United States Rubber Co., in 1901, when he was put in charge of the United States company's system of branch stores. He remained in this important position until July, 1906, when he was put in complete charge of the sales of the United States Rubber Co., being appointed manager of sales, to succeed the late E. H. Paine, who had been placed at the head of the company's export department, with headquarters in London. Mr. Rice's appointment to this position—carrying with it the general charge of the sales of over one-half of the rubber footwear manufactured in this country—was a signal recognition of his ability on the part of the directors of the United States Rubber Co. He remained in the position of manager of sales to the time of his death, and had also been on the board of directors since May, 1909.

Mr. Rice applied himself to the duties of his important office with characteristic energy and unflagging industry, familiarizing himself with all the details in all the various departments that go to constitute the selling system of this great corporation. But he did not permit the exactions of his position—great as they were—entirely to absorb his time and interest. He was an active member in various social and philanthropic organizations. He was a member of the Buffalo Club and the Saturn Club of Buffalo, being at one time its president. He was also president of the Elmwood School, a private educational institution of that city. He was a member of the Union League, the Lotos, and the Economic clubs of New York, and was a director for some years (receiving his appointment from the Governor) of the State Tubercular Hospital at Raybrook, New York.

He is survived by his widow, a daughter recently graduated from Vassar College, and a young son, now in a preparatory school at Buffalo. While the greater part of his time for many years had been passed in New York, he still retained his home in Buffalo, where the funeral services will be held.

He was a man of exceptional intelligence, with great power of application. He succeeded because he possessed, to a marked degree, the qualities that make for success. He was a man of unusually fine appearance, and was not only one of the most widely known personalities in the entire rubber trade, but he had a circle of most devoted friends.

WILLIAM HAGUE.

It is a great distinction in these days, and a record to be proud of, to have been actively associated with an important enterprise continuously for 52 years, and to have discharged one's duties faithfully and capably during that time. This distinction belonged to William Hague, who died in Tuckahoe, New York, January 15.

He was born in the North of Ireland in 1845. He came to this country at the age of 15, and secured employment in the factory of the Hodgman Rubber Co., at Tuckahoe. He remained a trusted and esteemed employee of that company up to a year ago, when, after 52 years of service, he was pensioned by the company. He lived during all that time at Tuckahoe, and took a useful part in the civic and religious life of the town, being at one time a trustee of the village, and actively identified for many years with the Asbury Centenary Methodist Church.

Another interesting incident connected with his career was the fact that he had a brother, Robert, also working for the Hodgman Rubber Co., but connected with their New York store, who, two years ago, rounded out 50 years of service in that position and was also pensioned by the company. It is refreshing in these days of industrial unrest to find instances where commercial relations between employer and employed have continued for half a century to the entire satisfaction of both.

News of the American Rubber Trade.

THE GUTTA PERCHA AND RUBBER, LTD.

THE January issue of this publication contained an announcement of the fact that the Gutta Percha and Rubber Manufacturing Co., of Toronto, Limited, was to be reorganized so as to include its three subsidiary companies with itself under one general name, viz.: The Gutta Percha and Rubber, Limited. The general facts of that reorganization were given in that announcement, but it did not include the names of the officers and directors, who are as follows:

Board of directors: S. T. Warren, chairman; A. W. Anglin, K.C., C. N. Candee, W. H. Galt, R. H. Greene, J. H. S. Kerr, C. B. Street, Trumbull Warren. Officers: Trumbull Warren, president and treasurer; C. N. Candee, vice-president and managing director; R. H. Greene, secretary and manager shoe department; J. H. S. Kerr, manager mechanical department; C. B. Street, general superintendent; W. H. Galt, general sales manager; L. L. McMurray, assistant treasurer; E. M. Lake, assistant secretary.

THE BOSTON BELTING CO.

A condensed summary of the last balance sheet of the Boston Belting Co., under date of September 30, 1912, shows the following:

LIABILITIES.

Capital stock	$1,000,000.00
Reserve fund	800,000.00
Profit and loss	201,666.52
Notes payable	439,000.00
Unsettled bills	7,500.00

ASSETS.

Real Estate (land and buildings)..	$328,711.85	
Machinery	275,757.32	
Tools, furniture and fixtures.....	99,111.15	
Cash	66,598.10	
Bonds receivable; notes receivable; investment acct; accts receivable.	808,688.10	
Merchandise	869,150.00	
Trade marks	100.00	
Sundries	50.00	
	$2,448,166.52	$2,448,166.52

THE HODGMAN RUBBER CO.

At the annual meeting of the stockholders of the Hodgman Rubber Co. held January 16, 1913, the following were elected directors for the year 1913: G. B. Hodgman, S. T. Hodgman, F. A. Hodgman, N. E. Stout and A. W. Warren. And at a subsequent meeting of the Board of Directors the following officers were re-elected: G. B. Hodgman, president; F. A. Hodgman, vice-president; S. T. Hodgman, treasurer; and A. W. Warren, secretary.

THE MASSACHUSETTS AUTOMOBILE CLUB OFFICERS.

At the annual meeting of the members of the Massachusetts Automobile Club, held at the club house in Boston January 9 last, the following officers were elected for the present year: President, William H. Ames; first vice-president, W. S. Shrigley; second vice president, William A. Rolfe; treasurer, Frank W. Remick, and secretary, Arthur H. Brooks. Executive Committee for three years—Frank E. Peabody, Henry S. Rowe and George R. Alley. Election Committee for three years—Joseph C. Stedman, George Tyson and Harry K. White.

THREE UNITED STATES RUBBER CO. DIVIDENDS.

On January 2 the United States Rubber Co. declared regular quarterly dividends of 1 per cent. on the common and 2 per cent. on the first preferred and 1½ per cent. on the second preferred stock, all payable January 31 to stockholders of record January 13.

ANNUAL MEETING OF THE MOTOR AND ACCESSORY ASSOCIATION.

The tenth annual meeting of the Motor and Accessory Manufacturers was held January 15, at the Waldorf-Astoria, New York, with an excellent attendance of members. The reports of the retiring president, treasurer and of the chairmen of the various committees were read. The following members of the Board of Directors were elected to serve three years: C. E. Thompson, of the Electric Welding Products Co.; Alfred P. Sloan, Jr., of the Hyatt Roller Bearing Co.; F. Hallett Lovell, Jr., of the Lovell-McConnell Mfg. Co., and C. E. Whitney, of the Whitney Manufacturing Co.

At the meeting of the Board of Directors, held in the headquarters at 17 West Forty-second street, New York City, January 16, the following officers were elected to serve for the ensuing year: President, J. H. Foster, of the Hydraulic Pressed Steel Co.; first vice-president, F. Hallett Lovell, Jr., of the Lovell-McConnell Mfg. Co.; second vice-president, C. E. Whitney, of the Whitney Mfg. Co.; third vice-president, F. C. Billings, of the Billings & Spencer Co.; treasurer, L. M. Wainwright, of the Diamond Chain & Mfg. Co.; secretary and assistant treasurer, Alfred P. Sloan, Jr., of the Hyatt Roller Bearing Co. William M. Sweet continues as manager.

The fifth annual banquet of the association was held on the evening of the 15th. Beside the members there were the following guests: Samuel A. Miles, Merle L. Downs, A. G. Batchelder, H. A. Bonnell, James S. Marvin, Sidney S. Meyers and T. E. A. Barthel. The speakers at the dinner were Wilbur D. Nesbit, Hon. George McAneny, T. O. McGill, W. J. Burns and Col. George Pope.

THE REPUBLIC COMPANY'S ST. LOUIS BRANCH.

The Republic Rubber Co., of Youngstown, Ohio, has leased the building at 2018-20 Locust street, St. Louis, to be used as a branch for the Republic tires. The company will occupy the first two floors and basement, handling all sizes and styles of Republic tires. George M. Hoffman will be manager of the branch.

THE FIRESTONE'S NEW YORK BUILDING.

The Firestone Tire and Rubber Co. has leased for a term of 21 years a vacant plot 150 x 100 feet, on the corner of Sixty-third street and West End avenue, New York, on which it will build a modern four-story fireproof service building, to be used exclusively for the motor truck end of its tire business. It will maintain a night service as well as a day service, which will undoubtedly appeal to a good many users of motor trucks. The aggregate rent for the term of the lease is said to be about $250,000.

THE INTER-CONTINENTAL RUBBER CO.

Very few American enterprises located in Mexico have been immune from the unhappy results of the civil strife, that has been going on in that republic during the last few years. The Inter-Continental Rubber Co. has suffered together with other American undertakings, but still its condition might be worse, as will be seen from the following remarks recently made by the president of the company, Mr. W. M. Porter: "We are now operating our Torreon plant," he says, "at from 75 per cent. to 80 per cent. of capacity, and have plenty of business on hand to continue operating at this rate for a long time. There is no special condition existing now, so far as the company's operations go, that would be regarded as a really depressing feature."

DUTCH GUIANA RUBBER CULTURE CO.

The Dutch Guiana Culture Co., controlling substantial rubber and coffee properties in Dutch Guiana, attracted a great deal of favorable interest at the recently held Rubber Show, and the accompanying sketch shows the company's booth at the exhibition. The president and treasurer of the company, Mr. L. C. Lawton, a prominent Chicago rubber man, is giving the company his personal attention, which is a sufficient guarantee of successful management. The offices of the company are at the Title & Trust building, 63 Washington street, Chicago.

THE DUTCH GUIANA CO. AT THE RUBBER SHOW.

UNITED STATES RUBBER CO.'S ISSUES.

TRANSACTIONS on the New York Stock Exchange for four weeks, ending January 25.

COMMON STOCK, $25,000,000.

[The treasury of a subsidiary company holds $1,334,000.]
Last Dividend, October 31, 1912—1%.

Week	January 4	Sales	8,500	Shares	High 65¼	Low	62
Week	January 11	Sales	33,800	Shares	High 68⅜	Low	62¾
Week	January 18	Sales	22,300	Shares	High 66½	Low	63
Week	January 25	Sales	19,400	Shares	High 67½	Low	64½

For the year—High, 68⅜, January 10; Low, 62, January 3.
Last year—High, 67⅞; Low, 45¼.

FIRST PREFERRED STOCK, $39,824,400.

Last Dividend, October 31, 1912—2%.

Week	January 4	Sales	925	Shares	High 107⅜	Low	107
Week	January 11	Sales	1,900	Shares	High 109	Low	107½
Week	January 18	Sales	1,312	Shares	High 106	Low	105½
Week	January 25	Sales	2,285	Shares	High 107½	Low	105⅝

For the year—High, 109, January 8; Low, 105½, January 15.
Last year—High, 116; Low, 105⅝.

SECOND PREFERRED STOCK, $9,965,000.

Last Dividend, October 31, 1912—1¼%.

Week	January 4	Sales	900	Shares	High 79⅜	Low	79⅛
Week	January 11	Sales	2,300	Shares	High 81½	Low	79½
Week	January 18	Sales	200	Shares	High 79¼	Low	79
Week	January 25	Sales	200	Shares	High 79	Low	79

For the year—High, 81½, January 9; Low, 79, January 16.
Last year—High, 85½; Low, 75.

SIX PER CENT. TRUST GOLD BONDS, $18,000,000.

Outstanding of the 1908 issue of $20,000,000.

Week	January 4	Sales	53	Bonds	High 103	Low	102⅞
Week	January 11	Sales	83	Bonds	High 103	Low	102¾
Week	January 18	Sales	68	Bonds	High 103	Low	102¾
Week	January 25	Sales	34	Bonds	High 103⅛	Low	102⅞

For the year—High, 103⅛, January 25; Low, 102¾, January 18.
Last year—High, 105; Low, 102½.

U. S. RUBBER RECLAIMING CO. IN 42d ST. BUILDING.

The United States Rubber Reclaiming Works has recently reorganized; changing the company name to that of the United States Rubber Reclaiming Co., Inc. The stock of the company has been increased to $2,400,000, divided into $1,200,000 preferred and $1,200,000 common. There has been no change in the administration or personnel of the company. About the 1st of March the administrative department will move its offices from the present location at 277 Broadway to the Forty-second street building, where it will occupy commodious and handsomely appointed offices.

NEW QUARTERS OF A CRUDE RUBBER HOUSE.

Wallace L. Gough, the well-known crude rubber operator, has taken a suite of offices on the fourth floor of the Maritime building, No. 8 and 10 Bridge street, and is certainly very happily located. Mr. Gough has extensively developed connections along the lines of both selling and buying. On the first of the year, Edward R. Williams, a young rubber man of experience—both in this vicinity and in Western rubber sections—became identified with the Gough concern, and brings to it what will very probably prove a profitable connection.

REMOVAL OF A TIRE FABRIC CONCERN.

The Connecticut Mills, Danielson, Connecticut, has recently added a 250-foot building to its extensive plant, augmenting production 50 per cent. and incidentally increasing its capital to $550,000. R. J. Caldwell, the selling agent of the company, has changed his New York address to 488 Broadway. He recently distributed a very large and effective water-color reproduction, showing the water-front of lower Manhattan. This souvenir is something that is not only sure of a substantial place in the appreciation of recipients, but of a conspicuous one on the walls of their offices as well.

INCREASED FACILITIES OF A RUBBER TOOL CONCERN.

The Hoggson & Pettis Manufacturing Co., makers of a complete and standard line of rubber-cutting tools and devices, and specializing in "The Sweetland Lathe Chuck," are now so situated as to handle orders with increased efficiency. This company has always been recognized as being standard in its line.

TRADE NEWS NOTES.

According to the newspapers of Trenton, there is quite an agitation in that city over a possible industrial exposition to be held under the direction of the Chamber of Commerce. If such an exposition is held, it will give a number of rubber manufacturers quite an opportunity to display their products.

The Duck Brand Co., of Chicago, are now located in their new store at 22-26 South Market street, that city.

It is reported that the East Palestine Rubber Co., are now turning out tires.

The McGraw Tire & Rubber Co., East Palestine, Ohio, are adding new buildings to their already extensive factory, and are now in a position to turn out their product in increased volume. The New York branch of that company, which is at 1706 Broadway, is now under the management of Russell F. Hobron, who was for many years connected with the Voorhees Rubber Co. Mr. Hobron enters upon his new position finely equipped to give good service to the metropolitan trade.

The annual banquet of the Goodyear Rubber Co., of Milwaukee, for salesmen and heads of departments, was held in the red room of the Hotel Pfister in that city, January 18. Mr. Olin A. Richards, of the United States Rubber Co., New York, was a guest.

R. L. Chipman, identified for many years with the Boston house of George A. Alden & Co., is now identified with the New York Commercial Co., 290 Broadway.

NEW INCORPORATIONS.

Alcorn Rubber Co., Inc., November 15, 1912; under the laws of California; authorized capital, $20,000. Incorporators: James A. Alcorn, C. F. Wickland, and Gay Baker, all of Los Angeles, California. Location of principal office, Los Angeles, California. To deal in rubber, imitation rubber goods, rubber products, imitation rubber products, etc.

Bedford Auto Renting and Repair Co., Inc., December 20, 1912; under the laws of New York; authorized capital, $10,000. Incorporators: George J. Murphy, 429 Willoughby avenue, Brooklyn, New York; Joseph H. Bernstein, 167 St. Ann's avenue, New York, and August E. Fuchs, 80 Heyward street, Brooklyn, New York. Location of principal office, Brooklyn, New York.

Best Tire and Rubber Co., December 5, 1912; under the laws of New Jersey; authorized capital, $125,000. Incorporators: S. L. Henry, 237 Jelliff avenue; Martin Walker and Edward Spillane, 54 Warren street—all of Newark, New Jersey. To manufacture and sell automobiles, and all kinds of vehicle tires, etc. Location of principal office, 237 Jelliff avenue, Newark, New Jersey.

Brooklyn Auto Livery Co., Inc., December 20, 1912; under the laws of New York; authorized capital, $20,000. Incorporators: Lewis W. Boynton, Ulster Park, New York, Dodge B. Hicks, 188 Lincoln avenue, and Charles M. Fuller, 527 Quincy street—both of Brooklyn, New York. Location of principal office, Brooklyn, New York.

The C. & K. Raincoat Co., Inc., December 6, 1912; under the laws of New York; authorized capital, $1,500. Incorporators: Barnett Cohen, 721 Stone avenue; Wolf Karsh, 353 Chester street, and Nathan Rosenbaum, 661 Rockaway avenue —all of Brooklyn, New York. Location of principal office Brooklyn, New York.

Climax Garter Co., Inc., December 23, 1912; under the laws of New York; authorized capital, $5,000. Incorporators: Aaron Gotlieb, 195 Penn street, Brooklyn, New York; Moses J. and Joseph Berger—both of Bedford avenue, Brooklyn, New York. Location of principal office, New York. To deal in garters, elastic goods, etc.

Durable Tread and Automobile Sales Co., Inc., December 13, 1912; under the laws of New York; authorized capital, $10,000. Incorporators: Rose H. Jacobs, 605 West 112th street; Samuel M. Winkler, 524 West 34th street, and Henry A. Deimel, 540 West 143rd street—all of New York. Location of principal office, New York. To deal in tires, tire treads, automobiles and accessories.

Favary Tire Co., December 21, 1912; under the laws of New York; authorized capital, $300,000. Incorporators: Ethelbert Favary, 111 Broadway, New York; William P. Richardson, Goshen, New York; and M. W. Brashears, 327 Central Park West, New York. Location of principal office, New York.

Flex-O-Fill Core Co., Inc., November 26, 1912; under the laws of New York; authorized capital, $10,000. Incorporators: Guy Osborn, 1493 Broadway, New York; L. McCready, 50 Church street, New York, and F. H. Crooks, Newark, New Jersey. To manufacture compounds for filling vehicle tires.

H. Goldman & Co., Inc., December 26, 1912; under the laws of New York; authorized capital, $25,000. Incorporators: Harry and Sarah Goldman—both of 598 West 152nd street, New York, and Blanche Denosky, 610 West 150th street, New York. Location of principal office, New York. To manufacture and deal in ladies raincoats, etc.

Illinois Tire Filler Co., December 14, 1912; under the laws of Illinois; authorized capital, $10,000. Incorporators: Albert Jacobs, Anton Pecival and Charles B. Stafford. Location of principal office, Room 1016, 29 South La Salle street, Chicago, Illinois. To manufacture and sell vehicles, wheels, tires and rims.

Improved Rubber Products Co., Inc., January 20, 1913; under the laws of New York; authorized capital, $100,000. Incorporators: Carrie M. Berger, Arthur C. Mandel and Samuel A. Berger—all of 772 Humboldt street, Brooklyn. Location of principal office, Brooklyn, New York.

The Miller Tire Sales Co., Inc., January 7, 1913; under the laws of New York; authorized capital, $5,000. Incorporators: Harry C. Miller, 608 Warburton avenue; Harrison C. Mills, 193 Woodworth avenue—both of Yonkers, New York, and Warren A. Schenck, 473 West 158th street, New York. Location of principal office, New York.

National Comb Works, Inc., January 7, 1913; under the laws of New York; authorized capital, $5,000. Incorporators: William L. Wray, Rockville Center, Long Island; Morris Friedman and Max Rothman—both of 96 East Fourth street, New York. Location of principal office, Brooklyn, New York. To manufacture combs and other articles of celluloid, rubber, etc.

New York Macandaruba Tire Filler Co., December 20, 1912; under the laws of New York; authorized capital, $25,000. Incorporators: Moses Haas, Nathaniel Levy and George A. Weingetz—all of 366 Broadway, New York. Location of principal office, New York. To deal in a composition used for filling tires.

Para Products Co., Inc., January 10, 1913; under the laws of New York; authorized capital, $5,000. Incorporators: Jacob Schreiber, 149 Broadway; Alfred Epstein, 1777 Broadway, and Frank Brown—all of New York.

Peninsular Tire and Rubber Co., November 25, 1912; under the laws of Michigan; authorized capital, $1,000. Incorporators: William O. Hugart, Jr., George T. Kendal and Herbert B. Gillette—all of Grand Rapids, Michigan. Location of principal office, Grand Rapids, Kent County, Michigan. To sell and manufacture and deal in rubber goods, automobiles, automobile tires, etc.

Peruvian-Chamayro Rubber Co., December 19, 1912; under the laws of Delaware; authorized capital, $700,000. Incorporators: Tonko L. Milic, 60 Wall street; George R. Allison, 64 Riverside Drive—both of New York, and Andrew E. Sanborn, Wilmington, Delaware.

Pneumatic Hub Wheel Co., Inc., January 15, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Kasiel Blau, 120 Delancey street, New York, George Derfman, 220 Hopkins street, Walter Primoff, 993 St. Marks avenue—both of Brooklyn, New York. Location of principal office, New York. To manufacture pneumatic rubber cushion hub wheels, etc.

Pneumatic Stamp Co., Inc., January 7, 1913; under the laws of New York; authorized capital, $15,000. Incorporators: Arthur H. and Mary Saunders—both of 115 Leroy street, and J. Addison Brown, 4 Ayres street—all of Binghamton, New York. Location of principal office, Binghamton, New York. To manufacture rubber stamps, type, etc.

Rochester Macandaruba Tire Filler Co., Inc., December 5, 1912; under the laws of New York; authorized capital, $10,000. Incorporators: Charles S. Morris, Nunda, New York, and John S. Crosier and Albert C. Olp—both of Rochester, New York. To deal in tire fillers, tires, etc.

Sidney Rubber Roofing Co., Ltd., October 23, 1912; under the laws of British Columbia; authorized capital, $150,000. Incorporators: Victor A. Elliot, Charles M. Lamb and Harold Despard Twiggall, of Victoria, British Columbia. Location of principal office, 607 Sayward Building, Victoria, British Columbia. To manufacture roofing felt and roofing paper, etc.

Standard Motor Co., December 31, 1912; under the laws of Delaware; authorized capital, $31,000,000. Incorporators: Donald C. Muhleman, New York, William J. Maloney and Herbert E. Latter—both of Wilmington, Delaware. To manufacture and deal in automobile tires, etc.

Star Raincoat Co., Inc., December 4, 1912; under the laws of New York; authorized capital, $10,000. Incorporators: Abram Harris, 527 West 110th street, Bernard Friedman, 1039 East 165th street, and Jacob Friedman, 906 Simpson street, Bronx, New York. Location of principal office, New York. To manufacture rubberized clothing, etc.

The Storm Shield Manufacturing Co., December 3, 1912; under the laws of Illinois; authorized capital, $100,000. Incorporators: L. E. and Norman A. Street and R. E. Wighton. To manufacture and deal in automobile accessories and parts.

Syneru Manufacturing Co., Inc., January 7, 1913; under the laws of New York; authorized capital, $100,000. Incorporators: Charles D. Gwyer, 303 Putnam avenue, Brooklyn, New York, Maxwell Greenberger, 2 Rector street, and Samuel R. Upham, 8 Gold street—both of New York. Location of principal office, New York. To manufacture rubber goods, etc.

United Rubberine Supply Co., Inc., December 6, 1912; under the laws of New York; authorized capital, $200,000. Incorporators: Herman Mayer, 331 West 83rd street, New York; Thomas H. Royce, Borough Park, Brooklyn, New York, and Charles L. Bookheim, Riverview Manor, Hastings-on-Hudson, New York. Location of principal office, New York. To deal in tire fillings, rubberine, etc.

United States Rubber Reclaiming Co., Inc., December 30, 1912; under the laws of New York; authorized capital, $2,400,000. Incorporators: Theodore W. Bassett and Rudolph A. Loewenthal—both of 277 Broadway, New York, and Cornelia Beebe, Ellenville, New York. Location of principal office, Buffalo, New York. To manufacture and deal in rubber goods, tires, etc.

Wholesale Auto Tire Co., Inc., December 26, 1912; under the laws of New York. Authorized capital, $1,000. Incorporators: William P. Cole, 83 Chambers street, David Morris, 26 Oliver street, and Abraham Levy, 277 Broadway. All of New York. Location of principal office, New York.

Winston-Hueter Co., Inc., December 5, 1912; under the laws of New York; authorized capital, $5,000. Incorporators: Charles C. Winston, John S. Sumner—both of Freeport, New York, and Gustav A. Hueter, 1252 58th street, Brooklyn, New York. Location of principal office, New York. To deal in leather and rubber belting, mill supplies, etc.

A NEW RUBBER COMPANY IN OHIO.

The I. J. Cooper Rubber Co., recently incorporated, is operating stores in various Ohio cities, including Cincinnati, Dayton and Columbus. These stores distribute the "Racine" automobile tires and the Cooper Rubber Company's own brand of solid carriage and bicycle tires.

RUBBER CITY MACHINE CO.

The Rubber City Machine Co., Akron, Ohio, which commenced business some four years ago, manufacturing a general line of machine work, is now specializing in rubber-making machinery, and is putting a mixing apron for mills, a ringless and boltless core, and a hydraulic tire-vulcanizer-press on the market. The special feature in the construction of this press is that it obviates the necessity of dropping the ram below the floor line. The cover is operated by hydraulic power. P. E. Welton, a well-known engineer, is putting in a line of machinery for The Rubber City company, which is said to have a thoroughly up-to-date plant.

PERSONAL MENTION.

Mr. George G. Bryant, secretary and general manager of the Chicago Rubber Clothing Co., of Racine, Wisconsin, was the guest of Mr. F. H. Peaty, of the Raw Products Co., at the annual dinner of the Rubber Club of America, held January 23, at the Waldorf-Astoria Hotel.

RETIRES AFTER 54 YEARS OF RUBBER-MAKING.

The only surviving incorporator of the Tyer Rubber Co., which was incorporated in 1876, is Mr. John H. Flint. He has acted as treasurer of that company for 30 years, and all-told has been in the rubber business for 54 years. He has just retired from active service in the company to enjoy a little leisure, which assuredly has been well earned. He will remain, however, as a director in the company. His position as treasurer has been taken by Mr. Frederick H. Jones.

W. W. WUCHTER.

The subject of the accompanying sketch is William W. Wuchter, who has recently become connected with the Gibney Tire & Rubber Co., of Philadelphia. Mr. Wuchter received his initial training in the rubber business with the B. F. Goodrich Co., with which concern he was identified for nine years. Subsequently he was prominently connected with the Firestone Tire & Rubber Co., with which he remained seven years. On September 1, 1909, Mr. Wuchter took the management of the Swinehart Tire & Rubber Co., of Akron, Ohio, and in this capacity developed the business from a relatively insignificant volume to a very important output.

W. W. WUCHTER.

Mr. Wuchter is recognized as a truck-tire expert and a generally competent rubber man, and one who has a host of friends in the trade. He is a man of genial personality and sterling integrity and will, no doubt, achieve substantial success in his present connection.

TWO POPULAR FOREMEN.

It is, of course, an economic fact that a foreman who is popular with his subordinates can run his department much more smoothly and efficiently than a foreman who is disliked or feared by his subordinates. The Stoughton Rubber Co., Stoughton, Massachusetts, evidently has some popular foremen, judging from the following paragraph cut from a local paper during the holidays: "Max J. Zinner, a foreman at the Stoughton Rubber Co., was presented a sideboard and a bouquet by those working for him, Wednesday afternoon. At about the same time Charles A. Kartstein, the foreman in the coat room, was responding to the presentation speech when a chest of silver was given to him by the employees."

TRADE NEWS NOTES.

The Loewenthal Co. has removed its warehouse and office in New York from 481 Washington street to 136 Watts street.

The Empire Rubber and Tire Co., Trenton, New Jersey, was incorporated with a capitalization of $1,000,000 on January 2, 1913, and took over the assets and liabilities of the Empire Rubber Mfg. Co. and the Empire Tire Co., both of the same place.

The Mayflower Rubber Works, of South Braintree, Massachusetts, is a new company of which William Killion is president, and S. R. Nichols is treasurer. They make a general line of molded specialties, which are marketed through the F. W. Wicher Co., Albany Building, Boston.

A branch has been opened in Atlanta, Georgia, by the Mansfield Tire and Rubber Co., Mansfield, Ohio, with Robert E. Warwich in charge as manager.

A new concern has recently been formed in New York—to begin business the present month—called the Wholesale Auto Tire Co., which will deal in unguaranteed tires. W. P. Cole is the manager, and Wilfred E. Willis, the assistant manager.

The object of this company is to deal in surplus and factory seconds, and also in first-grade tires where they can be bought at a low figure. The company will do only a wholesale business and will sell no goods at retail.

The Firestone Tire & Rubber Co., on January 15, paid a quarterly dividend of 2½ per cent. on its common stock and 1¾ per cent. on its preferred stock.

The Standard Raincoat Co., whose factory at Milford, Massachusetts, was recently destroyed by fire, has decided to move to Everett, in the same State, and will occupy a factory formerly used in the making of shoes.

The Victor Rubber Co., of Springfield, Ohio, has increased its capital from $69,000 to $100,000.

At a meeting of the board of directors of the Chicago Rubber Clothing Co., of Racine, Wisconsin, held January 15, a dividend of 12 per cent. on the outstanding stock was declared.

THE HIBERNATION OF TIRES.

The Service Bureau of the United States Tire Co. gives some seasonable advice an the proper way to winter tires.

"In laying up a car the tires should be removed from the rims and washed thoroughly with soap and water. They should then be carefully wrapped in strips of paper or cloth and stored in a dark place which is kept as nearly as possible at a temperature of 50 degrees.

"If the tires are to remain on the wheels for a considerable length of time while the car is out of service, the wheels should be jacked up and only about five pounds of air left in each tire. This keeps the tubes in shape and also preserves their softness and pliability. When the wheels are not jacked up and the car is allowed to stand for any length of time, the tires should be kept well inflated and the car moved occasionally, so that the tires do not flatten from standing too long on one spot."

THE ELWELL RUBBER CO. MOVES.

The Elwell Rubber Co. has recently removed from Trenton, New Jersey, to Stoughton, Massachusetts, having purchased the plant formerly occupied in that town by the Plymouth Rubber Co. It manufactures rubber heels and employs about 150 hands.

TO FILL TIRES WITH "DIXITE."

A new company has just been incorporated in Louisville, Kentucky, called the Dixie Rubber Co., for the purpose of manufacturing "Dixite," a substance for filling rubber tires. The capital stock of the company is $5,000, issued in shares of $10 each.

THE UNITED STATES RUBBER CO. BUYS THE RUBBER REGENERATING CO.

THE United States Rubber Co. recently made application to the New York Stock Exchange to list $6,000,000 additional common stock to be used for the purchase of the Rubber Regenerating Co., of Mishawaka, Indiana—a corporation with $1,500,000 common stock and a certain amount of preferred stock outstanding.

As there was considerable criticism in the columns of the daily press over the company's report for the six months ending September 30, 1912, which accompanied this application, President Samuel P. Colt, of the United States Rubber Co., has made the following statement:

"Judging from newspaper articles to which my attention has been called, several matters in the recent application of the United States Rubber Co. to list additional common and first preferred stock were misunderstood. As stated in the application, which has been duly granted by the authorities of the Stock Exchange, $6,000,000 additional common stock is to be given in exchange for the entire common stock of the Rubber Regenerating Co.

"It is only fair that our stockholders should know at this early date that the entire earnings of the United States Rubber Co. for this fiscal year promise to be largely in excess of dividend requirements. The earnings of the Rubber Regenerating Co. are now double the dividends on the amount of the United States Rubber Co. common stock issued in exchange for the corresponding issue of that company. Furthermore, the United States Rubber Co. will undoubtedly, aside from earnings, be indirectly benefited to a large extent by the acquisition of the Rubber Regenerating Co.

"There seems to have been some misapprehension as to the amount of surplus shown in the statement of the United States Rubber Co. to the Stock Exchange for the six months ended September 30, in comparison with the surplus shown as of March 31 last, in the annual report. Apparently it has been overlooked that in the meantime the company has declared and paid a stock dividend of $5,000,000 to its common shareholders. Obviously the surplus was reduced by that amount.

"In making the application to the Stock Exchange to list the additional common and first preferred stock, as complete financial statements as possible for the various companies involved were made. The application was filed some time before the close of the fiscal year of the United States Rubber Co., and its subsidiaries; consequently it was impossible to render complete statements, as could have been done if the application had been filed some little time after the close of the fiscal period.

"To my mind the important point in this whole matter is that which I have already referred to, namely, that the earnings of the United States Rubber Co. promise to be largely in excess of all dividend requirements."

OFFICERS OF THE MANSFIELD TIRE & RUBBER CO.

At the annual meeting of the stockholders of the Mansfield Tire & Rubber Co., of Piqua, Ohio, the following officers and directors were elected: C. R. Grant, president; G. W. Henne, vice-president and general manager; Jesse E. LaDow, secretary; W. F. Henne, treasurer. These with Dimon Herring, William Isaly, Charles Hoffman and John Schauer, comprise the board of directors.

A RUBBER PLANT IN OREGON.

It is stated that some citizens of Portland, Oregon, including Dr. E. G. Watts and Ray Pritchard, are engaged in promoting an enterprise for the manufacture of druggists' sundries in the town of Stanfield—not far from Portland. The town has contributed a site containing two acres for the factory, which is 50 x 100 feet in size. It is hoped that manufacturing operations will begin (on a small scale) in the immediate future.

OVER 11,000 FEET OF AIR-BRAKE HOSE A DAY.

The Air Brake Department of The Republic Rubber Co. made a record January 7, in turning out short-length hose, which, the company believes, will surpass that of any other establishment in the country. On that day 11,500 feet of air-brake hose were produced by the hundred men employed in this section of the works. C. B. Frase is manager of the department, and not a little credit for the feat is due to his executive skill.

THE DAVOL COMPANY'S NEW PLANS.

Just before the recent holidays, the sales force of the Davol Rubber Company, Providence, Rhode Island, gathered together after their usual custom, for the semi-annual meeting and conference. At the conclusion of the conference, which lasted two days, the president of the company, Mr. Charles J. Davol, gave the members of the force a banquet—and an exceptionally generous and attractive banquet it was, if one may judge by the menu. There were 14 in attendance on that occasion—the sales manager, superintendent, secretary and acting treasurer attending, together with the salesmen. The feature of the evening, however, was not the menu, abundant and choice as that was, but the speech of President Davol, in which he thanked his assistants for having made 1912 the largest year in the company's history, and in which he went on to describe the company's plans for the coming year—not forgetting the large new factory now under course of erection on ground adjoining the present plant. The new mill will be four stories in height and will cover an area of 300 feet by 60 feet, thus adding approximately 80,000 square feet to the present large plant. With the new addition the Davol Rubber Co. will have the largest factory in the world devoted exclusively to the manufacture of druggists' sundries.

A new selling feature, from which much is expected, is being added to the output of the company in the shape of a patented household dish-washing device that will be marketed under the style of the "Yankee Girl Dish Washer." This device, made of rubber and metal, represents the most practical advance in the washing of household dishes since dishes have been used. It enables either mistress or maid to do all the dish washing in a practical and sanitary manner, without so much as wetting the hands. It divorces the dish pan from the kitchen and makes the work of washing dishes a pleasure, instead of a distasteful task. The Davol people expect to make this a greater success than even their famous "Anti-Colic Nipple."

HIGHEST FOR UNITED STATES RUBBER COMMON.

On January 10, last, the common stock of the United States Rubber Co. sold at 68⅜, which was the highest point at which this stock has ever sold.

THE WALPOLE'S FINE YEAR.

The Walpole Tire & Rubber Co., Walpole, Mass., had a very successful year in 1912. The gross sales exceeded $2,500,000—over 60 per cent. increase over the previous year. The net earnings for the year are estimated at $335,000.

LOUISVILLE TO MAKE TIRES.

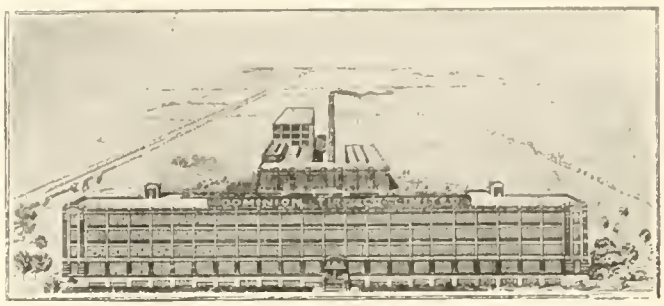
The manufacture of tires having in the past been practically confined to the territory north of the Ohio river, interest attaches to the incorporation at Louisville of the Speedway Tire Co., with a paid-up capital of $250,000. Sixty-five per cent. of the stock is held in the city named.

At first the new company will be located in a leased factory, with option of purchase. Later on, when its wants are known, a modern eight-story structure of concrete, steel and glass will be erected. It is expected to make about 100 motor vehicle tires a day, in three standard types. The chief product will consist of pneumatic and solid automobile tires, but mechanical rubber goods and druggists' supplies will also be manufactured. About 300 men will be employed, the plant being in charge of G. W. Greene, a Massachusetts tire expert. Harry L. Lewman is president; the other officials being likewise prominent local men.

THE NEW DOMINION TIRES.

The Dominion Tire Co., Ltd., recently started with a capital of $1,000,000, bids fair to make itself very well known in a short space of time. It is building an exceptionally fine factory in Berlin, Ontario. Berlin, by the way, has a marvelous record for growth and enterprise. Less than sixty years ago it had only 400 inhabitants; but they came from good stock; they were mostly Pennsylvania German farmers. Now the town has a population of 25,000 and is celebrated for its high-class factories. The workmen, too, are of a superior class; over 70 per cent. of the people of Berlin owning their own houses.

This new tire company has secured 40 acres of land, so that it will have room to grow. The main building, which is rapidly



DOMINION TIRE CO., LIMITED.

nearing completion, is 432 x 90 feet, five stories and basement, and is flooded with light from every side. It will be equipped with the very best machinery to be obtained anywhere on the continent, and both the Canadian Pacific and Grand Trunk Railways have extended their sidings to the factory, insuring prompt delivery of materials and equally prompt shipment of goods.

The company does not intend to get out a cheap tire, as it believes that cheap tires bring only disaster to manufacturer, dealer and consumer. Its purpose is to make the very best tire that the finest equipment and the best available labor can produce. The Canadian Consolidated Rubber Co., Ltd., will be the sole agent and distributor of the "Dominion" tires.

FAVARY TIRE CO. ACQUIRES PLANT.

Since its incorporation three years ago, the Favary Tire Co., of New York City, has been perfecting its special cushion tire. It recently acquired a plant at Middletown, New York, where it was expecting to produce tires during January. The company is composed of Ethelbert Favary, the inventor; H. C. Cryder, and M. W. Brashears.

The special feature of this tire is a concentric series of endless bands of specially woven fabric and rubber, supported by closely spaced aluminum blocks.

A NEW MICHELIN FACTORY.

A direct factory branch is being established in Wisconsin by the Michelin Tire Co., of New Jersey. In its application, the company states its capital as $3,000,000, and the Wisconsin interest as $25,000. The new branch, it is understood, will be located at Milwaukee.

PROHIBITION OF BULB HORNS.

A police ordinance in Los Angeles, California, prohibits the use of bulb horns as signal devices on automobiles. The new ordinance requires a signal producing an abrupt warning note, to be only used in the event of impending danger.

COMPLETION OF MARATHON RUBBER FACTORY.

Satisfactory progress is reported in the mechanical installation of the factory, lately erected by the Marathon Tire and Rubber Co., of Cuyahoga Falls, Ohio. It is anticipated that the company will be working at its full capacity by early in February.

CALENDARS RECEIVED.

A BEAUTIFUL HAND-COLORED PANEL.

The Adamson Machine Co., manufacturers of rubber-working machinery, of Akron, Ohio, have favored their customers with a particularly artistic calendar for 1913. The full size is 14 x 18 inches. The effective feature consists of a panel 6 x 12 inches, showing a restful landscape at sun down, hand-colored in the most delicate fashion. "That's good enough to frame" is the general expression on seeing this handsome picture. The panel is mounted on a cream-colored card and that in turn is mounted on a delicate shade of green. The calendar pad proper is printed in a very soft green and tied to the mounts with white ribbon. This calendar is rather for the private office or the library at home than for the factory walls.

"THE RUDE BRIDGE THAT ARCHED THE FLOOD."

The J. H. Stedman Co., scrap rubber merchants, Boston, Massachusetts, turned with great propriety to New England history for a calendar subject for the new year. Their calendar requires a sizeable space on the wall, as it is printed on heavy white cardboard 15 x 18 inches. One-half of this space is taken up by a photogravure of the old North bridge at Concord, Massachusetts, which Emerson referred to as "the rude bridge that arched the flood," where "the embattled farmers stood." The calendar pad is 5 x 9 inches, which gives plenty of space for legible figures. This makes a convenient and artistic office calendar.

TWO FINE HAND-TINTED SKETCHES.

The American Rubber Manufacturing Co., San Francisco, California, manufacturers of rubber belting, hose, matting and other mechanical rubber goods, have made a handsome contribution to the 1913 calendar output. It consists of a panel picture—the three-quarter length figure of a winsome young woman holding an American beauty rose. The title is "An American Beauty." Whether the title refers to the rose or to the young person holding it, would depend upon whether the decision rested with a woman or with a man. The average man would ignore the rose and say the title fitted the girl. This panel is mounted on a primrose-colored card, which in turn is mounted on a card of dark brown, the whole, which is 7½ inches wide by 16 inches long, being finished with brown silk ribbons and a ring for hanging.

Mr. Elmer E. Bast, manager of the Hamilton Rubber Manufacturing Co., and the American Belting Co., of Chicago, displays much taste in the handsome panel with which he has favored his friends. This is also a delicate water-tinted creation, showing a young woman—or at least the head and shoulders of one—enjoying the fragrance of a bunch of yellow roses, the title of the panel being "When Roses Bloom." This panel has a double mount, first on a cream and then on a delicate green background, the two mounts being fastened together with a heavy green silk ribbon.

CALENDARS BY THE MILLIONS.

Speaking of calendars, it is an interesting fact that an American company, the American Lithograph Co., of New York, prints more calendars than any other concern in the world, and has enjoyed this distinction for many years. The American Lithograph Co. has printed as high as 20,000,000 calendars in a year, which is almost enough to put one of its calendars in every home in the United States. Some of its single orders—generally from life insurance companies—amount to editions of 5,000,000. It has printed more calendars—and it is safe to say handsomer calendars—for rubber companies than any other concern. For a number of years the United States Rubber Co. distributed very large editions of handsome calendars intended for the general consumer. The B. F. Goodrich Co. for a number of years issued a series of beautiful lithographed heads. All this work was done by the American Lithograph Co.

Its principal customers—outside of the big rubber companies—have been packing houses, publishing concerns, the large soap manufacturers, life insurance companies and the fire arms companies. Of course these large companies that give orders for calendars running from 100,000 to 4,000,000 or 5,000,000 always have special designs made for them by the leading American artists—the original design often costing several thousand dollars.

SOME SMALLER CALENDARS.

The Electric Hose and Rubber Co., Wilmington, Delaware, prefers the useful to the ornamental in its calendar offering, and has supplied its customers with a desk calendar 5½ x 9 inches in size, which has a memorandum page for every week. At the bottom of each page there is a striking cut of a section of the company's hose; and printed in a light skeleton effect on each memorandum page one will find a variety of brief arguments in favor of using this brand of hose.

The Derby Rubber Co., Derby, Connecticut, manufacturers of reclaimed rubber, sent out a little panel calendar, 3¼ x 6½ inches, with a small picture in colors, of the American aborigine, the Red Man, with his bow and arrow, in pursuit of game.

The West India Committee Circular, published in London, has distributed a modest calendar 5 x 8½ inches in size, giving the calendar for the entire year—naturally in rather small figures—and above this showing a photographic panel of a familiar West Indian scene, to wit: a group of husky negresses going to market with a basket of yams and other delicacies on their heads, accompanied by a meek and lowly burro, whose circumference is considerably increased by bundles of sugar cane.

The Hazard Manufacturing Co., Wilkes-Barre, Pa., with offices in New York, Chicago and Pittsburgh, has distributed a large wall calendar about 30 x 18 inches in size, having a conspicuous half-tone picture printed in black and buff, showing a tug coming down the North River pulling the gigantic *Olympic* in its wake, a coil of insulated cable serving as an appropriate frame. The pad itself has large and conspicuous figures which will make it serviceable in office or storehouse.

The Revere Rubber Co.'s calendar is ornamented appropriately with a picture of a high-stepper trotting through a park. The calendar card, which is about 15 x 20 inches in size, also displays half-tone reproductions of 18 of the company's popular horseshoe pads. The card also bears some information relative to the use of pads.

The La Favorite Rubber Manufacturing Co., has made an attractive calendar by printing in a sepia tint, a large half-tone reproduction of a photograph of the exhibit the company made at the International Rubber Exhibition held in the Grand Central Palace last Fall. The half-tone is mounted on a brown board and has a brown calendar pad at the bottom of the mount.

White & Reid, "Rubberizers," Hoboken, New Jersey, have favored their customers with a particularly serviceable office calendar, consisting of a heavy cardboard back 8 x 12 inches, on which is mounted a calendar pad about 6½ inches square, having a page for each day of the year. This makes naturally a heavy pad, which is secured to the back by a couple of steel screws with caps that can easily be removed to change the date from day to day.

TO MAKE SYRINGES IN MEMPHIS.

The Sanitary Reversible Syringe Co., of Memphis, Tennessee, was granted a charter in November last, to manufacture reversible syringes and other druggists' supplies. The company expects to have its own factory in Memphis. The stock is $25,000, divided into shares of a par value of $25.

The Editor's Book Table.

INDIA-RUBBER JOURNAL DIARY AND YEAR BOOK, 1913. Maclaren & Sons, Limited, London, England. [Cloth, 4to, 96 pages, besides 122 pages of diary.]

THIS diary, which is in the usual convenient size of 11½ x 8½ inches, has once more appeared, and is fully up to the mark of its predecessors. Its statistical and other information in the introductory portion is as complete as usual, and shows much careful preparation.

HENDRICK'S COMMERCIAL REGISTER OF THE UNITED STATES. Twenty-first Annual Edition, 1912. Samuel E. Hendricks Co., New York. [Cloth, 1,575 pages, price $10.]

That this standard work has reached its twenty-first annual edition is the best proof of the valuable character of its contents. To the export buyer it is particularly valuable, as in the entire work there are 13,333 headings, each representing one article, with the names of the makers in each instance.

Those who know the "Register" will appreciate the completeness of this new edition, while those who have not hitherto used it, will probably find it just what they have been wanting.

FACTORY MUTUAL INSURANCE. The achievements of seventy-five years. Compiled to observe the fiftieth anniversary of the Arkwright Mutual Fire Insurance Co., Boston. [Pasteboard. 8vo. 123 pp. Privately printed.]

The Arkwright Mutual Fire Insurance Co., Boston, is one of the Associated Factory Mutual Insurance Companies, generally called "The New England Mutuals." It is an association of manufacturers for the prevention of fire loss and for the securing of insurance at cost. The company was founded in 1860, and this book is a souvenir of its half century of successful existence; and it very properly takes the form of a history of the whole mutual fire insurance development since its beginning in 1835. In that year a New England manufacturer conceived the idea that by getting other manufacturers to associate themselves with him, and by agreeing to share fire losses in their plants they could all secure insurance on much better terms. The idea was a good one. It was put into practice and has grown to such an extent that at the present time, in this country and in Canada, there are about 20 of these manufacturers' mutual insurance associations, with a valuation of their combined manufacturing properties aggregating over $2,000,000,000. Among this number might be mentioned the Rubber Manufacturers' Mutual Insurance Co., founded in 1884, and having an amount of risk of about $60,000,000.

The work of these mutual associations has been very successful in the great decrease of disastrous fires. As an illustration, during the 15 years from 1880 to 1895 there were among the plants insured by these companies 31 large fires, with an aggregate loss of $7,500,000; in the last 15 years from 1895 to 1910, notwithstanding the fact that the average amount of risk covered by these companies had increased from $550,000,000 to $1,200,000,000, the number of large fires dropped to 8, and the total loss to $1,400,000.

Naturally as all losses are borne by all members of the associated companies, all are mutually interested to have the best protection for their own property and for that of all other members. As a consequence great care is exercised in the original construction of plants and in their proper protection thereafter.

The above paragraphs give but a faint idea of the amount of interesting information in this little book. It contains a number of tables and charts and a great many cuts made from photographs; and altogether contains a mass of insurance information of great value to manufacturers, builders, architects and mill engineers. The book is not for sale, but can be secured, by people whose occupation makes them interested in the subject, from the Arkwright Mutual Fire Insurance Co., Boston.

CHEMICAL ANALYSIS OF LEAD AND ITS COMPOUNDS, by John A. Schaeffer, A. M., Ph. D., and Bernard S. White. Joplin, Missouri, 1912. Picher Lead Co. [8vo, cloth, 63 pages.]

It is a standing requirement of modern technical practice that the laboratory must control every process from the raw material to the various finished products. The Picher Lead Co., the well-known makers of lead compounds, in response to numerous and constant requests, have grouped the leading features of standard and new analyses of lead ores, pig lead, sublimed white and blue lead, red lead, litharge and other preparations of the mineral, in this concise and well prepared booklet.

The analyses are followed by accurate calculations, which facilitate their application.

An interesting section of the work deals with the idiometric determination of antimony and arsenic in lead-antimony alloys, while a comprehensive index assists in prompt reference to the various branches of lead analysis.

By means of the blank pages of ruled writing paper bound in at the back of the booklet, notes of study or experiments can be preserved. To users of lead in its various forms this little work will prove invaluable.

MY TOWN, OR COMMUNITY PATRIOTISM. BY GEORGE BLACKstone Irving. Rogerson Press, Chicago, Illinois. [8vo. 136 pp. Paper covers. Price 50c.]

This book has nothing in the world to do with rubber, as it is primarily an attempt to create and increase local patriotism. Indirectly, it has this much to do with the rubber industry, viz., that many of the most conspicuous rubber manufacturers have been, and are illustrious examples of local patriotism—not only looking after the welfare of their own employes, but contributing handsomely toward everything that promotes the welfare of the community in which their enterprise is situated. The author of this book, Mr. Irving, has lectured for years on this subject, traveling all through the country. His particular forte is to visit a town that needs "boosting," and to show the citizens in what way they can coöperate for the best interest of the community, and consequently for the best interest of each of its citizens.

When our synthetic friends succeed in producing rubber, as they hope to, at 8 cents a pound, so that it can be used liberally for pavement purposes, the promotion of local welfare and the rubber industry will be closely associated, for naturally the first suggestion that any wise community improver will then make, will be the taking up of noisy cobbles and the putting down of streets of noiseless rubber.

GRENIER'S RUBBER ANNUAL FOR 1912.

This is a quarto publication of 44 pages, printed on a very fine quality of coated paper, which not only brings out the text sharply but shows the most excellent halftones, of which there is a generous number, to extreme advantage.

More and more attractive with each recurrent year, this annual has become a standard feature of rubber trade journalism. Its literary contents include articles on "The Rubber Position," by S. M. Gluckstein; "Brazilian Rubber Reforms," by Arthur Shepard; "Rubber Costs and Commissions," by J. F. Ashly, "Rubber and Ten Per Cent.," by Sidney Pearson, and "Factors Affecting the Valuation of Rubber Shares," by W. A. Tinnock.

The illustrations, 86 in number, represent scenes on as many estates, and add greatly to the interest and value of the publication.

NEW TRADE PUBLICATIONS.

THE printing department of the B. F. Goodrich Co., produces exceedingly effective work. Another illustration of this fact is to be found in a lot of a dozen folders recently sent out from that department, descriptive of various products of the Goodrich mill. One large folder entitled "Comfort and a Few Facts," describes the hot water bottles made by the company's drug supply department. About thirty varieties of bottles are illustrated in the folder. Another folder, with eight detached leaflets included in it, has to do with the automobile and its appurtenances. The detached leaflets are each devoted to some particular tire trouble, which is described with a cut of a tire showing the effect of this particular trouble, after which the remedy is given. These leaflets are entitled: "Skidding," "Anti-Skid Devices," "Over-Speeding," "Wheel Out of Alignment," "Bad Roads," "Running in Car Tracks," and "Over-Loading."

The Goodrich Company, in addition, has recently distributed three little folding leaflets calling attention to three of its lines of production, namely, surgeons' rubber aprons, dental dam, and infant bulb syringes. The circulars are each printed in two colors and adequately illustrate the articles described. Regarding surgeons' aprons, the company calls attention to the fact that aseptic reliability and facility of sterilization can only be successfully realized by the use of high grade material. The company's dental dam is prepared from fine pure gum and will retain its elasticity under all conditions. Furthermore, it is translucent and does not get sticky. These three folders will be of interest to dealers in these various lines.

Three other folders pertain to the hose department, one describing and illustrating steam hose, another the Goodrich Sand Blast Hose, and the third, hose used in drilling. It is an effective lot of commercial literature.

With the object of making their "Analyzed Chemicals" more generally known, and at the same time keeping in touch with their old friends, the J. T. Baker Chemical Co., of Phillipsburg, New Jersey, issue a monthly booklet entitled the "Chemist Analyst"; containing papers by practical experts on subjects connected with laboratory practice.

In the latest number received, "Electric Combustion Furnaces," "Air in the Electrolytic Determination of Copper," and other subjects are treated, while Mr. J. T. Baker, the president, gives his views on "Manufacturing Incompatibilities." As appealing to the chemist and analyst, the title is fully justified by the contents.

The sprightly little publication issued by the Beacon Falls Rubber Shoe Co., Beacon Falls, Connecticut, contains in its January issue the usual amount of entertaining and instructive reading. It is a 16mo., consisting of 16 pages and cover and full of moralizing and humor, with facts interspersed with fables. Incidentally, it leaves the impression on the mind of the careful reader that Beacon Falls footwear is eminently desirable. It has one excellent feature that publications of this sort sometimes lack—there is just enough of it. Enclosed in this little booklet is a new price list for 1913.

The Katzenbach & Bullock Co., of 100 William street, New York, importers and dealers in chemicals, have just issued a 24-page catalogue 3½ x 6½ inches, giving a list of the chemicals in which they deal. These chemicals are first given in alphabetical order, and then the various trades supplied by the firm are alphabetically arranged, while under each trade is a further classified list of the chemicals that are of particular interest to that trade. This makes the book exceedingly easy for purposes of reference.

The Eureka Fire Hose Manufacturing Co., manufacturers of the Eureka "Paragon Red Cross" brand of fire hose, have issued a large wall calendar, on which there are a number of photographic illustrations showing the fireman at his hazardous occupation.

SOUVENIR OF CANADIAN TOUR OF BRITISH MANUFACTURERS.

In connection with the British manufacturers' Canadian tour of last year, under the auspices of the Dominion Government, the "Financial News" of London has issued a handsome souvenir number of 72 pages, richly illustrated. It closely follows the itinerary of the party; one of its special features being the reproduction of the groups photographed at various points. Views of picturesque Canadian scenery and of street scenes at the different cities visited, enhance the attractiveness of this artistic issue; while the narrative text is concise and full of information.

TWO RECENT BOOKS WHICH REFER TO RUBBER.

As Viewed by Our English Correspondent.

RUBBER LITERATURE.

In the present paragraph I am not referring to any new book on rubber, but to the chapters on rubber in a new book. This book is entitled "Industrial and Manufacturing Chemistry" (Organic), by Geoffrey Martin, assisted by numerous specialists familiar with British and American practice. Section IX, Part I, dealing with the rubber industry, is by A. J. Carrier, B. Sc., of whose nationality I must confess my ignorance. As the space given to the subject only covers twelve pages, and a good part of this is occupied by illustrations of David Bridge & Co.'s machinery, it will be seen that condensation has had to be severely employed.

It is doubtful whether the rubber industry of today can be satisfactorily dealt with in so short a space, and a few paragraphs on the general topic of the manufacture of rubber goods can convey but little of utility to seekers of information. We read that inner air tubes for cycles and motors are made of high-class rubber; while cruder rubber articles such as dolls, toys, goloshes, etc., contain a very large amount of mineral fillers or rubber substitutes. I don't know that a high-class golosh is really a cruder article than an inner tube, and I have my doubts about the large amount of substitute present. Raw caoutchouc is said to melt under ordinary pressures at about 190 degs. F. to a gummy mass (presumably Centigrade is intended). In the paragraph dealing with Devulcanization and Re-manufacture of Rubber it is stated that it has not been found possible up to the present to free vulcanized rubber from its sulphur, and thus transform it into a product akin to raw rubber. This, of course, is quite correct, but why head the paragraph "Devulcanization"? This part concludes with some useful trade statistics. Part II is by Mr. Martin himself and deals efficiently with the topic of synthetic rubber, and is probably the most up-to-date detailed account of the chemistry of this somewhat abstruse and complicated business.

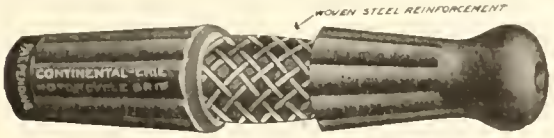
Another new and imposing volume, in which rubber finds mention, is "Industrial Chemistry," edited by Allen Rogers and Alfred B. Aubert and various collaborators. This is an entirely American production. The information on rubber and its manufacture covers only 2½ pages in the chapter on resins and gums. The general statement that raw rubber is very impure, with water, sand, wood, etc., will doubtless be objected to by planters in the Far East. It is hardly correct to say that litharge is only added as a filler in inferior grades of goods. Under "Reclaimed Rubber" we read that the most widely employed method is Goodyear's, which consists in reducing the waste to a finely divided state, mixing with normal rubber and sulphur and beating for several hours under heavy pressure.

Another statement is that hydrofluoric acid is kept in hard rubber containers. In England, at any rate, it is kept in gutta-percha containers. Altogether, the rubber information strikes me as decidedly weak, compared with the treatment of other materials and manufactures in the volume.

New Rubber Goods in the Market.

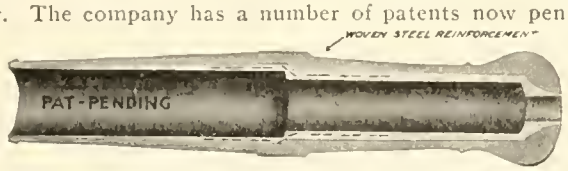
MOTORCYCLE GRIPS REINFORCED WITH STEEL.

THE Continental Rubber Works are offering manufacturers of motorcycles a new grip which they call "The Woven Steel Reinforced Grip." The two cuts here shown will give a good idea of what these grips are. It will be



A "Continental Erie" Grip.

seen that these grips have a woven steel reinforcement in the center or relief part of grip, which strengthens the grip at its weakest point. This woven steel reinforcement is pliable and does not take away from the grip any of its resiliency. The company has a number of patents now pending,

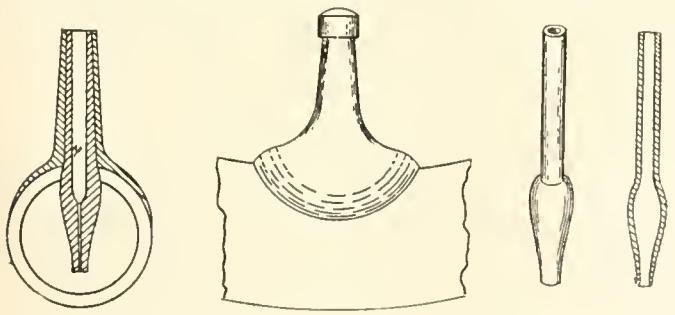


Cross Section Showing Steel Reinforcement.

covering this construction and also covering reinforcements of other materials to be used in the grip. It proposes to make these grips for the manufacturers, but it does not propose to issue any licenses for others to make them. The Continental Rubber Works, Erie, Pennsylvania.

ALL RUBBER AIR VALVES.

A certain inventive genius in Hot Springs, Arkansas, has devised an all-rubber valve for rubber air receptacles, like tires for the auto, bicycle and motorcycle, and also for air-cushions and footballs. This valve does away with all metal parts, and one claim for its superiority is that it cannot be injured by the creeping of the tire. Here are four illustrations which may possibly make the working of the valve a little plainer. No. 3 shows the valve by itself; No. 4, a cross-section of it; No. 1, a cross-section of the valve fitted into a tire; and No. 2, a side view of the valve when fitted and firmly attached to the tire. The theory is this: that the lower



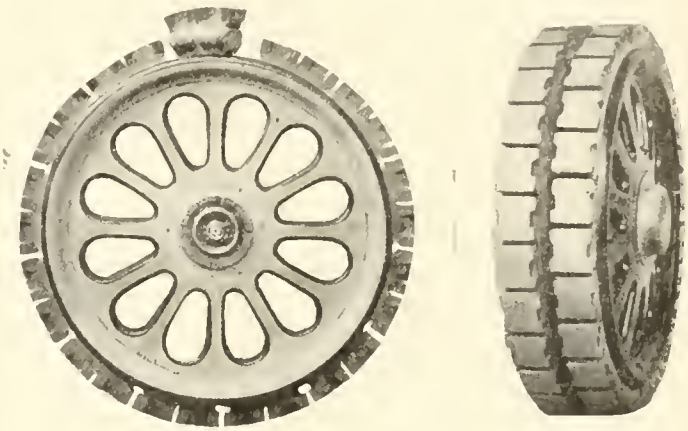
1. 2. 3. 4.

end of the valve which projects into the tire, or other air-chamber, is of such soft collapsible rubber that when the tire or other chamber is filled with air the pressure causes the valve to come together, entirely closing the air passage. A rubber cap is fastened on the outer end of the tube, as shown in Fig. 2, serving still further to make the tube air tight. Theoretically, this is an interesting valve; as to just how far it has been tested in practice, information is lacking. The inventor and patentee is Mr. P. P. Wood, Hot Springs, Arkansas.

THE ENGLISH RESILIENT WHEEL AND TIRE.

Excellent reports come across the water regarding the Lynton Resilient Wheel and Tire, which seems to be a happy combination where the wheel and tire work together, each increasing the resiliency of the other, and the two together giving practically a pneumatic effect to a solid tire. The tire (as will be seen by the accompanying illustrations) is a solid tire in blocks. This sectional character of course greatly increases the economy of the tire, as it is not necessary to discard an entire tire when one part of it becomes injured or worn.

It is the peculiar construction of the wheel, however, that gives the Lynton combination its distinctive character. This wheel is formed of two steel discs. One disc is rigidly attached to the hub, while the other disc, by means of a form of ball-joint, which allows it to rock in any direction upon the hub, has a pronounced element of "give" to it; which greatly in-



The Lynton Wheel and Tire.

creases the resiliency of the tire. These two discs are so correlated that the tire—which is fitted into a seat formed by the curving and spreading of the two discs at their outer circumference—flattens out when any obstruction is encountered and causes the two sides of the rim to spread. This spreading is possible through the arrangement of the loose disc. But while the rim at the point of contact is spreading, the part of the rim diametrically opposite, that is, at the top, correspondingly contracts; so that not only is that part of the tire which touches the ground operating to overcome the obstruction, but the corresponding section of the tire farthest removed is also operating for the same purpose—the lower section flattening out, while the upper section is being compressed.

This interplay of tire and wheel gives the "Lynton" a peculiar resiliency. These wheels are made with a single tire for pleasure cars, and also with double tires for commercial vehicles. The accompanying cuts show both the single and the double wheels. [The Lynton Wheel and Tire Syndicate, Ltd., Longford Bridge, Warrington, England.]

DEEP CUT RIVETS TO GRIP THE ROAD.

The Leather Tire Goods Co., of Niagara Falls, New York, is out with a new chrome leather tire cover differing from its earlier products in having at intervals of 2 inches very deep cup rivets, intended to take a strong grip of icy and snowy roads. It is the hope of the manufacturers that this cover will do the work which is now generally accomplished by the inconvenient chain—which is not only inconvenient but hard on tire and road-bed alike.

Some Rubber Interests in Europe.

GOOD RECORD OF DERMATINE VALVES.

IN June, 1911, a large sugar refinery in Whitechapel, London, installed an air pump manufactured by W. H. Bailey & Co., Ltd., of Manchester, England. This pump was supplied with the valves made by the Dermatine Co., Ltd., of London. Recently the pump has undergone an inspection, the valves being taken out. They have been re-measured, and it is found that although the pumps have been maintaining a vacuum of over 29 inches night and day for 11 months, the valves have worn on one side less than 3/64 of an inch. The good result attained has been to a large degree due to the fact that the valves were fitted with the Patent Anchor Bush which eliminates any tendency to enlargement in the central hole. It thus maintains a high vacuum and avoids the expense of early stoppage of the machinery, and the possibility of spoiling the material in process of manufacture.

NEW COMPOUNDING INGREDIENT.

According to the claims made for the new compounding ingredient "Corub," recently introduced on the English market, it is specially adapted for mixing with rubber compounds where a large quantity of waste or reclaimed rubber is used, imparting greater elasticity and resilience to the finished product. At the same time it tends to preserve the rubber. It is supplied in various colors.

MR. CASPER KRAAY IN LONDON.

Mr. Casper Kraay, who is well known in rubber and financial circles on both sides of the water, has established himself as a rubber dealer at Dunster House, Mincing Lane, London, E. C., under the style of Casper Kraay & Co. Doubtless we are interpreting the sentiments of his American friends in wishing him good luck and a prosperous new year.

A VALUABLE COMBINATION DIARY.

Typke & King, Ltd., 16 Mincing Lane, London, india-rubber chemists and chemical manufacturers, have favored their customers with an extremely convenient desk diary. It is a combination diary and writing pad. When folded up it is 11 x 13 inches in size; the top, finished in crimson leatherette, opens in the middle, disclosing a blotter pad with leatherette corners and quite large enough for ordinary desk purposes; while the left leaf when folded back proves to be a diary about 10½ x 6 inches in size, one week being covered by each page. It is not a particularly inexpensive form of diary—but that will not seriously militate against its welcome by the trade. At the front of the diary there is a calendar for the years 1913 and 1914, together with discount and interest tables, tables of money equivalents in various countries, Post-Office regulations, and other information such as a business man needs for ready reference.

THE JOSEPH FYNNEY DIARY.

Joseph Fynney & Co., india-rubber merchants and importers of Liverpool, have issued to their particular branch of the trade, a valuable little diary, of a size to go easily in the pocket, and yet containing pages enough for a memorandum for every day of the year, and besides that, a great volume of information of particular value to the rubber man. For instance, there is a table occupying 21 pages showing, for the benefit of raw rubber buyers, the loss in washing rubber—that is, the shrinkage in washing being known, the table gives the money equivalent. Then there is a table occupying a number of pages giving the equivalents of English money per pound, in cents per pound, and in francs and marks per kilo. Another valuable table gives the equivalent in kilograms of English weights. Then a number of pages are devoted to the Pará receipts and values for the last seven years. Another table shows vulcanizing pressure and temperature. These are but a few instances of the volume of valuable information this little book contains.

THE FOURTH INTERNATIONAL RUBBER EXHIBITION.

Mr. A. Staines Manders, the organizing manager of the two rubber expositions held in London in 1908 and 1911 and of the Rubber Exposition recently held in New York, announces the Fourth International Rubber and Allied Trades' Exhibition, to take place in London during June, 1914. It will be under the patronage of His Majesty, King George V; the president will be Sir Henry Blake, G. C. M. G., and the vice-president will be The Right Honorable Lord Elphinstone. In conjunction with this rubber exhibition, occurring at the same time but in another building, will be held the First International Cotton, Fibre, Tropical Products and Allied Trades Exhibition, of which Mr. Manders will also be organizing manager.

JOSEPH FYNNEY & CO.'S LONDON OFFICE.

Joseph Fynney & Co., rubber merchants and importers, have recently opened a London office at 155 Fenchurch street, which will deal more particularly with plantation rubbers.

THE MANUFACTURE OF ELECTRICAL INSTRUMENTS IN EUROPE.

The Bureau of Foreign and Domestic Commerce is about to issue a monograph dealing with the manufacture of electrical instruments and meters in Europe. The report is by H. B. Brooks, commercial agent of the Department of Commerce and Labor, who recently inspected 31 of the most important electrical works of England, France, Germany, and Italy. The products of each concern are treated in detail and descriptions are given of the buildings, equipment, labor conditions, kinds of material used, and the markets in which the products are sold.

PROGRESS OF DANISH TIRE COMPANY.

The Danish United Rubber and Tire Co. has paid for the last business year a dividend of 12 per cent. as compared with 10 per cent. for the preceding annual period. Its capital has recently been increased from the equivalent of $84,000 to $140,000.

CHANGE IN GERMAN TIRE COMPANY.

The International Rubber Tire Co., Limited, of Wittenberg, Germany, has removed its headquarters to Hamburg; at the same time changing its name to the International Rubber Industry Co., Limited.

NEW GERMAN AUTOMOBILE FACTORY.

According to Frankfurt advices a new automobile factory, to be styled the "Taunus" works, is contemplated in the neighborhood of that city. The capital will equal $1,500,000. and will be taken up by Count Posadowsky-Wehner, in conjunction with Herr von Brandenstein.

TRADE NEWS NOTES.

Some 1,500 skilled workmen and a large number of native laborers are employed in the Cape Province and the Transvaal in the manufacture of carriages and automobiles, but there are no builders of chassis in South Africa. Hence the tariff commissions of the various states have recommended their admission at a normal rate of duty, with the object of encouraging the building of motor bodies in the country. Motor vehicles are gradually superseding in South Africa those drawn by horses.

The trade mark "Rambler" has been registered in Germany for automobiles by the Thomas B. Jeffery Co., of Kenosha, Wisconsin.

Contrasted with a loss for the preceding annual period equaling $92,000, the last business year of the Harburg-Vienna Rubber Factories showed a profit of about $280,000. This result is attributed to absence of the fluctuations in the rubber market which had marked the preceding annual period. A dividend of 6 per cent. has been declared.

RUBBER PLANTING IN FORMOSA.

By Our Regular Correspondent.

THE Japanese government does not facilitate the acquisition of land in Formosa for rubber plantations, though the boom of 1909 and 1910 directed attention to the island and its possibilities as a source of rubber.

Five planters have, however, started plantations after careful preparation, and with the permission of the government. The total area of these plantations represents 6,124 ko (about 15,310 acres); the principal holders being:

	Ko.	Acres.
Mr. Fujii	460	1,150
Mr. Mukono	830	2,075
Mr. Murai	3,134	7,835
Toyo Rubber Co., Ltd.	1,000	2,500
Fujikura Electric Wire and Rubber Co., Ltd.	700	1,750
Total	6,124	15,310

Mr. Kunishige Watanabe and the Formosan Agricultural and Forestry Co. are applying for permission to plant 1,200 ko (3,000 acres).

Rubber planting commenced in Formosa in 1908, at which time experiments were made at the Kagi government rubber planting beds with all kinds of rubber seeds. These included *Hevea* from South America, *Manihot* from Hawaii, *Castilloa* from Central America, *Ficus* from Borneo and the South Seas, as well as *Funtumia* and *Landolphia* from Africa.

Some years before, the existence had been discovered of the *Gomu Katsura*, or rubber vine, which was recognized as a source of wild rubber, a full botanical report on which was issued by the government and was reproduced in the Japanese papers, with the result that several leading Japanese rubber manufacturers visited Formosa to investigate the vine. Among them were Messrs. Isaburo Yamada and Tomekichi Matsumoto of the Fujikura Electric Wire and Rubber Co. The American and British governments, through the United States Department of Agriculture and the British Imperial Laboratory, discovered the excellence of the vine. It grows thickly in groups of twenty or thirty, at a height of 1,200 feet or thereabout above sea level.

With a view of testing the merits of this vine, the Japanese government distributed 100 pounds of the latex among various factories, for the production of different kinds of manufactures. At the same time they tried to plant it by a method of grafting, but on account of its slow growth it was finally decided to plant rubber trees from various parts of the world, which have produced the following results:

Hevea (planted in April, 1907).—In April, 1911, the trees varied from 5 feet 7 inches to 11 feet 3 inches in height.

Manihot (planted in March, 1908).—At the end of May, 1910, the largest tree was 29 feet high and 12 inches in circumference at the base.

Castilloa, in the same period as recorded for *Manihot*, had attained a height of 6 feet 4 inches with 7 inches circumference of the trunk.

The following details illustrate the climatic conditions in the various provinces of Formosa:

	Average Temperature. Fahr.	Annual Rainfall. Inches.	Days of Frost in a Year.
Taihoku	70.7	83.42	1.6
Taichu	71.6	74.38	.9
Tainan	73.4	66.14	.1
Koshun	75.9	85.63	.0

Taihoku is at the northern end of the island and Koshun at its southern extremity. The climate is thus well fitted for rubber cultivation, particularly in the southeastern part, where it has grown twice as well as in the official rubber planting beds at Kagi, towards the west of the island.

In October, 1910, Mr. Bradford, an American expert from Hawaii, in conjunction with Mr. Masaichi Mukono (already mentioned), applied to the government for a lease of 830 ko, or about 2,075 acres. In Mr. Bradford's opinion *Manihot* grows better in Formosa than in Hawaii; other kinds also growing satisfactorily and Pará twice as well in the latter island.

The government, however, does not encourage plantations, preferring to see the results of a few years before expressing a definite view. One ground of apprehension is the fear of damage to *Manihot* from the hurricanes to which Formosa is exposed.

EXISTING PLANTATIONS.

With regard to the plantations already referred to, covering an area of 15,310 acres, Mr. Fujii, who has 1,150 acres in Hozan, is the oldest planter and has planted *Manihot*, while Mr. Mukono's previous experience of Pará and *Manihot* planting has not been favorable. Both he and Mr. Fujii depend more on the proceeds of cotton than of rubber.

Mr. Kichibei Murai, a wealthy resident of Tokyo, is the largest owner, with 7,835 acres. He has only *Manihot* and planted 2,000 acres with 50,000 trees in the rainy season of 1912 along with 200,000 camphor trees. The latter were specially for the purpose of forestation. Camphor, it will be recalled, is the chief product of Formosa.

The Toyo Rubber Co., of Tokyo, has acquired 2,500 acres, which will probably be planted during the ensuing spring.

Some authorities think Formosan rubber growing has passed through the experimental stage and has good prospects. All depends on the results of the first tappings, some five or six years after planting.

[Formosa, an island to the east of China, was ceded to Japan by the former country in 1895. Its length is 235 miles and its area 41,402 square miles. The population is 3,039,751.]

DETERMINATION OF WET RUBBER IN LATEX.

An instrument for the determination of the amount of wet rubber in latex has been invented by Mr. Thomas Cockerill, Chief Instructor of the Technical Schools, Colombo. The results of five years of experiments have convinced him of the infallibility of the "Latexometer," for at once estimating, within a fraction, the quantity of wet rubber contained in the latex brought in from the collecting area.

The "Latexometer" is similar to a hydrometer, only the body is brass plated with tin and the recording figures are placed on a metal tape. The set of instruments consists of five, each recording a certain range of yield; the five groups extending from 9 ounces to 117 ounces of wet rubber per gallon. In Mr. Cockerill's opinion, the range thus indicated would cover all practical requirements. If so desired, the scale can be marked to show the weight of dry rubber.

Experiments have been made at the Heneratgoda Gardens (through the courtesy of the officials), and at various plantations, including those of Gikiyanakande, Horana, and Talangama. The last-named experiments were conducted in presence of a representative of the "Times of Ceylon," which journal speaks favorably of Mr. Cockerill's invention, for which a patent specification has been accepted.

RUBBER SEED HUSKS AS FUEL.

The "Ceylon Observer" describes a new gas-producing plant in use at the Lauka Iron Works. This plant, instead of requiring charcoal, coal, anthracite, or liquid fuel, consumes rubber seed husks, which have hitherto been regarded as useless. They can be put straight into the generator from the estate. The power required is thus obtained at a minimum cost.

Some Rubber Planting Notes.

GOLD COAST ANNUAL REPORT.

THE report of the Agricultural Department of the Government of the Gold Coast for the year 1911 has recently been submitted by Mr. W. S. D. Tudhope, Director of Agriculture. An interesting table shows the following quantities (in pounds) of rubber shipped from the colony during the years 1902-1911 inclusive:

1902—1,599,974; 1903—2,258,981;
1904—4,013,837; 1905—3,633,106;
1906—3,649,668; 1907—3,549,548;
1908—1,773,248; 1909—2,764,190;
1910—3,223,265; 1911—2,668,667.

Five agricultural stations were controlled by the department; one in each province of the colony, one in Ashanti, and one in the Northern Territories. During the year there were distributed the following quantities of plants and seeds:

	Plants.	Seeds.
Pará rubber	43,455	94,115
Funtumia rubber	8,898	3,930,000 (262 lbs.)

Supplies of *Hevea Brasiliensis* seeds were far short of the demand.

Several European plantation companies are now actively operating in the colony and Ashanti. The African Rubber Co. has 55,075 Pará rubber trees, while the Avreboo Rubber Co. has 45,000 Pará and 37,000 *Funtumia*. The West African Rubber Plantations, Limited, have 300 acres planted with Pará rubber, and 150 acres with *Funtumia*.

Plantations in Ashanti include the Offin Rubber Plantations, Limited, with 50,000 *Funtumia* trees 8 months old, and 5,000 Pará trees 6 months old; as well as the Ashanti Rivers and Concessions, Limited, with 2,500 Pará rubber trees and 38,000 *Funtumia*.

The above particulars indicate the progress being made by European plantations; while the rates of growth show that rubber may be successfully grown in the Colony.

RUBBER EXPORTS OF FEDERATED MALAY STATES.

Official statistics received from the Malay States Information Agency, London, show the following rubber exports for the last three years:

	1910.	1911.	1912.
January	768,743	1,329,170	2,730,576
February	728,458	1,490,849	2,715,767
March	899,383	1,916,219	3,089,583
April	1,123,097	1,235,917	2,285,390
May	877,435	1,147,488	2,255,034
June	879,675	1,229,754	2,305,915
July	971,469	1,581,993	2,695,861
August	981,022	1,651,845	3,655,535
September	1,110,476	1,677,062	2,968,121
October	1,484,847	2,182,857	3,210,831
November	1,153,137	2,104,317	3,111,473
December	1,234,669	2,147,859	3,693,929
	12,212,411	19,695,330	34,718,015

These statistics refer to the Federated Malay States only, and do not include exports from the Straits Settlements or the Non-Federated Malay States. The output for 1912 constitutes a record for the first-named section of the Middle East.

SCOTTISH MALAY RUBBER CO., LTD.

The crop for the eleven months ended November 30, 1912 amounted to 156,736 pounds dry rubber, as compared with 88,411 pounds for the corresponding period of 1911.

RIVERSIDE (SELANGOR) RUBBER CO., LTD.

Returns for the eleven months ended November 30, 1912, show a total yield of 153,217 pounds, against 52,645 pounds for the same period of 1911; the quantity being almost threefold.

MR. BAXENDALE CORRECTS AN ERROR.

Some of the Ceylon papers had it that Mr. Cyril E. S. Baxendale, when in this country on the occasion of the recent Rubber Exposition, had stated that Malaya could produce rubber at 15 cents a pound. He has hastened to correct this error, saying that he never gave an opinion as to the lowest cost of production. He then continues:

"I told the American manufacturers that a well-managed, favorably situated, mature plantation can produce, with a handsome profit, at 2s. 6d. (60 cents) per pound. I might have put the figure lower, but I desired to ascertain whether they anticipated a sufficient development of their business, if rubber should fall to this price, to absorb the output of six years hence. I may say that their replies to this question were encouraging. Perhaps the most encouraging form of reply received was when every manufacturer I visited showed me the extensions to his factory, built, usually, out of the profits won last year, when the price of rubber averaged 5s. 2d., or just over twice the value I suggested."

ATTACHMENT TO TAPPING KNIVES.

A specification reported in the "Colombo Observer" has been lodged by Mr. George A. Craib. It is based on the fact that the bark, when cut in the process of tapping, has been let fall on the ground; thus taking up a certain quantity of extraneous matter, which affects the manufacture of the rubber. To prevent this, a receptacle is attached to the knife, which collects the bark cut from the tree in the process of tapping.

IMPROVEMENTS IN LATEX COLLECTION.

Mr. Oswald Dufaur-Clark, of Sungei Limau Estate, Perak, has been granted by the Government of the Federated Malay States, exclusive privileges for fourteen years, in respect to an improvement in the method of attaching latex-collecting cups to rubber trees. Similar privileges have been granted Messrs. J. G. Barclay and H. W. Weigall, of Kemendore Estate, Jasin, Malacca, for a latex cup holder.

PROPOSED GERMAN INVESTIGATIONS IN VENEZUELA AND GUIANA.

With the financial support of the heads of three leading German rubber manufacturing companies, an expedition is being organized which will visit the territory of the Orinoco and its affluents, for the investigation of rubber and balata conditions. Two years will be devoted to the work, which will be under the direction of Dr. Siegfried Benig, of Berlin, who lately returned from a visit to Venezuela. Satisfaction is being expressed at the prospect of the countries referred to being thus opened up to German enterprise, instead of being left in English and American hands.

BRAZILIAN AGRICULTURE.

According to cable advices from Rio de Janeiro, the estimates for the Ministry of Agriculture included about 36,000 contos of reis (about $12,000), for improvements in public services and the promotion of agriculture; including the advancement of the rubber industry in Amazonas and the other rubber producing States, in accordance with the plan elaborated by Dr. Pedro de Toledo, Minister of Agriculture. Among the features of this plan, it will be recalled, were the perfecting of the methods of production and extraction of rubber, as well as the reduction of cost of labor.

The Federal Senate at first proposed to cut out several of the items included in the estimates, but on hearing the explanations of Dr. de Toledo gave way and adopted the proposed legislation, which had already passed the Chamber of Deputies by a substantial majority.

NOTES FROM BRITISH GUIANA.

(From Our Regular Correspondent.)

FAILURE OF ANOTHER BALATA COMPANY, LABOR AND CAPITAL.

THAT 1912 has been a bad year for the balata industry is becoming only too evident by the official returns. We are now coming very close to the end of the year, and the export returns make lamentable reading. From January 1 to December 5, 1912, the amount exported has been 554,453 pounds, against 987,287 pounds during the same period last year. The difficulties of the season appear to have been too much for the Amsterdam Balata Co., which has gone into liquidation, with an indebtedness to laborers of $18,000, it is reported. The situation thus precipitated is an exceedingly unfortunate one; a number of laborers, about 300 it is said, have been dispatched to the interior, where they have been working for some months. It is known that two of the expeditions of this company have been involved in river accidents, caused, it is presumed, by undue recklessness in negotiating falls, which have had disastrous results, and there has been a certain amount of sickness in camp, in some cases with fatal results. The survivors of these expeditions return to town, find that their employers' business is in the hands of the Public Trustee, and that they can only get a small percentage of their earnings. This has precipitated a situation which was anticipated at the time the Balata Committee was investigating the conditions of the industry. No recommendation, however, was made to the committee. The Institute of Mines and Forests has now applied to the Government to remedy the situation by applying to the industry the following regulation that has been enforced for the past seven years in the gold industry: "No company or co-partnership, whether duly registered in this colony or not, shall be allowed to register laborers to work in any capacity in any mining district, otherwise than in the name of an individual resident in the colony, who must be the duly authorized attorney or representative of the said company or co-partnership, and who shall be held personally and individually liable for all the liabilities imposed by these regulations upon an employer of labor." Mr. James Winter, secretary of the Institute of Mines and Forests, has advanced the following reasons for taking this step on behalf of the Council of the Institute, in his letter to the Government: "Along with other witnesses that gave evidence before the Balata Commission, I urged the need of Mining Regulation No. 102 being made applicable to balata collecting. There is, however, no reference to this point in the report of the commissioners. Just at this juncture there have arisen circumstances in connection with the Amsterdam Balata Co., which very aptly illustrate the need of the regulation referred to. Many of the laborers of that Company now in town cannot get the wages due them, and the same will be the plight of some 300 who have not yet come to town. These men are without resources, and depend entirely upon the wages they earn in the interior, and after performing their duty it is extremely hard on arrival in Georgetown to find there is no money nor an attorney of the company they have worked for during months, to whom they may look for payment for services rendered. My Council are strongly of the opinion that this matter should not be overlooked, but dealt with when the matters connected with balata collecting are being considered, as foreshadowed in His Excellency the Governor's reference to that industry in his speech to the Combined Court."

ATTORNEYS AND LABORERS: QUESTION OF LIABILITY.

Mr. W. Maynard Payne, legal adviser to the Institute, in an interview, has given the following reasons in support of such legislation: "I always have been of the opinion that a clause similar in effect to that prevailing as regards the gold industry should be inserted in the balata regulations. If the employer receives a due and proper report on his concessions or grants, he should be able to cut his coat to his cloth, and there is no excuse for any employer who cannot give that remuneration, to which his laborers are entitled for their labor, the fruits of which he has himself disposed of. Such provisions I consider would be most advantageous where the balata industry is concerned, in fact I ventured to urge the necessity for them before the recent Balata Commission. I consider when work is paid for it should carry with it a certain proportion of responsibility. In the absence of any such enactment in the balata regulations, as I referred to, what is the position? The moment any trouble arises, the attorney of the foreign companies, can any day when it no longer suits his book, relieve himself of the responsibility, chuck up the power of attorney, throw everything on the broad back of the official receiver, and look on while the band plays. It is a case under certain implied conditions, namely that a certain amount of balata is to be obtained from a certain spot; when it is obtained it will be paid for at certain prices, and the laborers undertake to do a certain duty. If they do not do so they go to gaol, and what is sauce for the goose ought emphatically to be sauce for the gander, too. Introduce this section and a stop would soon be put to the indiscriminate acceptance of powers of attorney, without making due inquiry, or still more without being secured against possible eventualities as regards the financial status of the principals of the companies."

The "Daily Chronicle," commenting editorially on the proposal, says: "To what extent will a remedy be found by making the attorneys liable, it will be asked. Why should an attorney be held responsible for the failure of his principals? There is no reason, however, why attorneys should ever be called upon to discharge the liability they have incurred. The regulation proposed does not seek to be punitive, it seeks to be precautionary. . . . The object of such a regulation is to make the attorneys more careful in despatching expeditions. With such a regulation in force, attorneys would require their principals to give adequate security for their laborers' wages, before despatching expeditions to the balata forests; the absence of any such conditions does not remove the position far from Mr. Maynard Payne's definition—a gamble with other people's labor." Opposition to such a proposal appears unnecessary to say the least of it. If the regulation was deemed to be good for the gold industry, why should the Government deem it to be bad for the balata industry? That it has been good for the gold industry there can be no doubt. It has inspired caution in men who might otherwise have sent laborers to do work that is attended by some hazard and some risk."

THE GOVERNOR AND A HINTERLAND RAILWAY.

The chief need of the balata industry at the present time, as the Balata Committee emphasized in its report, is improved means of communication. As I have indicated in previous letters public opinion is rising in favor of a through line to Manaos, on the Amazon, which line could easily be made to take three-fourths of the balata output. It was anticipated that the new Governor, who was sent out here with a reputation as an administrator of constructive ability, would have favored this project. He has somewhat dampened the ardor of the enthusiasts by announcing in the course of a lengthy speech in the Legislature: "While guaranteeing the construction of a line to the far interior seems to me beyond the means of this colony, I wish to acquire personal knowledge of the country and there can be little doubt that a direct line from Georgetown to Manaos would be a great benefit to British Guiana, and that this Government should not put any obstacle in the way of capitalists who might be willing to undertake its construction." He also stated that "for the past year a specially engaged railway surveyor (Mr. J. Tew) has been employed in the surveying of a route for a railway from near Rockstone, the terminus on the Essequibo of the short line joining the Demerara and Essequibo Rivers, to the Potaro and the Goldfields of the Konawarook. His report has only just been

delivered, but will shortly be available. I fear that the estimated cost of construction is very high and that there is no doubt that this route is not suitable for adoption as a section of the main line to the interior of Brazil." His Excellency has pleaded for an extension of the Coast Railway as far as the Dutch frontier, but he is shortly to pay a visit to the Rupununi savannahs, which possess possibilities for rubber cultivation, and it is not to be understood that he has arrived at any dogmatic opinion. It is significant that in a memorandum which he submitted to the Legislature on the coast-railway extension he advocated the metre gauge for this and all future railways that may be built in this colony, because the metre gauge is in use in Brazil. There is presumptive evidence that His Excellency has a Brazilian frontier railway in view. It is by no means beyond the bounds of possibility that such a railway should take the form of an extension of the existing coast railway.

PROPOSED REMOVAL OF EMBARGO ON VENEZUELAN BALATA.

In the same speech His Excellency said that the "question of withdrawing the prohibition of importation of balata from Venezuela has long been under discussion. It is proposed to allow such importation, but subject to an import or transit-duty equivalent to the royalty on indigenous balata." His Excellency has thus speedily reversed the policy of his predecessor, who adopted a desperate remedy, which has done much harm to the Venezuelan balata industry and to the British Guiana township of Morawhanna. The removal of the embargo will be advantageous to the Georgetown merchants, whose representative, the Chamber of Commerce, has long advocated the admission of Venezuelan balata.

THE OUTLOOK FOR THE BALATA INDUSTRY; BETTER PROSPECTS FOR 1913.

At the present time there is severe industrial depression in the colony as a result of the long drought, and nowhere is this more apparent than in the balata industry. The sugar and rice crops are going to be short, and the figures relating to the balata output I have already quoted. There is likely to be a serious shrinkage in the spending capacity of the large amount of labor employed in the industry, which will be rendered worse by the unfortunate failure of the Amsterdam Balata Co. There can be no doubt that the balata industry is passing through a critical period. Three companies have dropped out, and those who have survived previous storms will have done well to have escaped heavy losses on the season that is now closing. The calamity of a long drought, following upon the labor difficulties of 1911, has been a crushing blow. Nevertheless, the position for the companies remaining is by no means hopeless, providing prudent and careful action is taken. The outlook at any rate is still being regarded optimistically. Mr. James Winter says that the prospections for next year have been very successful, and there is promise of a good season next year, providing weather conditions are favorable. The failure of some companies he attributes to bad management and unnecessary expense. To this, of course, has been added the important consideration that most of the grants within easy distance of Georgetown have been worked out, and the cost of despatching expeditions to the upper reaches of the river has proportionately risen.

The real remedy, of course, is an improvement in transit facilities, but even under the most favorable circumstances, that cannot be accomplished for years. Provided, however, that the labor difficulties are adjusted and the prospections are more honest than has always been the case in the past, 1913 should offer concessionaires some opportunity of retrieving the losses of the past two seasons. Employers and laborers are settling down, and the evil that arose from the necessity of sending all sorts of incompetent and inexperienced men to the balata concessions, after the first rush for labor, should show some signs of abatement. Managers have acquired more experience, and the men themselves are better equipped for performing their duties. The failure of some companies has shaken confidence to some extent, but prudent management next year should relieve the situation.

The failure that has marred the operations of the past two seasons has not entirely been the fault of the industry, if at all. Adverse circumstances have been supplemented by imprudent flotations. A gentleman well informed as to the circumstances of the industry has said: "I attribute the failure of these companies chiefly to their being over-capitalized, and to the fact that they paid very much more for their grants than they were actually worth. In a great many cases they acquired lands, which, after being prospected at great expense, proved valueless, and the consequence was the available working capital was exhausted. The Amsterdam Balata Co. suffered a great deal through the grants being such a long distance from Georgetown, and the journey the men had to take to get to the grants took roughly three months, while in addition they had immense difficulties to overcome. In their case their working capital has also been exhausted. The grants may or may not be valuable, but at the present time there is no information on the subject. This company had some grants within easy reach of the city, which, after prospection, proved valueless, after the spending of a great deal of money for that purpose.

If the balata business was worked more carefully, and a limited number of men sent up to prove grants that are known to be valuable, there is yet a great deal of money to be made. The balata industry has been an important factor in the colony's welfare for over 20 years and there are still grants at work now, which were working 20 years ago. This proves that if the trees are bled properly, the balata industry will continue for years. In a large number of cases the trees have been killed by bad bleeding; of course, where that takes place, the balata industry must die out. It is, therefore, much to the interest of the balata licensees to conserve the forests and it is also the duty of the government to do what they can, not only in that direction but also to increase them. That seems to be a point the government has missed up to the present. No doubt this year's losses are due to the drought, but the effect will be felt a great deal more in the first half of 1913 than it has up to the present. At least $120,000 ought to go into circulation in Water Street at the end of 1912, but will not, owing to the shortage in balata. The advances to balata bleeders in 1913 will necessarily be very much less than they were in 1912. Economy will have to be practised."

RUBBER IN TRINIDAD AND TOBAGO.

In an interesting special report, Mr. A. E. Collens, F. C. S., assistant analyst, Government laboratory, has dealt with the subject of rubber planting in Trinidad and Tobago. He traces the progress made since the introduction in 1876 of *Hevea*. At present about 150,000 *Hevea* are under cultivation, mostly in Trinidad, only a small number having been planted in Tobago. The cultivation of *Castilloa* has been taken up in various parts of Trinidad, where there are 500,000 trees; while in Tobago 120,000 have been planted. Of *Funtumina*, about 25,000 to 30,000 trees are being cultivated in the colony. *Landolphia* and *Ficus* have only been planted to a limited extent.

Many interesting particulars are given of official and other results as to tapping and yields.

BRITISH EXPERT'S VIEW OF BRAZILIAN SITUATION.

According to a recent cable from London, an expert has lately visited the East to study the question of rubber cultivation, on behalf of an important financial group. He also visited Pará and his report states that it is absolutely imperative for the Brazilian rubber planters to make three reforms. One of these is the adoption of the mode of incision employed in the East, while the others are the importation of Chinese labor and the reduction of the export duties on rubber.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED DECEMBER 3, 1912.

NO. 1,045,825. Testing-machine. W. W. Duncan, Watertown, Mass., assignor to Hood Rubber Co., Boston, Mass.
1,045,858. Life-preserver. H. Laprise, Holyoke, Mass.
1,045,937. Valve for automobile-tires. C. R. C. Borden, Brookline, Mass.
1,045,947. Bath-tub cover. W. W. Christensen, Portland, Ore.
1,045,955. Pneumatic tire. M. A. Dees, Pascagoula, Miss., assignor to American Tire Co., St. Louis, Mo.
1,046,033. Adjustable garden-hose supporter. W. O. Smith, Oxford, Mich.
1,046,068. Life-preserver. W. J. G. Hebs, St. Louis, Mo.
1,046,272. Emergency traction device. F. B. Comins, Sharon, Mass.

Designs.

43,310. Tire tread. A. P. Lohmann, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
43,311. Tire tread. A. P. Lohmann, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
43,330. Wheel. W. C. Teasdale, Jr., assignor to The Motor Car Mfg. Co.—both of Indianapolis, Ind.
43,332. Tire tread. B. G. Work, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.

Trade Marks.

63,825. The Essenkay Co., Chicago, Ill. The word *Essenkay*. A compound for filling automobile tires in place of air.
65,509. Sealo Tire Co., Chicago, Ill. The word *Sealo* inside of tire. A composition for preventing leakage of air through punctures in pneumatic tires.

ISSUED DECEMBER 10, 1912.

1,046,424. Life-saving device. T. E. Aud, Herndon, Va.
1,046,451. Tire mail. J. B. Duhring, Chestnut Hill, Pa.
1,046,501. Socket member for water bags. M. C. Schweinert, West Hoboken, N. J., and H. P. Kraft, New York.
1,046,584. Syringe. M. A. Grafflin and R. J. Gregg, Los Angeles, Cal.
1,046,629. Fastening device for tires. W. R. Morrison, Chicago, Ill.
1,046,686. Rubber tire protector. J. A. Utter, Crawfordsville, Ind., assignor of one-half to J. F. Utter, San Francisco, Cal.
1,046,712. Resilient wheel. B. Anderson and C. L. Miles, Boston, Mass.
1,046,760. Resilient wheel for vehicles. R. E. Fivey, Newark, N. J.
1,046,839. Vehicle washer. E. Muller, Weehawken, N. J.
1,046,855. Tire clencher ring lock. P. Recconi, San Francisco, Cal.
1,046,901. Hose connection. J. P. Tierney and L. Csernai, Youngstown, Ohio.
1,046,909. Hose reel. C. Wagner, Grantwood, N. J.
1,046,954. Anti-skidding device for motor vehicle tires. F. E. Bond, Walton, N. Y.
1,047,063. Hose coupling. J. H. Irving and M. Pedersen, Kenosha, Wis.

Design.

43,335. Tire tread. W. R. Blowers, Toronto, Ont., Canada.

Trade Marks.

24,146. Massachusetts Chemical Co., Walpole, Mass. The word *Dryfoot*. Waterproof textile fabric.
59,000. I. B. Kleinert Rubber Co., New York. The word *Brassiere*. Dress shields.
59,773. Kabus Rubber Co., New York. The word *Victor*. Rubber erasers and rubber bands.

ISSUED DECEMBER 17, 1912.

1,047,166. Repair or reinforcement of pneumatic tires. T. E. Cann, Leicester, England.
1,047,190. Resilient wheel. W. C. Fickes, Shirland, Ill.
1,047,204. Inner tube guard for pneumatic tires. S. Goodman, Bayonne, N. J.
1,047,268. Cushion wheel. J. Millar, assignor of one-half to D. Campbell—both of Arlington, N. J.
1,047,278. Traction wheel attachment. O. Olson, Brager, Minn.
1,047,297. Resilient wheel. L. S. Robbins and J. R. Davis, Vine Grove, Ky.
1,047,303. Spare tire cover. H. A. Sallop, New York.
1,047,268. Cushion wheel. J. Millar, assignor of one-half to D. Campbell—both of Arlington, N. J.
1,047,297. Resilient wheel. L. S. Robbins and J. R. Davis, Vine Grove, Ky.
1,047,352. Automatic air hose coupling. W. A. Weil, Findlay, Ohio, assignor of one-half to J. W. Grant, Uniontown, Ohio.
1,047,354. Ball. L. Wermeling, Covington, Ky., assignor to P. Goldsmith's Sons, Cincinnati, Ohio.
1,047,407. Resilient tire for vehicles. H. D. Hart, San Diego, Cal.
1,047,409. Pneumatic tire pump coupling. R. F. Hersey, Beverly, Mass.
1,047,485. Combination spring cushion tire wheel. R. F. Balding and H. P. Garland, Los Angeles, Cal.
1,047,495. Pneumatic wheel. A. Burfoot and J. Burfoot, Auckland, New Zealand.
1,047,504. Rubber shoe. J. T. Vrowley, assignor to The Beacon Falls Rubber Shoe Co.—both of Beacon Falls, Conn.
1,047,538. Spring tire for automobiles or other vehicles. G. A. and W. M. Krautter, Marion, Ohio.
1,047,544. Wringer. C. J. Marth, assignor to Wayne Mfg. Co.—both of St. Louis, Mo.
1,047,594. Expansible core for repairing tires. E. H. Trump, assignor of one-half to J. K. Williams—both of Akron, Ohio.
1,047,620. Pneumatic wheel. J. A. and R. R. Dennis, Cambridge City, Ind., assignors to International Pneumatic Wheel Co. of Indiana.
1,047,621. Pneumatic wheel. J. M. and R. R. Dennis, Cambridge City, Indiana.
1,047,642. Vehicle wheel. A. Jaeger, Jackson, Mo.
1,047,658. Jeweler's tool. A. J. Krueger, North Branch, Minn.
1,047,663. Turbine compressor or pump for elastic fluids. F. Lawaczeck, Aerzen, near Hameln, Germany.
1,047,750. Manufacture of rubber footwear. M. C. Clark, Providence, R. I.
1,047,790. Tire patch. R. E. Gregg, assignor to General Specialty Co.—both of Indianapolis, Ind.
1,047,803. Inner tube for automobile wheels. D. W. Harris, Platte City, Missouri.
1,047,888. Resilient vehicle wheel. J. Gaynor, assignor to Standard Resilient Wheel Co., Inc.—both of New York.

Design.

43,348. Tire tread. E. C. Shaw, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.

Trade Marks.

64,714. W. S. Daniels, Boston, Mass. The words *New Era* written above the words *"Simply Honest."* Pneumatic tires.
64,869. Sté. Ame. Pour Le Commerce & l'Industrie du Caoutchouc, Brussels, Belgium. The word *Royal* under picture of tiger's head in circle. For automobile horn bulbs.
66,333. The Ringwalt Linoleum Works, New Brunswick, N. J. The word *Rubberoleum* fancily written. A waterproof floor covering similar to linoleum.

ISSUED DECEMBER 24, 1912.

1,047,918. Elastic fluid turbine. G. B. Collier, Kinderhook, N. Y.
1,047,962. Hose clamp. C. Marion, Petaluma, Cal.
1,048,054. Resilient wheel rim. J. Adman, assignor to A. M. Hovland—both of Minneapolis, Minn.
1,048,069. Syringe. E. E. Hall, Wausau, Wis., assignor to Layula W. Hall, Chicago, Ill.
1,048,120. Automatic air coupling. J. C. Wright, Kansas City, Mo.
1,048,138. Method of vulcanizing vulcanizable articles. W. W. Duncan, Boston, and N. E. Tousley, Watertown, assignors to Hood Rubber Co.—all of Massachusetts.
1,048,183. Cover for vehicle wheels. K. J. Lageson, Benson, Minn.
1,048,208. Device for repairing pneumatic tires.
1,048,215. Wringer. S. E. Schroeder, Minier, Ill.
1,048,238. Spring tire. P. Tysseling, Pelia, Iowa.
1,048,326. Manufacture of composite tubes. W. Love, London, England.
1,048,367. Rubber heel. L. J. Soderlund, Two Harbors, Minn.
1,048,371. Pneumatic cushion spring for wheeled vehicles. J. W. Sutton, assignor to Mary Sutton—both of Brisbane, Queensland, Australia.
1,048,376. Anti-skidding device. R. J. Thiesen, and C. T. King, Jr., Atlanta, Ga.
1,048,385. Puncture repairer. W. R. Barstow, Oakland, Cal.
1,048,423. Puncture proof tire. W. McKay, New York.

ISSUED DECEMBER 31, 1912.

1,048,564. Elastic fluid turbine. J. F. Metten, Philadelphia, Pa., assignor to the Wm. Cramp & Sons Ship & Engine Building Co. of Pennsylvania.
1,048,813. Resilient wheel. W. F. Doll, Liberty, N. Y.
1,048,863. Hose reel. R. L. Notman, assignor to McKinnon Dash Co.—both of Buffalo, N. Y.
1,048,904. Elastic wheel for automobiles and other vehicles. A. Sordi, Lugano, Switzerland.
1,049,039. Rubber composition. W. F. Beasley, Plymouth, N. C.
1,049,046. Spring cushioned wheel. S. W. Buercklin, Prague, Okla.
1,049,067. Resilient tire for vehicle wheels. O. Erickson, and O. G. Sunden, Chicago, Ill.
1,049,071. Spring tire for vehicles. P. C. Fox, assignor to Fox Spring Tire Co.—both of Spokane, Wash.
1,049,090. Device for repairing pneumatic tire tubes. A. R. Hoeft, Chicago, Ill.
1,049,129. Resilient wheel. H. C. Moore, Cleburne, Texas.
1,049,142. Tire alarm. J. B. Polo, Clear Lake, S. D.
1,049,157. Tire. P. C. Seward, Petersburg, Va.
1,049,164. Shoe heel. W. E. Stedman, Zanesville, Ohio.
1,049,287. Clencher tire retaining device. S. Barnett, Tipton, assignor to Joseph Darlus Griffin, London—both of England.
1,049,300. Vehicle wheel. S. C. Harfield, Baltimore, Md.
1,049,313. Protective shoe for tires. J. A. Murphy, Holyoke, and R. J. Harrison, Chicopee Falls—both of Massachusetts.

Design.

43,412. Tire tread. E. C. Shaw, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.

Trade Marks.

58,272. Louis Judell, New York. The words *Regime Shoe*. Boots, shoes, etc.
65,055. Federal Rubber Mfg. Co., Milwaukee, and Cudahy, Wis. The word *Rugged*. Rubber vehicle tires.

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 4, 1912.]

18,356 (1911). Isoprene; intermediate products. J. Y. Johnson, 47 Lincoln's Inn Fields, London.
18,391 (1911). Elastic bulbs for motor horns, etc. A. Cleret, 6 avenue Gambetta, Paris.
18,408 (1911). Balata plies in belts. R. Slack, Market Place, Chapel-en-le-Frith, Derbyshire.
18,430 (1911). Supplementary air tubes for tires. T. and J. Nuttall, 536 Romford Road, and R. Nuttall, Goodmayes avenue—both in Goodmayes.
18,431 (1911). Isoprene and similar hydrocarbons; caoutchouc. K. Gottlob, Prague-Vysocan, Austria.
18,452 (1911). Tread bands for tires. W. H. J. Willson, 40 Chapel street, St. Kilda, and S. Moody, Plenty Road, Preston—both in Victoria, Australia.
18,469 (1911). Tread bands with metal plates. T. H. Rushton, 158 Grimsby Road, New Cleethorpes, Lincolnshire.
18,470 (1911). Improvement in tread bands. G. A. Mortier, "Elsinore," Garstang Road, Fulwood, Preston, Lancashire.
18,540 (1911). Rubber covers for golf tees. W. H. H. Booth, 4 Woodlands Terrace, Blackhill, and W. H. Francis, Bays Hill, Ffynone Terrace both in Swansea.
18,556 (1911). Spring wheels with pneumatic cushions. E. Jones, "The Poplars," Greenfield, near Holywell, North Wales, and W. S. Williams, 28 Bowring Road, Ramsey, Isle of Man.

18,562 (1911). Continuous elastic tire. C. A. Besaw, and A. C. Tyre Co., Union street, Sunderland.
[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 11, 1912.]
18,807 (1911). Elastic bands in spring wheels. O. Deprez, 44 rue Africaine, and A. Richir, 18 rue de Danemark—both in St. Gilles-lez-Brussels, Belgium.
*18,839 (1911). Spring wheels with pneumatic cushions. C. D. Galvin, 1820 Wallace street, Philadelphia, Pa., U. S. A.
18,863 (1911). Compositions for sealing punctures in tires. G. H. Price, Queenstown, Cape Colony.
18,876 (1911). Spring wheels with pneumatic cushions. C. E. de Boos, Temona, New South Wales, Australia.
18,967 (1911. Stocking-suspenders. H Bunte, 22 Grabenstrasse, Dusseldorf, Germany.
19,027 (1911). Raising sunken vessels. F. L. Blonkinsop, Lansdowne Lodge, Lansdowne Crescent, Great Malvern, Worcestershire.
*19,038 (1911). Ear-protectors. J. A. R. Elliott, 7404 Third avenue, Brooklyn, New York, U. S. A.
19,080 (1911). Rubber tip in heel protectors. W. G. Rudolph, 84 Luisenstrasse, Offenbach-on-Main, Germany.
19,117 (1911). Rubber covering for printing rolls. E. Ludin, Dornach, Elsass, Germany.
[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 18, 1912.]
19,216 (1911). Spring wheels with rubber blocks. H. G. Hugon, 22 rue de Vic, Calais, France.
*19,218 (1911). Rubber tire with transverse holes. E. W. Morrow, 116 Broad street, New York, U. S. A.
19,245 (1911). Improvement in fitting of rubber gloves. H. F. Finlay, 75 York street, Sydney, Australia.
18,286 (1911). Spring wheels with pneumatic cushions. E. C. R. Marks, 57 Lincoln's Inn Fields, London.
19,293 (1911). Pneumatic cushions for springs. M. Sutton, "Stonehenge," Bowen Terrace, New Farm, Brisbane, Australia.
19,424 (1911). Composition for repairing tires. F. W. Farr, Cogenhoe, near Northampton.
19,504 (1911). Teeth-cleaning appliances. R. F. Gunther, 8 Clemenstrasse, Bonn, Germany.
19,522 (1911). Spring-wheel with pneumatic cushion. C. A. C. Rispaud, rue Etienne Jodelle, Paris.
19,562 (1911). Tread bands for tires. H. Agha, Eagle Lodge, Hale, Cheshire.
19,568 (1911). Repairing pneumatic tires, hose-pipes, etc. R. Jennings, P. O. Box 1809, Johannesburg, Transvaal.
[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 27, 1912.]
19,702 (1911). Vulcanizing presses. Soc. A. Olier et Cie, Clermont-Ferrand, Puy-de-Dome, France.
19,711 (1911). Rubber rings for use in planting bulbs. W. Dick, 28 Glebe street, Townhead, Glasgow.
19,770 (1911). Hot-water bottles, etc. T. Machin, 93 The Crescent, and T. H. Joy, 5 Great North Road—both in Woodlands, and D. W. Freeman, Finningley—both near Doncaster.
19,784 (1911). Coagulating latex. Freudweiler, 64 Feldeggstrasse, Zurich, Switzerland.
19,788 (1911). Coagulating latex. H. H. Markley and F. E. Mellinger, Lumija, Chiapas, Mexico.
19,881 (1911). Portable vulcanizer. R de C. de Peruzzis, Roosendael, Holland.
19,889 (1911). Rubber rings for billiard rollers. W. Westmoreland, 84 York Road, West Hartlepool.
19,901 (1911). Rubber surface for bowls. E. V. Row, Know Hill, Nutbank road, Norwich.
19,919 (1911). Erythrene, isoprene and intermediate products. P. A. Newton, 6 Breams buildings, Chancery lane, London.
19,950 (1911). Lace tags. W. and H. and W. Stommel, Barmen, Germany.
[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 31, 1912.]
*20,116 (1911). Improvements in tire covers. F. Power, 3950 Wyandotte street, Kansas City, Mo., U. S. A.
20,129 (1911). Compositions of rubber flint. Rauh-Gummi-Verwertungs-Ges., 48 Werderstrausse, Hamburg, Germany.
20,240 (1911). Apparatus for detecting punctures. H. T. Stephens, 4 Quay street, Garmarthen.
20,297 (1911). Waterproof fabrics for tires. J. Hoyle, Acre Mills, Hebden Bridge, Yorkshire, and A. J. Smith, Milne, 210 Venner road, Sydenham, London.
20,315 (1911). Football bladders, etc. J. W. Albers, 1 Bremergasse. Hamburg-on-Elbe, Germany.
20,438 (1911). Spring wheels with pneumatic cushions. A Lucia, 102 Corso Vittorio Emanuele, Rome.
20,463 (1911). Machinery belting. H. Panzetta, Carrara, Redhill, Surrey, and Panzetta Tire Syndicate, St. Michael's House, Cornhill, London.
20,481 (1911). Elastic tires and cores. M. D. Rucker, "Heimath," Foxley lane, Purley, Surrey.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

443,642 (May 9, 1912). J. A. Redfern. Rubber sole for footwear, etc.
443,700 (May 11). B. W. Wittenberg. Anti skid system for pneumatic tires.
443,767 (May 13). E. C. Lena. Elastic tire.
443,926 (May 15). J. Hobel. Anti-skid system for automobiles.
443,973 (May 18). L. Liais. Improvements in rubberized fabrics for use as pneumatic tire covers.
444,059 (May 21). M. Gratz. Wheel with elastic tire.
444,026 (July 28, 1911). Chemische Fabrik Florsheim, Dr. H. Nördlinger. Process of making products similar to rubber.
444,031 (July 27). Auquetil. Process of preparing rubber by synthesis.
444,062 (May 21, 1912). S. Block and S. Benima. Filling material for rubber and its process of manufacture.
444,244 (May 24). H. Zeuner. Elastic tire for wheels.
444,305 (May 28). M. A. Dees and McLeod. Mold for vulcanizing tires.
444,315 (August 4, 1911). J. Fiena. Elastic vehicle tire.
444,369 (May 23, 1912). S. M. Luguet. Soft wheel for automobiles and carriages.
444,423 (May 15). Dujardin. Rubber soles and heels for footwear.
444,467 (May 31). P. Seydel and N. Klemenz. Portable vulcanizing apparatus for repairing *en route* automobile tubes and tires, etc.
444,483 (May 31). W. Ure. Improvements in covers for pneumatic tires.
444,528 (June 1). N. Rosenblatt. Compound tire for automobiles, etc.
444,641 (August 12, 1911). H. Farjas. Shock absorbing vehicle tire.
444,628 June 5, 1912). McGraw Tire and Rubber Co., Process and apparatus for vulcanization.
444,646 (June 5). G. Molu and A. Wohlcken. Protector for vehicle tires.
444,804 (June 10). E. R. Riedinger and A. Fraser. Improvements in pneumatic tires.
445,025 (June 15). Weed Chain Tire Grip Co. Improvements in arrangements for repair of tires.
444,872 (June 12). C. D. Williams. Pneumatic vehicle wheel.
445,058 (August 23, 1911). Mendes de Almeida. Pneumatic vehicle tire.
445,107 (June 17, 1912). A. Von Linde. Pneumatic tire.
445,139 (June 18). E. H. Jones. Improvements in manufacture of pneumatic tires.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

254,548 (December 13, 1910). Production of rubber, its analogues and homologues. Farbenfabriken, vorm. Fried Bayer & Co., Elberfeld.
254,569 (May 27, 1909). Rubber protective covering for walls and floors of rooms containing electrical accumulators. Felten & Guilleaume, Mülheim-on-Rhine.
254,672 (January 26, 1912). Process for production of artificial rubber. Farbenfabriken, vorm. Fried Bayer & Co., Leverkusen and Elberfeld.
254,703 (September 30, 1909). Extraction of pure rubber from resinous crude material. Schon & Co., Harburg-on-Elbe.
254,868 (March 15, 1912). Production of rubber substitute. Farbenfabriken, vorm. Fried Bayer & Co., Leverkusen and Elberfeld.
254,847 (May 28, 1911). Elastic tire, in which the enclosed air is compressed by the pressure of the tire. F. T. Roberts, New York.
255,129 (March 13, 1912). Process for manufacture of Butadiene rubber, its homologues and analogues. Farbenfabriken, vorm. Fried Bayer & Co., Leverkusen and Elberfeld.
255,417 (December 14, 1911). Protective and anti-skid armor for pneumatic and solid tires. Rudolph Müller, Kiew, Russia.
255,679 (August 8, 1911). Process for manufacture of artificial rubber. Farbenfabriken, vorm. Fried Bayer & Co., Leverkusen.
255,680 (August 8, 1911). Manufacture of a product coming near to vulcanized rubber. Farbenfabriken, vorm. Fried Bayer & Co., Leverkusen.
255,703 (April 4, 1911). Production of a rubber substitute from oils and chloride of sulphur, in conjunction with suitable resins and neutralizing agents. Rubber Substitute, Limited (1910), London.
255,786 (January 27, 1912). Manufacture of products resembling rubber. Badische Anilin & Soda Fabrik, Ludwigshafen.
255,795 (February 28, 1911). Repair appliance for pneumatic tires. Gustav Joseph Martel, Chicago.
255,796 (March 17, 1912). Elastic vehicle tire. John Henry Messenger, London.
255,801 (June 23, 1912). Appliance for fastening pieces of rubber on heels. Alfred Weichelt, Dresden.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

250,126 (1912). Gross (C. K. F. L.), Sporveisgade 31, Christiana, Norway. Process for manufacture of mass, acting as calazyator in the production of isoprene from oil, turpentine and other materials.
250,128 (1912). Gross (C. K. F. L.), Sporveisgade 31, Christiana, Norway. Process for manufacture of rubber from synthetic isoprene.
250,125 (1912). Gross (C. K. F. L.), Sporveisgade 31, Christiana, Norway. Process for the manufacture of synthetic isoprene.

Trade Marks, Rubber Articles, 1912.

"SINGER." MeG. Le Breton, 29 rue Fontaine-au-Roi, Paris.
"CONTINENTAL PARIS." Continental Manufactured Rubber Co., 146 avenue Malakoff, Paris.
"FIXO." MeA. B. Graves, 23 Rue dela Paix, Paris.

STATEMENT OF THE INDIA RUBBER WORLD.

Statement of the ownership, management, circulation, etc., of THE INDIA RUBBER WORLD, published monthly at New York, required by the Act of August 24, 1912.

Editor, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Managing editor, John P. Lyons, 150 West Ninety-first street, New York City.

Business manager, Edward F. Pfaff, 94 Hawthorne street, Brooklyn, New York.

Publisher, The India Rubber Publishing Co., 15 West Thirty-eighth street, New York.

Owner, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

(Signed) HENRY C. PEARSON, *Editor.*

Sworn to and subscribed before me this 30th day of September, 1912.

(Signed) HELEN HEROLD, Notary Public,
(Seal) Kings County, No. 162.

Certificate filed in New York County. Term expires March 30, 1913.

Kings County Registers Certificate No. 882. New York County Registers Certificate No. 3082. (Commission continuous.)

Report of the Crude Rubber Market.

SINCE December 24, date of last report, the course of the London market for fine Pará has tended downwards, though the result has only been a falling off to the extent of 2*d.* per pound. Practically, the advance established during December has been lost; the figure at time of writing (January 25) being 4*s.* 5¼*d.*, as compared with 4*s.* 7¾*d.* on December 24, and 4*s.* 5*d.* on November 25. This position has been attributed to the relative abstention of buyers.

During the past four weeks plantation rubber has fallen 3*d.* per pound, likewise reverting to about the position it occupied at the end of November, the gain in December having been offset by subsequent reductions. The course of London prices for pale crepe, basis first latex, was: December 24, 4*s.* 7¼*d.*; December 31, 4*s* 7¾*d.*; January 6, 4*s.* 7*d.*; Jaunary 18, 4*s.* 6¼*d.*; January 23, 4*s.* 5¼*d.*; January 24 and 25, 4*s.* 4¼*d.* On the two last-named days Pará stood at 4*s.* 5¼*d.*

That the London plantation rubber auctions are getting a large part of the increased production is proved by the table in another column, which shows that the total offered in 1912, including the sale of December 31, was 18,069 tons, as compared with 9,945 tons for the year 1911.

Owing to the non-arrival of rubber afloat, the final sale of the year, on December 31, only included 350 tons, as compared with 930 tons in that of December 17. This fact led to keen competition, resulting in an advance of 2*d.* to 3*d.* over the prices of the preceding sale.

By the date of the next sale, January 14, large arrivals brought up the amount offered to 1,130 tons, this auction thus creating a record for quantity. The whole was sold at an average of 1*d* per pound under the rates of a fortnight earlier, thus making a good start for the new year.

On this basis English consumers operated extensively, apparently covering their wants for the immediate future.

At the Rotterdam sale of January 10, there were offered 33 tons Congo, 7 tons *Hevea*, and 5 tons *Ficus*, three-fourths of which sold on an average about 2 per cent. below valuations. The next sales at Rotterdam are fixed for February 18.

The Amsterdam sale of January 16 included 26 tons *Hevea* and 13 tons *Ficus*. In the former, valuations were about obtained, while an advance of 2 per cent. was realized for the latter.

On January 21 there was a sale at Havre including about 70 tons Congo rubber.

New York Quotations.

Following are the quotations at New York for Parà grades, one year ago, one month ago, December 30—the current dates:

Para.	Feb. 1, '12.	Jan. 1, '13.	Jan. 30, '13.
Islands, fine, new	108@109	102@103	98@ 99
Islands, fine, old	110@111	.....	.....
Upriver, fine, new	111@112	111@112	104@105
Upriver, fine, old	114@115	118@119	.....
Islands, coarse, new	64@ 65	56@ 57	51@ 52
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	94@ 95	82@ 83	79@ 80
Upriver, coarse, old	.....	.....	.....
Cametà	66@ 67	57@ 58	51@ 52
Caucho (Peruvian) ball	94@ 95	84@ 85	78@ 79
Caucho (Peruvian) sheet	.....	.....	.....
Plantation Ceylons.			
Fine smoked sheet	133@134	112@113	109@110
Fine pale crepe	131@132	110@111	104@105
Fine sheets and biscuits	127@128	109@110	103@104
Centrals.			
Esmeralda, sausage	92@ 93	81@ 82	77@ 78
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	91@ 92	80@ 81	76@ 77
Panama	.....	.....	.....
Mexican plantation, sheet	90@ 91	.....	.....
Mexican, scrap	54@ 55	79@ 80	75@ 76
Mexican, slab	.....	.....	.....
Managabeira, sheet	60@ 62	.....	.....
Guayule	89@ 90	60@ 61	60@
Balata, sheet	56@ 57	.....	85@ 86
Balata, block	.....	.....	55@ 56
African.			
Lopori, ball, prime	109@110	.....	.....
Lopori, strip, prime	105@106	.....	.....
Aruwimi	106@107	98@ 99	.....
Upper Congo, ball, red	112@113	101@102	.....
Ikelemba	.....	.....	.....
Sierra, Leone, 1st quality	95@ 96	96@ 97	95@ 96
Massai, red	102@103	99@100	96@ 97
Soudan, Niggers	.....	.....	92@ 93
Cameroon, ball	69@ 70	.....	75@ 76
Benguela	72@ 73	74@ 75	73@ 74
Madagascar, pinky	.....	.....	.....
Acera, flake	27@ 28	26@ 27	25@ 26
East Indian.			
Assam	.....	.....	.....
Pontianak	5⅝@5¾	6⅞@	7@7⅛
Borneo	.....	.....	.....

Late Pará cables quote:

	Per Kilo.		Per Kilo.
Islands, fine	4$200	Upriver, fine	5$300
Islands, coarse	2$100	Upriver, coarse	3$700
		Exchange	16 3/32*d.*

Latest Manáos advices:

Upriver, fine	5$500	Exchange	16 3/32*d.*
Upriver, coarse	3$500		

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During January a decided change has come over the money market as expected, rates easing very much and the demand improving from both city and out-of-town banks, with the best rubber paper selling at 5@5¼ per cent., and names not so well known 5½@6 per cent."

New York Prices for December (New Rubber).

	1912.	1911.	1910.
Upriver, fine	$1.06@1.12	$1.04@1.07	$1.36@1.50
Upriver, coarse	.82@ .85	.90@ .93	1.00@1.05
Islands, fine	.96@1.02	.95@1.01	1.19@1.25
Islands, coarse	.54@ .58	.60@ .64	.70@ .73
Cametá	.56@ .60	.60@ .65	.72@ .76

Summary of New York Rubber Prices for 1912.

	Upriver.		Island.		Cameta.
	Fine.	Coarse.	Fine.	Coarse.	Coarse.
January	103@111	90@94	97@107	62@64	63@66
February	107@111	92@94	105@108	62@65	65@67
March	111@123	93@99	108@118	63@67	66@72
April	112@118	92@96	110@114	63@66	66@70
May	109@112	89@92	105@110	58@63	65@67
June	108@112	86@91	101@106	55@59	63@65
July	110@119	85@91	100@108	54@57	62@65
August	116@123	89@96	106@113	56@59	64@68
September	110@122	87@95	107@113	55@59	61@67
October	104@111	81@86	99@106	53@56	56@61
November	102@108	80@84	94@100	53@58	55@58
December	106@112	82@85	96@102	54@58	56@60

Average Prices.

1912	111¾	89½	105½	59	63¾
1911	118¼	95	110¼	64	70½
1910	201¼	136¼	189¾	90	100
1909	159¾	107	149¾	66¼	77
1908	93¼	67½	88¼	47½	52
1907	109¼	88	104½	61¾	65½

Statistics of Para Rubber (Excluding Caucho).

	NEW YORK. Fine and Medium.	Coarse.		Total 1912.	Total 1911.	Total 1910.
Stocks, November 30....*tons*	152	24	=	176	358	156
Arrivals, December	1,231	423	=	1,654	1,741	1,533
Aggregating	1,383	447	=	1,830	2,099	1,689
Deliveries, December	1,170	421	=	1,591	1,767	1,478
Stocks, December 31.....	213	26	=	239	332	211

	PARA. 1912.	1911.	1910.	ENGLAND. 1912.	1911.	1910.
Stocks, Nov. 30...*tons*	1,265	3,050	1,190	260	935	1,335
Arrivals, December...	4,200	3,455	2,315	959	884	1,248
Aggregating	5,465	6,505	3,505	1,219	1,819	2,583
Deliveries, December..	4,185	3,830	2,830	969	994	1,093
Stocks, December 31.	1,280	2,675	675	250	825	1,490

	1912.	1911.	1910.
World's visible supply, December 31..*tons*	4,527	5,852	3,891
Pará receipts, July 1 to December 31.....	15,655	14,635	13,400
Pará receipts of caucho, same dates.....	2,790	1,760	2,370
Afloat from Pará to United States, Dec. 31	1,379	1,300	435
Afloat from Pará to Europe, Dec. 31.....	1,379	720	1,080

African Rubbers.

NEW YORK STOCKS (IN TONS).

December 1, 1911.....	60	July 1, 1912.....	62
January 1, 1912.....	58	August 1	85
February 1	150	September 1	156
March 1	90	October 1	89
April 1	80	November 1	90
May 1	62	December 1	80
June 1	94	January 1, 1913.....	60

IMPORTATIONS OF RUBBER INTO THE UNITED STATES.

	1909.	1910.	1911.	1912.
Fine Pará .....*tons*	11,982	10,274	10,818	13,185
Coarse Pará	5,609	4,622	5,074	6,056
Plantation Ceylon	1,730	3,611	6,556	14,003
Centrals and Caucho.....	4,961	4,636	4,316	6,469
East India and Africa.....	6,847	9,773	8,324	8,338
Total	31,129	32,916	35,088	49,051

Rubber Stock at Para.

On May 31, 1912, the stock had increased, but receded by June 30; and had again fallen off on July 31. Large sales by the syndicate materially reduced the stock by the end of August, from which point it had slightly increased by September 30. A further increase was shown on October 31. The stock had dropped by November 30 to the lowest point reached in 1911 or 1912, very slightly increasing by the close of 1912.

May 31, 1911.....*tons*	5,350	March 31, 1912....*tons*	2,730
June 30.....	4,545	April 30.....	2,770
July 31.....	3,884	May 31.....	2,995
August 31.....	3,450	June 30.....	2,685
September 30.....	3,102	July 31.....	2,300
October 31.....	3,320	August 31.....	1,355
November 30.....	3,050	September 30.....	1,420
December 31.....	2,675	October 31.....	1,845
January 31, 1912.....	3,370	November 30.....	1,265
February 29.....	3,240	December 31.....	1,280

LONDON RUBBER AUCTIONS 1911 AND 1912.

	1911. Offered Tons.	1912. Offered Tons.
January—First series	360	491
Second series	371	339
Third series	254	614
February—First series	325	494
Second series	469	848
March—First series	180	483
Second series	345	710
April—First series	376	526
Second series	495	748
May—First Series	421	693
Second series	295	659
Third series	130	400
June—First series	280	170
Second series	248	260
July—First series	287	561
Second series	281	579
Third series	269	660
August—First series	131	789
Second series	495	870
September—First series	432	964
Second series	455	896
October—First series	404	832
Second series	437	920
November—First series	393	731
Second series	525	742
December—First series	467	810
Second series	420	930
Third series	400	350
Total	9,945	18,069

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA, 1912.

[IN SHILLINGS AND PENCE PER POUND.]

January 5, 1912.....	4/4½	July 19	4/10
January 12	4/5½	July 26	4/11¾
January 19	4/5½	August 2	4/11
January 26	4/8	August 9	5/0½
February 2	4/7	August 16	5/0½
February 9	4/6½	August 23	5/2
February 16	4/6¾	August 30	5/1¾
February 23	4/7½	September 6	4/11½
March 1	4/7½	September 13	4/9½
March 8	4/9	September 20	4/8
March 15	4/10½	September 27	4/7
March 22	5/1½	October 4	4/7
March 29	4/11½	October 11	4/7
April 5	4/11	October 18	4/6½
April 12	4/11	October 25	4/6
April 19	4/10¼	November 1	4/4½
April 26	4/9	November 8	4/5
May 3	4/7½	November 15	4/5¼
May 10	4/7½	November 22	4/5¼
May 17	4/7¾	November 29	4/5½
May 24	4/7½	December 6	4/7
May 31	4/7½	December 13	4/7
June 7	4/8½	December 20	4/6½
June 14	4/10	December 27	4/7½
June 21	4/9½	January 3, 1913.....	4/7¼
June 28	4/7½	January 10.....	4/6½
July 5, 1912.....	4/9	January 17.....	4/6½
July 12	4/10	January 24.....	4/5¼

CONSUMPTION OF INDIA-RUBBER BY THE UNITED STATES AND CANADA (IN TONS).

[From the Annual Statistical Summary of MEYER & BROWN, New York.]

DETAILS.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
Imports to United States...	23095	20468	23208	21842	24760	27623	28635	29936	29433	29477	31129	32916	35088	50051
Exports to Europe.....	300	450	680	430	490	274	357	1625	558	480	681	1340	823	430
	22795	20018	22528	21412	24270	27349	28278	28311	28875	28991	30448	31576	34265	49621
Add stock on January 1....	591	712	1198	1399	331	256	305	537	365	606	1553	1332	523	636
	23386	20730	23726	22811	24601	27605	28583	28848	29240	29603	32001	32908	34788	50257
Less stock close of year....	712	1198	1399	331	256	305	537	365	606	1553	1332	523	636	605
Deliveries to manufacturers.	22674	19532	22327	22480	24345	27300	28046	28483	28634	28050	30669	32385	34152	49652

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weight in Pounds.]

DECEMBER 16.—By the steamer *Justin*, from Manáos and Pará:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	147,800	23,900	94,200	16,200=	282,100
General Rubber Co.	107,500	18,600	50,500	.....=	176,600
New York Commercial Co.	106,200	15,300	26,700	17,600=	165,800
H. A. Astlett	43,200	8,600	45,800	23,700=	121,300
Henderson & Korn	3,100	1,000	27,700	108,600=	140,400
Meyer & Brown	41,000	3,400	4,800	5,300=	54,500
De Lagotellerie & Co.	22,800	3,600	13,900	1,700=	42,000
Robinson & Co.	28,300	.....	4,000	.....=	32,300
G. Amsinck & Co.	9,300	300	5,900	2,800=	18,300
Ed. Maurer	5,400	900	500	.....=	6,800
Total	514,600	75,600	274,000	175,900=	1,040,100

DECEMBER 23.—By the steamer *Clement*, from Manáos and Pará:

Arnold & Zeiss	398,100	76,100	161,100	135,300=	770,600
New York Commercial Co.	118,600	39,800	49,000	51,100=	258,500
General Rubber Co.	116,200	33,500	21,700	700=	172,100
H. A. Astlett	63,100	7,600	56,800	5,500=	133,000
Robinson & Co.	45,000	9,300	42,100	20,800=	117,200
Meyer & Brown	29,900	10,300	10,300	.....=	50,500
Hagemeyer & Brunn	12,500	1,100	8,600	.....=	22,200
Henderson & Korn	6,700	2,100	12,100	.....=	20,900
De Lagotellerie & Co.	.....	.....	11,900	.....=	11,900
Ed. Maurer	5,000	300	2,600	.....=	8,900
Total	795,100	180,100	376,200	213,400=	1,564,800

JANUARY 4.—By the steamer *Pancras*, from Manáos and Pará:

Arnold & Zeiss	293,500	46,300	157,300	41,900=	539,000
Robinson & Co.	145,300	12,400	21,400	.....=	179,100
General Rubber Co.	90,100	16,500	57,400	7,100=	171,100
H. A. Astlett	70,100	18,300	51,400	17,100=	156,900
New York Commercial Co.	81,200	23,800	24,400	21,400=	150,800
Henderson & Korn	53,600	16,000	43,500	2,400=	115,500
Meyer & Brown	21,400	2,500	.....	.....=	23,900
Total	755,200	135,800	355,400	89,900=	1,336,300

JANUARY 16.—By the steamer *Benedict* from Manáos and Pará:

Arnold & Zeiss	518,800	71,200	174,300	22,700=	787,000
New York Commercial Co.	166,400	60,600	50,800	13,900=	291,700
General Rubber Co.	128,200	12,100	86,100	2,000=	228,400
Meyer & Brown	116,200	13,100	.....	.....=	129,300
Henderson & Korn	26,000	10,500	67,100	200=	103,800
H. A. Astlett	39,200	9,500	29,200	17,300=	95,200
Robinson & Co.	29,200	.....	900	.....=	30,100
G. Amsinck & Co.	6,800	300	7,800	2,900=	17,800
Ed. Maurer	300	2,200	3,900	.....=	6,400
Total	1,031,100	179,500	420,100	59,000=	1,689,700

PARA RUBBER VIA EUROPE.

POUNDS.

DECEMBER 23.—By the *President Lincoln*=Hamburg:

Ed. Maurer (Fine)	10,000	
N. Y. Commercial Co. (Fine)	9,000	19,000

DECEMBER 24.—By the *Amerika*=Hamburg:

Ed. Maurer (Fine)	50,000	
Rubber Trading Co. (Fine)	7,000	57,000

DECEMBER 27.—By the *Colon*=Mollendo:

W. R. Grace & Co. (Caucho)		8,000

DECEMBER 30.—By the *Campania*=Liverpool:

Raw Products Co. (Fine)	18,000	
Arnold & Zeiss (Caucho)	70,000	
Raw Products Co. (Coarse)	22,500	110,500

DECEMBER 31.—By the *Celtic*=Liverpool:

N. Y. Commercial Co. (Fine)		13,500

JANUARY 2.—By the *Kroonland*=Antwerp:

L. Blitz (Fine)		11,000

JANUARY 6.—By the *Patricia*=Hamburg:

Wallace L. Gough Co. (Fine)	15,000	
Rubber Trading Co. (Fine)	7,000	
Ed. Maurer (Fine)	7,000	29,000

JANUARY 8.—By the *Carmania*=Liverpool:

Raw Products Co. (Fine)	6,000	
Arnold & Zeiss (Caucho)	75,000	
Raw Products Co. (Coarse)	11,500	92,500

JANUARY 14.—By the *President Grant*=Hamburg:

In transit (Fine)		11,500

JANUARY 20.—By the *Augusta Victoria*=Hamburg:

Meyer & Brown (Fine)		11,000

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

POUNDS.

DECEMBER 23.—By the *President Lincoln*=Hamburg:

Ed. Maurer	15,000

DECEMBER 23.—By *El Sol*=Galveston:

Charles T. Wilson	*30,000

DECEMBER 23.—By the *Altai*=Colombia:

G. Amsinck & Co.	2,500	
Isaac Samuels	2,500	
Caballero & Blanco	2,000	7,000

DECEMBER 24.—By the *Amerika*=Hamburg:

Arnold & Zeiss	11,500

DECEMBER 26.—By the *Guantanamo*=Tampico:

New York Commercial Co.	*67,000	
Continental-Mexican Rubber Co.	*45,000	
Arnold & Zeiss	*35,000	*147,000

DECEMBER 26.—By the *Steiermark*=Hamburg:

General Rubber Co.	17,000

DECEMBER 27.—By the *Frutera*=Honduras:

A. Rosenthal & Sons	5,000	
West Coast Rubber Co.	1,500	
Suzarte & Whitney	1,000	7,500

DECEMBER 27.—By the *Minneapolis*=London:

Arnold & Zeiss	50,000

DECEMBER 27.—By the *Colon*=Colon:

G. Amsinck & Co.	11,000	
Dumarest Bros. & Co.	7,000	
L. Johnson & Co.	4,500	
American Trading Co.	4,000	
Isaac Brandon & Bros.	3,500	
United Export Co.	1,500	
Wessels, Kulenkampff & Co.	1,500	
Mecke & Co.	1,000	34,000

DECEMBER 28.—By the *Niagara*=Havre:

Henderson & Korn	33,500	
In transit	11,000	44,500

DECEMBER 28.—By the *Thespis*=Bahia:

Adolph Hirsch & Co.		13,500

DECEMBER 28.—By the *Morro Castle*=Frontera:

G. Amsinck & Co.	10,000	
Charles T. Wilson	2,500	
H. Marquardt & Co.	2,500	
General Export Commission Co.	1,500	
E. Steiger & Co.	1,000	17,500

DECEMBER 28.—By the *Turialba*=Costa Rica:

Isaac Brandon & Bros.	4,500	
G. Amsinck & Co.	3,500	
Andean Trading Co.	2,000	
R. Castillo & Co.	2,000	
A. Held	1,000	
Gillespie Bros. & Co.	1,000	14,000

DECEMBER 30.—By the *Campania*=Liverpool:

Arnold & Zeiss		9,000

JANUARY 2.—By the *Georgia*=Liverpool:

Adolph Hirsch & Co.		20,000

JANUARY 2.—By the *Montosa*=Tampico:

Continental-Mexican Rubber Co.	*80,000	
Arnold & Zeiss	*25,000	*105,000

JANUARY 2.—By the *Sigismund*=Colon:

G. Amsinck & Co.	7,000	
W. R. Grace & Co.	7,000	
Piza, Nephews & Co.	4,000	
Pablo Calvet & Co.	3,000	
A. Held	2,000	
Wessels, Kulenkampff & Co.	1,500	24,500

JANUARY 6.—By *El Alba*=Galveston:

Ed. Maurer	*30,000	
Charles T. Wilson	*11,500	*41,500

JANUARY 6.—By the *Patricia*=Hamburg:

Ed. Maurer		*17,000

JANUARY 6.—By the *Esperanza*=Frontera:

Harburger & Stack	4,500	
General Export Commission Co.	3,500	
American Trading Co.	2,500	
Meyer & Brown	1,500	12,000

JANUARY 6.—By the *Mandeville*=Belize:

Manhattan Rubber Mfg. Co.	7,000	
A. Rosenthal & Sons	4,500	
G. Amsinck & Co.	2,500	
Eggers & Heinlein	3,000	
In transit	3,500	20,500

JANUARY 7.—By the *Westerwald*=Colombia:

Kunhardt & Co.	7,000	
Mecke & Co.	3,000	
Johnson-Mottley Co.	3,000	
Caballero & Blanco	2,500	
Maitland, Coppell & Co.	2,500	
A. Held	1,500	19,500

JANUARY 8.—By the *Panama*=Colon:

G. Amsinck & Co.	9,000	
Isaac Brandon & Bros.	5,500	
Charles E. Griffin	4,500	
Elias & Abdoo	2,000	
Graham, Hinkley & Co.	1,500	
Colombia Smelting Co.	1,000	23,500

JANUARY 9.—By the *Seguranca*=Tampico:

Continental-Mexican Rubber Co.	*125,000	
Arnold & Zeiss	*22,000	
For Europe	*70,000	*217,000

JANUARY 10.—By the *Almirante*=Colombia:

G. Amsinck & Co.	3,000	
H. C. Coleman	3,000	
R. Castillo & Co.	2,000	
Mecke & Co.	1,000	9,000

JANUARY 11.—By the *Mexico*=Vera Cruz:

H. Marquardt & Co.	1,500	
W. L. Wadleigh	1,000	
Harburger & Stack	1,000	
G. Amsinck & Co.	1,000	4,500

JANUARY 13.—By the *Caronia*=Liverpool:

Adolph Hirsch & Co.		34,000

JANUARY 14.—By the *President Grant*=Hamburg:

Ed. Maurer	11,500	
Ed. Maurer	*11,000	22,500

JANUARY 15.—By the *Cedric*=Liverpool:

Henderson & Korn		15,000

JANUARY 15.—By the *Prinz Frederik*=Colon:

Andean Trading Co.	3,500	
Pottsberg Ebling Co.	3,000	
Gravenhorst & Co.	2,000	
Isaac Brandon & Bros.	1,500	10,000

JANUARY 18.—By the *Antilla*=Tampico:

Continental-Mexican Rubber Co.	*75,000	
For Europe	*25,000	*100,000

JANUARY 20.—By the *Augusta Victoria*=Hamburg:

Henderson & Korn	45,000	
Ed. Maurer	*45,000	90,000

JANUARY 20.—By the *Monterey*=Frontera:

Charles T. Wilson	5,000	
Maitland, Coppell & Co.	4,500	
Herman Kluge	3,000	
E. Steiger & Co.	2,500	
J. W. Wilson & Co.	2,000	
Harburger & Stack	2,000	
Willard Hawes & Co.	1,500	
H. Marquardt & Co.	1,500	
W. L. Wadleigh	1,000	
General Export Commission Co.	1,000	24,000

JANUARY 21.—By *El Mundo*=Galveston:

Charles T. Wilson	*34,000

JANUARY 21.—By the *Colon*=Colon:

G. Amsinck & Co.	20,000	
L. Johnson & Co.	5,500	
A. Rosenthal & Sons	3,500	
Piza, Nephews & Co.	3,500	
Wessels, Kulenkampff & Co.	4,000	
Pablo Calvet & Co.	4,500	
Eggers & Heinlein	3,500	
Mecke & Co.	2,500	
R. G. Barthold	2,500	
Heilbron, Wolff Co.	1,500	51,000

JANUARY 21.—By the *Altai*=Colombia:

A. Held	2,500	
Caballero & Blanco	2,500	
Roldau & Van Sickle	2,500	
R. Castillo & Co.	1,500	9,000

JANUARY 22.—By the *Prinz August Wilhelm*=Colon:

Pottsberg Ebling Co.	5,500	
Andean Trading Co.	4,500	
G. Amsinck & Co.	4,500	
Gillespie Bros. & Co.	1,000	
Isaac Brandon & Bros.	1,000	16,500

AFRICAN.

		Pounds.
DECEMBER 23.—By the *President Lincoln*=Hamburg:		
Wallace L. Gough Co.	34,000	
Ed. Maurer	35,000	
Robert Badenhop	7,000	
Meyer & Brown	5,500	81,500
DECEMBER 24.—By the *Lapland*=Antwerp:		
Robinson & Co.	29,000	
George A. Alden & Co.	11,000	
Arnold & Zeiss	9,000	
Meyer & Brown	2,000	51,000
DECEMBER 24.—By the *Amerika*=Hamburg:		
Ed. Maurer	65,000	
Wallace L. Gough Co.	20,000	
Arnold & Zeiss	15,000	
Meyer & Brown	11,000	
George A. Alden & Co.	9,000	
Robert Badenhop	7,000	
General Rubber Co.	5,500	
Rubber Trading Co.	2,500	135,000
DECEMBER 26.—By the *Minneapolis*=London:		
General Rubber Co.		34,000
DECEMBER 26.—By the *Steiermark*=Hamburg:		
Ed. Maurer	15,000	
Raw Products Co.	3,500	18,500
DECEMBER 30.—By the *Campania*=Liverpool:		
Arnold & Zeiss	45,000	
Henderson & Korn	22,500	
Ed. Maurer	22,500	
George A. Alden & Co.	13,500	
A. W. Brunn	4,500	108,000
DECEMBER 30.—By the *New York*=London:		
Meyer & Brown	11,000	
Charles T. Wilson	13,500	24,500
DECEMBER 30.—By the *Celtic*=Liverpool:		
George A. Alden & Co.	15,000	
James T. Johnstone	11,500	
Raw Products Co.	3,500	30,000
DECEMBER 31.—By the *Bordeaux*=Havre:		
Arnold & Zeiss	22,500	
Ed. Maurer	3,500	26,000
JANUARY 2.—By the *Kroonland*=Antwerp:		
Meyer & Brown	90,000	
Arnold & Zeiss	20,000	
George A. Alden & Co.	34,000	
Wallace L. Gough Co.	25,000	
Rubber Trading Co.	9,000	
Raw Products Co.	11,000	189,000
JANUARY 2.—By the *Touraine*=Havre:		
Meyer & Brown		27,000
JANUARY 3.—By the *Hudson*=Bordeaux:		
Arnold & Zeiss		34,000
JANUARY 6.—By the *Patricio*=Hamburg:		
George A. Alden & Co.	50,000	
Wallace L. Gough Co.	9,000	
Robert Badenhop	11,000	
Rubber Trading Co.	22,500	
J. T. Johnstone	5,500	98,000
JANUARY 8.—By the *Carmania*=Liverpool:		
George A. Alden & Co.		22,500
JANUARY 8.—By the *Filomachi*=Lisbon:		
General Rubber Co.	56,000	
Ed. Maurer	7,000	63,000
JANUARY 8.—By the *Rochambeau*=Havre:		
Ed. Maurer		22,500
JANUARY 8.—By the *Hamburg*=Hamburg:		
Ed. Maurer	56,000	
George A. Alden & Co.	22,500	
Arnold & Zeiss	22,500	
Rubber Trading Co.	22,500	
Meyer & Brown	7,000	
Robert Badenhop	2,500	133,000
JANUARY 8.—By the *La Savoie*=Havre:		
Meyer & Brown		100,000
JANUARY 10.—By the *Hilbrook*=Lisbon:		
Santos & Seguna	45,000	
General Rubber Co.	11,000	56,000
JANUARY 10.—By the *Zeeland*=Antwerp:		
J. H. Rossbach & Bros.	15,500	
Meyer & Brown	7,000	22,500
JANUARY 10.—By the *Madonna*=Lisbon:		
Wallace L. Gough Co.		11,500
JANUARY 10.—By the *St. Paul*=London:		
Arnold & Zeiss	15,000	
General Rubber Co.	11,500	
George A. Alden & Co.	7,000	
Meyer & Brown	5,000	38,500
JANUARY 13.—By the *Caronia*=Liverpool:		
General Rubber Co.	13,500	
Arnold & Zeiss	5,500	
George A. Alden & Co.	3,500	
A. W. Brunn	2,500	
Robert Badenhop	2,000	27,000
JANUARY 13.—By the *Germania*=Lisbon:		
Santos & Seguna		22,500
JANUARY 14.—By the *President Grant*=Hamburg:		
Ed. Maurer	45,000	
Wallace L. Gough Co.	13,500	
Meyer & Brown	35,000	
Robert Badenhop	5,500	
George A. Alden & Co.	2,500	101,500
JANUARY 15.—By the *Cedric*=Liverpool:		
James T. Johnstone	11,500	
Wallace L. Gough Co.	11,000	22,500
JANUARY 16.—By the *Minnetonka*=London:		
Charles T. Wilson		10,000
JANUARY 17.—By the *Craighead*=Lisbon:		
George A. Alden & Co.		15,500
JANUARY 20.—By the *Mexico*=Havre:		
George A. Alden & Co.	25,000	
Arnold & Zeiss	22,500	
Ed. Maurer	13,500	61,000
JANUARY 20.—By the *Baltic*=Liverpool:		
James T. Johnstone	22,500	
Robinson & Co.	7,000	
George A. Alden & Co.	2,500	32,000
JANUARY 20.—By the *Philadelphia*=London:		
Ed. Maurer	33,500	
George A. Alden & Co.	13,500	47,000
JANUARY 20.—By the *Augusta Victoria*=Hamburg:		
Ed. Maurer	80,000	
George A. Alden & Co.	25,000	
Wallace L. Gough Co.	10,000	
Robert Badenhop	11,000	
Raw Products Co.	3,500	
Meyer & Brown	4,500	134,000

EAST INDIAN.

[*Denotes Plantation Rubber.]

		Pounds.
DECEMBER 23.—By the *Pathan*=Singapore:		
L. Littlejohn & Co.	*70,000	
Ed. Maurer	*45,000	
Wallace L. Gough Co.	*20,000	
Otto Isenstein & Co.	*11,500	
New York Commercial Co.	*5,500	*152,000
DECEMBER 24.—By the *Amerika*=Hamburg:		
Rubber Trading Co.	*11,500	
Meyer & Brown	*5,500	
James T. Johnstone	*3,500	*20,500
DECEMBER 24.—By the *Lapland*=Antwerp:		
Meyer & Brown		*30,000
DECEMBER 26.—By the *Edinburgh*=Colombo:		
New York Commercial Co.	*125,000	
Meyer & Brown	*90,000	
Ed. Maurer	*20,000	
William H. Stiles	*11,500	
H. W. Peabody & Co.	*5,500	*252,000
DECEMBER 26.—By the *Minneapolis*=London:		
New York Commercial Co.	*165,000	
Arnold & Zeiss	*100,000	
Ed. Maurer	*60,000	
James T. Johnstone	*70,000	
Meyer & Brown	*35,000	
Malaysian Rubber Co.	*34,000	
Charles T. Wilson	*34,000	
Robinson & Co.	*22,500	
Robert Badenhop	*11,500	
Raw Products Co.	*7,000	
William H. Stiles	*7,000	
In transit	*100,000	*646,000
DECEMBER 27.—By the *Majestic*=London:		
Arnold & Zeiss	*22,500	
New York Commercial Co.	*20,000	
Robinson & Co.	*9,000	
Meyer & Brown	*7,000	
In transit	*34,000	*92,500
DECEMBER 30.—By the *Trifels*=Colombo:		
Meyer & Brown	*40,000	
New York Commercial Co.	*50,000	
Ed. Maurer	*7,000	
L. Littlejohn & Co.	*7,000	*104,000
DECEMBER 30.—By the *New York*=London:		
New York Commercial Co.	*45,000	
Meyer & Brown	*35,000	
Arnold & Zeiss	*34,000	
Robinson & Co.	*25,000	
Charles T. Wilson	*22,500	
In transit	*65,000	*226,500
DECEMBER 31.—By the *Minnehaha*=London:		
General Rubber Co.	*115,000	
James T. Johnstone	*34,000	
New York Commercial Co.	*15,000	
Ed. Maurer	*22,500	
Raw Products Co.	*5,500	
Rubber Trading Co.	5,000	
General Rubber Co.	22,500	219,500
JANUARY 2.—By the *Kroonland*=Antwerp:		
Meyer & Brown	*190,000	
Arnold & Zeiss	*15,000	
Rubber Trading Co.	*9,000	*214,000
JANUARY 3.—By the *Oceanic*=London:		
Arnold & Zeiss	*170,000	
New York Commercial Co.	*95,000	
Ed. Maurer	*56,000	
Meyer & Brown	*11,000	
Robinson & Co.	*11,500	
Robert Badenhop	*13,500	*357,000
JANUARY 4.—By the *Potsdam*=Rotterdam:		
Meyer & Brown	*22,500	
Robinson & Co.	*4,500	*27,000
JANUARY 6.—By the *Patricia*=Hamburg:		
Wallace L. Gough Co.		*11,500
JANUARY 9.—By the *Zeeland*=Antwerp:		
Meyer & Brown		*60,000
JANUARY 9.—By the *Minnewasko*=London:		
Ed. Maurer	*35,000	
James T. Johnstone	*33,000	
Meyer & Brown	*20,000	
L. Blitz	*10,000	
Rubber Trading Co.	*7,000	
Adolph Hirsch & Co.	*7,000	*112,000
JANUARY 10.—By the *St. Paul*=London:		
Arnold & Zeiss	*125,000	
New York Commercial Co.	*70,000	
Henderson & Korn	*20,000	
Ed. Maurer	*9,000	
L. Littlejohn & Co.	*9,000	*233,000
JANUARY 10.—By the *Kosenga*=Colombo:		
Meyer & Brown	*40,000	
New York Commercial Co.	*40,000	
L. Littlejohn & Co.	*15,000	*95,000
JANUARY 14.—By the *President Grant*=Hamburg:		
Ed. Maurer	*10,000	
James T. Johnstone	*5,000	*15,000
JANUARY 16.—By the *Minnetonka*=London:		
New York Commercial Co.	*95,000	
Ed. Maurer	*56,000	
Henderson & Korn	*34,000	
Arnold & Zeiss	*25,000	
Meyer & Brown	*25,000	
General Rubber Co.	*35,000	
Robert Badenhop	*9,000	
James T. Johnstone	*9,000	
Wallace L. Gough Co.	*9,000	
Raw Products Co.	*7,000	
L. Littlejohn & Co.	*5,500	
In transit	*100,000	*409,500
JANUARY 17.—By the *Argenfels*=Colombo:		
Meyer & Brown	*95,000	
New York Commercial Co.	*95,000	
Ed. Maurer	*15,000	
L. Littlejohn & Co.	*11,000	
William H. Stiles	*7,000	*223,000
JANUARY 20.—By the *Philadelphia*=London:		
New York Commercial Co.	*60,000	
Arnold & Zeiss	*50,000	
Ed. Maurer	*35,000	
Robinson & Co.	*15,000	
Charles T. Wilson	*7,000	
Meyer & Brown	*7,000	
In transit	*40,000	*214,000
JANUARY 20.—By the *Auguste Victoria*=Hamburg:		
Ed. Maurer	*25,000	
Rubber Trading Co.	*11,000	*36,000
JANUARY 20.—By the *Jeseric*=Singapore:		
Ed. Maurer	*80,000	
Malaysian Rubber Co.	*50,000	
New York Commercial Co.	*11,000	
L. Littlejohn & Co.	*11,500	
Wallace L. Gough Co.	*9,000	*161,500
JANUARY 21.—By the *St. Patrick*=Singapore:		
Ed. Maurer	*50,000	
James T. Johnstone	*22,500	
L. Littlejohn & Co.	*22,500	
Ed. Maurer	10,000	105,000
JANUARY 22.—By the *Burmese*=Singapore:		
Ed. Maurer	*55,000	
L. Littlejohn & Co.	*15,000	
New York Commercial Co.	*15,000	*85,000
JANUARY 23.—By the *Baroda*=Singapore:		
Ed. Maurer	*67,000	
James T. Johnstone	*33,000	
General Rubber Co.	*22,500	
Malaysian Rubber Co.	*22,000	
Wallace L. Gough Co.	*11,500	
L. Littlejohn & Co.	*11,000	
New York Commercial Co.	*7,000	
Arnold & Zeiss	15,000	189,000

GUTTA-JELUTONG.

		Pounds.
DECEMBER 23.—By the *Pathan*=Singapore:		
L. Littlejohn & Co.	255,000	
Wallace L. Gough Co.	70,000	325,000
JANUARY 22.—By the *Burmese*=Singapore:		
Haebler & Co.	225,000	
L. Littlejohn & Co.	200,000	
Wallace L. Gough Co.	200,000	625,000
JANUARY 23.—By the *Baroda*=Singapore:		
L. Littlejohn & Co.	325,000	
Haebler & Co.	70,000	
Wallace L. Gough Co.	30,000	425,000

GUTTA-PERCHA.

		Pounds.
DECEMBER 23.—By the *President Lincoln*=Hamburg:		
Robert Soltau & Co.		11,000
DECEMBER 23.—By the *Pathan*=Singapore:		
Wallace L. Gough Co.	45,000	
Haebler & Co.	22,000	
L. Littlejohn & Co.	45,000	112,000
JANUARY 22.—By the *Burmese*=Singapore:		
L. Littlejohn & Co.	22,500	
Otto Isenstein & Co.	22,500	
Wallace L. Gough Co.	22,000	67,000

BALATA.

		Pounds.
DECEMBER 24.—By the *Suriname*=Demerara:		
Yglesias, Lobo & Co.	25,000	
American Trading Co.	22,000	
George A. Alden & Co.	9,000	56,000
JANUARY 6.—By the *Mayaro*=Demerara:		
Ed. Maurer	30,000	
Middletown & Co.	11,000	
Frame & Co.	2,500	
A. Held	2,500	
Wessels, Kulenkampff & Co.	1,500	47,500
JANUARY 9.—By the *Coppename*=Demerara:		
G. Amsinck & Co.	27,000	
George A. Alden & Co.	9,000	
Wessels, Kulenkampff & Co.	4,500	
Middletown & Co.	5,000	
Gillespie Bros. & Co.	1,500	47,000
JANUARY 15.—By the *Maracas*=Trinidad:		
Yglesias, Lobo & Co.	5,000	
M. A. DeLeon	2,500	
Ed. Maurer	2,000	
J. P. Watson	2,000	11,500

BOSTON ARRIVALS.

	Pounds.
DECEMBER 2.—By the *Cambrian*=London:	
In transit (East Indian)	19,000
DECEMBER 9.—By the *Winifredian*=Liverpool:	
Arnold & Zeiss (Africans)	3,500
DECEMBER 16.—By the *Arabic*=Liverpool:	
Arnold & Zeiss (Africans)	5,500
DECEMBER 20.—By the *Indrani*=Singapore:	
L. Littlejohn & Co. (Jelutong)	1,350,000
DECEMBER 26.—By the *Pathan*=Singapore:	
Littlejohn & Co. (Jelutong)	1,040,000
Geo. A. Alden & Co. (Jelutong)	7,000
Arnold & Zeiss (Gutta-Percha)	2,600 1,049,600
DECEMBER 28.—By the *Canadian*=Liverpool:	
Arnold & Zeiss (Africans)	3,500

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—DECEMBER, 1912.

Imports:	Pounds.	Value.
India-rubber	10,759,429	$8,902,947
Balata	205,672	106,869
Guayule	613,956	279,589
Gutta-percha	20,628	10,785
Gutta-jelutong (Pontianak)	286,519	21,244
Total	11,884,204	$9,321,434
Exports:		
India-rubber	81,604	$66,465
Balata	11,423	6,511
Guayule	4,497	3,598
Gutta-percha	.....	.....
Reclaimed rubber	71,438	11,658
Gutta-jelutong (Pontianak)	.....	.....
Rubber scrap, imported	2,116,819	157,022
Rubber scrap, exported	532,401	58,886

EXPORTS OF INDIA-RUBBER FROM PARA IN 1912 AND FOR FIFTEEN YEARS.

[The figures indicate weights in kilograms.]

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	TOTAL.
Zarges, Berringer & Co.—Pará } Zarges, Ohliger & Co.—Manáos }	3,680,490	831,961	2,947,667	1,241,894	8,702,012	5,018,888	495,322	634,032	1,672,198	7,820,440	16,522,452
Ad. H. Alden, Ltd.—Pará—Manáos	1,963,033	551,801	1,059,896	808,964	4,383,694	1,619,573	279,130	629,064	455,183	2,982,950	7,366,644
General Rubber Co. of Brazil—Pará-Manáos	2,139,938	403,631	1,083,498	451,180	4,078,247	1,118,727	209,731	189,901	708,302	2,226,661	6,304,908
R. O. Ahlers & Co.—Pará } Ahlers & Co.—Manáos }	839,680	135,867	385,149	332,651	1,693,347	1,431,795	119,551	365,437	432,267	2,349,050	4,042,397
Suarez Hermanos & Co., Ltd.—Pará	400	.....	.....	93	493	1,015,502	26,506	106,507	396,753	1,545,268	1,545,761
De Lagotellerie & Co.—Pará-Manáos	194,300	32,600	255,660	3,230	485,790	539,982	90,150	166,471	103,833	900,436	1,386,226
J. Marques—Pará	341,500	48,431	296,015	46,297	732,243	401,061	48,861	106,456	38,366	594,744	1,326,987
J. Marques Syndicate Pará	.....	9,920	269,018	302,336	581,274	.....	.....	.....	2,800	2,800	584,074
Pires Teixeira & Co.—Pará	110,326	11,252	95,070	16,616	233,264	88,710	3,570	25,080	.....	117,360	350,624
M. Ulmann & Co.—Pará	.....	.....	.....	.....	.....	17,009	1,064	18,527	171,920	208,520	208,520
J. G. Araujo—Manáos	.....	.....	7,200	7,200	14,400	5,050	4,096	75,179	321	84,646	99,046
Nunes Sobrinho & Co.—Pará	12,580	3,060	22,440	4,240	42,320	38,360	3,104	6,576	734	48,774	91,094
S. A. Armazens Andresen—Manáos	.....	.....	.....	.....	.....	18,535	4,838	9,984	2,245	35,602	35,602
Sundries	132,406	5,652	66,771	59,907	264,736	91,648	11,826	81,607	43,310	228,391	493,127
	9,414,653	2,034,175	6,488,384	3,274,608	21,211,820	11,404,840	1,297,749	2,414,821	4,028,232	19,145,642	40,357,462
Itacoatiara, direct	1,800	.....	840	750	3,390	95,703	14,075	59,632	17,477	186,887	190,277
Iquitos, direct	61,435	1,103	14,407	62,333	139,278	1,069,699	102,748	348,241	1,154,688	2,675,376	2,814,654
Total, 1912	9,477,888	2,035,278	6,503,631	3,337,691	1,354,488	12,570,242	1,414,572	2,822,694	5,200,397	22,007,905	43,362,393
Total, 1911	7,686,680	1,571,375	5,173,230	1,669,596	16,100,881	11,230,371	1,503,869	2,504,439	4,519,039	19,757,718	35,858,599
Total, 1910	7,500,410	1,412,311	4,489,108	1,658,661	15,060,490	11,673,302	1,506,752	3,382,432	6,416,842	22,979,328	38,039,818
Total, 1909	9,439,722	1,767,310	5,784,170	2,655,778	19,646,980	9,832,613	1,372,221	2,950,626	5,649,763	19,805,223	39,452,203
Total, 1908	8,280,768	1,739,505	5,616,549	1,902,620	17,539,442	10,721,266	1,419,025	2,854,624	5,528,994	20,523,909	38,063,351
Total, 1907	8,012,592	1,863,775	5,149,312	1,580,657	16,606,336	10,783,787	1,358,264	3,190,982	5,574,783	20,907,816	37,514,152
Total, 1906	7,406,171	1,785,315	5,496,419	1,531,399	16,192,304	9,289,310	1,253,574	3,223,944	4,799,623	18,575,451	34,767,755
Total, 1905	7,173,463	1,518,444	4,921,222	1,647,216	15,260,345	10,052,634	1,291,703	2,498,516	4,363,690	18,656,543	33,916,888
Total, 1904	8,062,104	1,630,355	5,394,429	1,222,580	16,309,468	7,615,817	993,955	2,503,520	3,221,376	14,334,668	30,644,136
Total, 1903	7,248,065	1,621,827	5,029,646	1,133,857	15,033,395	9,156,872	1,167,956	2,659,748	3,076,971	16,061,547	31,094,942
Total, 1902	6,588,524	1,614,776	4,523,413	1,133,155	13,859,868	8,522,521	1,514,521	2,595,177	2,057,222	14,689,912	28,549,780
Total, 1901	8,027,727	1,926,505	4,271,456	1,325,290	15,550,978	7,939,010	1,556,358	2,605,553	2,638,599	14,739,520	30,290,498
Total, 1900	6,557,277	1,199,611	3,783,279	894,500	12,434,667	7,798,537	1,401,390	3,256,969	1,857,100	14,313,996	26,748,663
Total, 1899	7,583,405	1,319,349	4,023,710	951,854	13,878,318	6,410,647	1,030,459	2,527,013	1,583,572	11,551,691	25,430,009
Total, 1898	5,399,654	868,982	2,759,714	801,915	9,830,265	6,794,541	1,125,688	2,995,801	1,162,712	12,078,742	21,909,007

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR DECEMBER, 1912 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	GRAND TOTAL.
Zarges, Ohliger & Ca.	442,929	59,647	91,190	65,208	658,974	126,330	21,280	28,833	69,185	245,628	904,602
Adelbert H. Alden, Ltd.	151,961	56,407	35,739	38,429	282,536	.....	.....	.....	32,395	32,395	314,931
General Rubber Co. of Brazil	142,297	31,978	51,044	690	226,009	57,172	8,630	6,973	60,296	133,071	359,080
Ahlers & Ca.	130,619	18,654	32,268	11,040	192,581	133,361	15,633	46,637	30,175	225,806	418,387
De Lagotellerie & Co.	.....	.....	.....	.....	.....	93,702	8,434	22,130	12,976	137,242	137,242
J. G. Araujo	.....	.....	.....	.....	.....	2,308	190	1,363	59	3,920	3,920
Semper & Co.	.....	.....	.....	.....	.....	876	.....	2,027	130	3,033	3,033
W. Peters & Co.	.....	.....	.....	.....	.....	3,552	1,130	4,886	2,041	11,609	11,609
Sundries	.....	.....	.....	.....	.....	960	.....	1,615	1,950	4,525	4,525
	867,806	166,686	210,241	115,367	1,360,100	418,261	55,297	114,464	209,207	797,229	2,157,329
Iquitos, direct	.....	.....	.....	.....	.....	155,691	5,233	60,510	100,368	321,802	321,802
Total, December, 1912	867,806	166,686	210,241	115,367	1,360,100	573,952	60,530	174,974	309,575	1,119,031	2,479,131
Total, November, 1912	1,229,203	235,852	578,500	175,958	2,219,513	1,315,795	94,271	335,463	459,173	2,204,702	4,424,215
Total, October, 1912	535,227	101,599	124,020	48,935	809,781	439,820	55,605	67,942	48,158	612,166	1,421,947
Total, September, 1912	479,558	101,508	98,538	82,074	761,678	650,509	89,416	99,081	174,999	1,014,005	1,775,683
Total, August, 1912	194,739	34,654	44,691	38,668	312,752	388,198	32,359	60,654	90,698	572,409	885,161
Total, July, 1912	177,787	47,976	46,874	36,951	309,588	131,295	13,120	59,558	216,591	420,564	730,152
Total, January-June, 1912	2,523,525	633,319	1,019,142	860,626	5,036,612	2,791,987	465,094	665,339	2,108,191	6,030,611	11,067,223

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Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound—are practically unchanged.

	Jan. 30, '13.
Old rubber boots and shoes—domestic	9⅞@10
Old rubber boots and shoes—foreign	9⅜@9½
Pneumatic bicycle tires	4¾@5
Automobile tires	9¾@9⅞
Solid rubber wagon and carriage tires	9¼@9½
White trimmed rubber	11 @11½
Heavy black rubber	4¾@5
Air brake hose	6 @6½
Garden hose	1⅛@1½
Fire and large hose	2 @2⅛
Matting	⅝@¾

Antwerp.

RUBBER STATISTICS FOR DECEMBER.

DETAILS.	1912.	1911.	1910.	1909.	1908.
Stocks, Nov. 1...*kilos*	707,545	634,262	568,148	735,616	604,170
Arrivals in December..					
Congo sorts	168,281	321,169	234,673	215,983	454,701
Other sorts	13,294	56,424	30,414	57,985	52,005
Plantation sorts	144,064	73,721	35,616	42,029	13,476
Aggregating	1,033,184	1,085,576	868,851	1,051,613	1,124,352
Sales in December	522,124	410,838	280,639	510,101	528,617
Stocks, December 31..	511,060	674,738	588,212	541,512	595,735
Arrivals since Jan. 1..					
Congo sorts	3,229,978	3,175,581	3,105,357	3,492,332	4,262,531
Other sorts	144,585	489,771	399,641	865,349	652,398
Plantation sorts	1,402,841	670,461	553,678	328,277	120,415
Aggregating	4,777,404	4,335,813	4,058,676	4,685,958	5,035,344
Sales since January 1..	4,930,882	4,249,387	4,011,974	4,740,181	5,446,503

RUBBER ARRIVALS FROM THE CONGO.

December 17, 1912.—By the steamer *Anversville*:

Bunge & Co	(Société Générale Africaine) *kilos*	45,700	
do	(Comptoir Commercial Congolais)	7,700	
do	(Chemins de fer Grand Lacs)	2,200	
do	(Forminière)	2,800	
Société Coloniale Anversoise	(Haut Congo)	7,870	
do	(Cie. Franc. du Haut Congo)	10,040	
L. & W. Van de Velde	(Cie. du Kasai)	80,000	
do	(Comfina)	7,500	
do		2,700	
Charles Dethier	(American Congo Co.)	2,300	
Willaert Freres		5,000	
Divers		17,300	191,110

January 7, 1913.—By the steamer *Leopoldville:*

		Kilos.	
Bunge & Co	(Société Générale Africaine)	22,600	
do	(Chemins de fer Grands Lacs)	6,000	
do	(Cie. du Kasai)	82,500	
do	(Comptoir Commercial Congolais)	8,300	
do	(Alberta)	1,900	
do	(Comfina)	19,300	
do	(Forminière)	3,200	
do	(Intertropical)	20,700	
Société Coloniale Anversoise	(Lomami)	3,900	
do	(Cie. franc du Haut Congo)	240	
do	(Comminière)	3,900	
L. & W. Van de Velde	(Uelé)	8,550	
do	(Velde)	470	
Willaert Frères		13,000	194,560

Plantation Rubber From the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

[From January 1 to December 23, 1912 and 1911. Compiled by the Ceylon Chamber of Commerce.]

	1911.	1912.
To Great Britain.....*pounds*	3,374,226	7,377,602
To United States	1,807,085	4,267,949
To Belgium	729,174	1,178,666
To Australia	47,547	232,386
To Germany	48,254	195,138
To Austria	6,648	73,660
To Japan	56,000	68,415
To Canada	18,871	22,078
To France	117	11,568
To Italy	8,460	6,378
To Russia	.....	2,288
To Holland	12,893	2,282
To India	196	700
To Norway and Sweden	.....	39
To Straits Settlements	3,216	.....
To Africa	35	.....
Total	6,112,722	13,439,149

[Same period 1910, 3,074,783 pounds; same 1909, 1,332,055.]

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To	Singapore, Dec. 6.	Penang, Oct. 31.	Port Swetenham, Nov. 15.	Total.
Great Britain *pounds*	10,054,739	7,341,875	14,784,869	32,181,483
Continent	328,328	16,129	2,002,600	2,347,057
Japan	483,173	.....	.....	483,173
Australia	83,267	.....	.....	83,267
Ceylon	2,217	216,827	759,815	978,859
United States	2,737,939	933	2,081	2,740,953
Total, 1912	13,689,663	7,575,764	17,549,365	38,814,792
Total, 1910	3,512,787	1,967,100	7,224,781	12,704,668
Total, 1909	2,348,271	1,872,601	2,138,262	6,359,134
Total, 1911	6,009,206	4,057,932	10,221,779	20,288,917

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DR. HUBER ON THE RUBBER OUTLOOK IN BRAZIL.

IN the January issue of this publication there appeared a digest of the paper read by Dr. Jacques Huber, director of the government museum at Pará, on "The Present and Future of the Native Hevea Rubber Industry." In the same number there was an editorial referring to the importance and value of this contribution to the literature of an exceedingly interesting subject.

In this issue this paper will be found in full, and will undoubtedly be read attentively by everyone interested in the rubber industry. At the present rate of increase in the production of wild rubber in the Amazon basin, and in the output of the Eastern plantations, it is highly probable that the present year will see the plantation product overtake the volume of rubber shipped from Pará.

While there has been a material increase in the exports of rubber from Pará in the last fifteen years—an increase amounting very nearly to 100 per cent.—the increase during the last five years has been slight, while the increase in the plantation output has been constant and large. To go a little more into detail, the total shipments of rubber from Pará fifteen years ago were a little less than 22,000 tons. The volume rose steadily for four years until in 1901 it was 30,000 tons. It remained practically at this figure for four years, when in 1905 it began slowly to increase and grow steadily larger each year until it reached 39,000 tons in 1909. It then fell back in 1911 to less than 36,000 tons, or less than the output four years earlier. In 1912 it reached its highest point—43,000 tons.

But in the meantime Eastern plantation rubber has increased by leaps and bounds. In 1906 the Eastern plantation output amounted to 510 tons; the next year it nearly doubled, being 1,010 tons. In the following year it nearly doubled again, reaching the figure of 1,800 tons. The next year, 1909, it increased considerably over 100 per cent., amounting to 3,850 tons. In 1910 it showed another increase of over 100 per cent., reaching the substantial figure of 8,230 tons. In 1911 it was over 14,000 tons; and for 1912 the plantation output will doubtless prove to be over 28,000 tons. Careful estimates for the next few years, made by competent observers, place the product of the Eastern plantations at 40,000 tons for the present year, 55,000 tons for next year, and 70,000 tons for 1915.

The slow and by no means uniform increase in the Pará output during the last five years would seem to substantiate the contention made in many quarters that the production of South American wild rubber had about reached its maximum, while no one would care to hazard a conjecture as to when the output of plantation rubber will reach its limit. If the Amazon basin, therefore, is to compete in volume with the plantations of the East, it must do so from plantations of its own. Obviously it has the soil and the climate, as it is the native home of the *Hevea*. What it needs is capital, management and labor, chiefly the last. But if the Eastern planters have succeeded by carrying the trees to the place where there was labor in abundance, the South American planters will have to succeed by carrying labor to the place where nature has placed the trees.

THE LATEST REPORT FROM PUTUMAYO.

IN July and August of last year the whole English-speaking world was shocked by the astounding disclosures of the cruelties practised in the Putumayo district in the gathering of rubber in the concessions owned by the Peruvian-Amazon Co. For several weeks the press of England and America was full of the story of these atrocities. A summary of the situ-

ation was given in the editorial pages of our August issue, and may be remembered by some of our readers.

The first intimation of the situation in the Putumayo district (the Putumayo being one of the tributaries of the Upper Amazon, flowing through a section which at different times has been claimed by Colombia, Ecuador, Brazil and Peru, but of late years generally conceded as being under Peruvian sovereignty) came from two American engineers, who, after spending many months in that territory, went to London in 1909 with a story of what they had seen, that was so appalling that no publisher would accept it, and no daily paper print it—except in part. But what was printed aroused so much indignation in England that the British Consul at Rio de Janeiro, Sir Roger Casement, was despatched to the Putumayo territory to make an official investigation. The result of his investigation, extending over many months, was the substantial corroboration of all the allegations made by the two Americans, and it was the publication of Sir Roger Casement's report last Spring that inflamed the public—not only of England, but of America.

As a consequence of the popular indignation felt in this country that such conditions could exist in a government concerning which—under the theory of the Monroe Doctrine—we must necessarily feel some moral responsibility, our government felt called upon to take some action, and appointed Stuart J. Fuller consul at Iquitos, for the express purpose of having him visit the rubber country along the Putumayo and report his findings to the State Department.

Consul Fuller left Iquitos on the 7th of August, for his trip into the rubber jungle. He remained there a little over two months, and then sailed for home to submit his report. He reached New York on the 21st of December and immediately laid the results of his investigations before the State Department. On February 7, President Taft submitted the essential facts of this report, accompanied by a message of his own, to Congress; and on the same date the Peruvian Minister at Washington, Señor Pezet, handed to the State Department a communication from his government, giving many assurances that immediate reforms would be instituted, and that the atrocities that had given the name Putumayo the same evil prominence that was attached to the word Congo a few years ago, should immediately cease.

It cannot be said that Consul Fuller's report is altogether satisfactory, for he states that his work was carried on under extreme difficulties, as his movements were continually watched, and the result of his investigations, as far as possible, negatived by the agents of the Peruvian-Amazon Company, who constantly dogged his steps, making it difficult for him to get access to witnesses, and rendering it dangerous for the witnesses, even when secured, to give him the truth of the deplorable situation. But notwithstanding the fact that his movements were closely watched and constantly hampered, he learned enough to be able to corroborate practically all the statements made by Sir Roger Casement. Though conditions had apparently been somewhat ameliorated from what they were when at their worst, he found that the unoffending natives were still being flogged and otherwise maltreated and tortured in order to exact from them the maximum amount of effort. He found a system of peonage—under which the natives became the absolute slaves of the agents, being bought and sold as chattels—extremely prevalent.

The Peruvian minister in his communication declares the deep determination of his government to stop these barbarities, and cites as one reason "not alone because these events have occurred in our territory, but on account of the harm which they have done to Peru by giving us an undeserved notoriety for deep-rooted cruelty which is not a trait of our national character." Everyone will agree that it is most unfortunate that Peru should have gained "a notoriety for deep-rooted cruelty"; and it is quite likely that this is not a trait of their national character, but the fact remains that these frightful atrocities have been going on in Peru for over 15 years, and that no effort worthy of the name was ever made to stop these horrors, and to bring their perpetrators to justice, until, through American and English channels the dark secrets of the Putumayo had been told to the whole world, and could no longer be hidden.

The cries of the tortured natives fell on deaf ears at Lima. It was not until the voice of Christendom was raised in indignation and angry denunciation, that the home government began to show a genuine interest in the appalling crimes perpetrated within its borders.

A new administration has recently come into power in Peru, and its declaration of a determined purpose to wipe out the horrors of the Putumayo forests should be taken at their face value; but at the same time, in view of earlier protestations of a like sort that were never fulfilled, it behooves England and America—and especially America—not to relax their vigilant interest. Moreover, if any new investigators are sent into that

country, they should go unheralded and do their work without the constant escort and assistance of the criminals whose deeds are under inquiry. They should do their work unattended, unobserved and unhampered. Then the true conditions will be disclosed.

A MEMORIAL TO CHARLES GOODYEAR.

THOSE who were fortunate enough to be present at the banquet given at the Plaza, New York, last October, which concluded the International Rubber Exposition, as well as the members of the Rubber Club of America who attended the annual dinner held in January, will recall the eloquent addresses made on both of these occasions by Professor Franklin W. Hooper, of the Brooklyn Institute of Arts and Sciences, on the character and achievements of Charles Goodyear. In both of these admirable tributes the speaker urged the propriety of some adequate and suitable memorial to the man, whose life of heroic self-sacrifice had laid the foundations for the great rubber industry of today.

In his address before the Rubber Club, quoted in the February number of THE INDIA RUBBER WORLD, he said:

"In the City of Washington, as one of the group of buildings destined to become our great National Museum, most comprehensive in scope, most useful in purpose, most commanding in plan, will stand a museum in memory of Charles Goodyear; a museum in which may be placed, not only the history of the discovery and of the manifold inventions of Charles Goodyear, but in which may be exhibited all of the inventions, examples of manufactured products, illustrations of the many and great uses to which vulcanite has been put in these latter days. And in the grand vestibule of this Museum shall stand a statue of Charles Goodyear, the greatest American discoverer and inventor."

It is earnestly to be hoped that this vision may come true. Undoubtedly it will—in time. It can hardly be questioned that some day the Government will establish in connection with the Smithsonian Institution or otherwise, a great permanent national museum that shall adequately represent our national development in all the mechanical arts, and that the rubber industry will be allotted space in that great exposition commensurate with its importance. And such an exhibit of the rubber industry without a proper memorial to Charles Goodyear would be inconceivable. But in the meanwhile, and quite aside from what the Government in its own time may undertake, why should not the rubber men, through the club to which so large and representative a number of them belong, or through some other suitable agency, inaugurate a movement for some fitting and permanent memorial to the illustrious founder of this great industry.

The only public memorials to Goodyear in this country are two life-size bronze busts—one in the railroad station at Naugatuck, the scene of many of Goodyear's early struggles and of his first triumphs, and the other in the executive offices of the United States Rubber Co., the president of that company, Colonel Samuel P. Colt, being the donor of both of these memorials.

THOSE EUROPEAN MUD-GUARDS.

THERE appeared in the November issue of THE INDIA RUBBER WORLD an illustrated description of a mud-guard—or splash-guard—in use on some of the heavy automobile busses in the streets of Paris. In an account of the automobile show recently held in that city, from our special Paris correspondent, which appears on another page in this issue, quite a good deal of space is devoted to the rubber mud-guard. Our correspondent states that in some of the side streets of Paris it is not an infrequent occurrence for a pedestrian to be spattered with mud by one of the heavy motor-vehicles passing through the street, though he may be eighteen or twenty feet distant, and that the stores along these streets are frequently disfigured by the splashing of the mud. He believes that the mud-guard is so necessary that its use will soon be compulsory, and he predicts that the development of this new line of rubber manufacture will become quite important. Accounts appear quite frequently in European journals of competitive trials to test the merits of various mud-guards; the points chiefly taken into consideration being their efficiency, economy of construction and maintenance, and convenience in use and lightness.

All this indicates a condition in European cities with which we in this country, fortunately, are unfamiliar. We have heard a good deal about the superior roads in England and on the Continent, but the streets of their cities evidently still leave much to be desired. A mud-guard would be quite a curiosity to an American auto owner, and if the streets in our cities were so deep in mud that store-fronts and inoffensive pedestrians twenty feet away were be-spattered by passing vehicles, it would occur to us—not to put guards over the wheels—but to practise the recall on the street commissioner and get a new one.

In most lines of rubber manufacture we believe that we are fully abreast—if not a little ahead—of our friends

across the water, but in the development of mud-guards Europe is quite likely to retain the pre-eminence.

THE RIO EXPOSITION POSTPONED UNTIL SEPTEMBER.

THE January number of The India Rubber World contained a fairly extended editorial comment on the International Exposition to be held in Rio de Janeiro next May. The attention of the manufacturer was called to this opportunity—rendered particularly attractive by exemption from duties—to show the South Americans the product of his skill and enterprise. But great expositions to be successful, require much time for preparation, and the Rio management has concluded most wisely to postpone the opening from May until the early part of September. This is most fortunate for Americans who wish to be properly represented there, as it gives them ample time to prepare a creditable exhibit.

As already pointed out in these columns, the imports from Brazil into the United States amount to $124,000,000 a year in value, being one-third of all the Brazilian exports, while the Brazilian imports from the United States amount to only $25,000,000 a year, or one-eighth of the foreign goods bought by Brazilians. There certainly seems to be no good reason why when we buy over a third of their exports, they should buy seven-eighths of their imports from other markets. There certainly is a market for rubber goods in South America. The demand for tires in the large urban centers is already considerable, and undoubtedly a market for other lines of rubber goods could be secured if sufficient effort were put forth. Some English companies and at least one American manufacturing concern are seriously contemplating the erection of rubber factories in or near Rio de Janeiro. Such a move would be a distinct departure, and the result would be awaited with interest. But to make an attractive display at the Rio exposition would involve comparatively little expense and no risk, and is certainly worth the American manufacturers' most earnest consideration.

RUBBER TIPS TO SAVE THE EYES.

SOME of our progressive state legislatures have passed sundry enactments against the long, sharp and perilous hatpin, with which the feminine members of our body politic are accustomed to attach their headgear to the abundant locks with which they have been endowed by nature—or otherwise.

Any man who has occasion to use the subway, the elevated, or even the plain trolley during the going-to-work or going-home hours, appreciates the awful menace of this keen steel point projecting at random into space, and sweeping through the air with every movement of the owner's head. There was a time when in a crowded car, a man gave consideration to his watch and his pocketbook, but now if he is wise he watches only his eye.

In Sweden they have handled this world-wide evil with much acumen. They sometime since passed a law in that advanced country, making it a misdemeanor to wear hatpins with exposed points; and early last month a new law, corollary to the first, went into effect, providing that street car conductors throughout Sweden should be supplied by the Government with rubber tips which they should furnish, at one cent each, to women passengers with unprotected hatpin points.

Now here is a vital issue for the new administration. If Mr. Wilson in his impending inaugural, will forego all references to sacred honor, plighted faith and high resolve, and simply announce that the first work of the new Congress will be to pass a law compelling the use of rubber tips on all hatpins, he will achieve what the historical writers love to refer to as a *coup d'etat,* and will instantly take his place in masculine regard by the side of Washington—if not a little in front.

But let us view this matter not with reference to its political effect, but rather as to its bearing on the great world of rubber manufacture. What a fine new industry it would open up. Just consider the statistics for a moment: There are 45,000,000 female persons in the United States, 40,000,000 of them being of the hatpin age, viz., between 8 and 80. It is safe to say that each bonnet contains five hatpins. (There are men who aver the number is fifty, but this is undoubtedly an exaggeration.) Each bonnet wearer would doubtless consume—counting the lost, loaned and those given to the baby to play with—three full sets, or fifteen rubber tips a year. That would make an annual consumption of 600,000,000 rubber tips. Assuming that these rubber tips retail here as in Sweden, at one cent each, making annual gross sales of $6,000,000, and that the manufacturer modestly contents himself with 50 per cent. of the gross—that would amount to $3,000,000, quite a snug, little business. Now who will see that the Swedish law is adopted in the United States, and who will be the first to equip his factory for the output of 600,000,000 point-covering, eye-saving rubber tips?

COMPARATIVE IMPORTS AND PRICES OF RUBBER.

STATISTICS to end of November (the latest published at time of writing) give the following details of rubber imports for first eleven months of the last three years:

Year.	Pounds.	Value.	Average Per Pound.
1910.....	83,888,801	$91,038,750	$1.08
1911.....	74,013,921	67,179,799	0.91
1912.....	107,078,574	90,436,489	0.85

As these returns are based on the imports of various descriptions of rubber, their value is only of general character. However, they establish the broad fact, that an increase of nearly 50 per cent. in the quantity imported in 1912 as compared with 1911, only led to an average fall in price of less than 7 per cent.

The Present and Future of the Native "Hevea" Rubber Industry.

By Jacques Huber, Ph. D., Director of the Museu Goeldi, Pará.

PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912.

THE opinion is common among persons interested in plantation companies, that native Brazilian rubber will be entirely knocked out by the product of the eastern plantations within the next ten years, when the output of these will be over 100,000 tons.

Regarding those opinions, it is evident that "the wish is father of the thought." Most of these prophets hope that the disappearing of the Brazilian crop from the market will relieve the plantations from the danger of over-production. Others perhaps are instinctive enemies of Brazilian rubber because of the manner in which Brazil has protected its coffee output.

If we consider the problem from a higher and more objective point of view than that of the plantation shareholder, if for instance, we consider the views of the manufacturing industry, we find that there is no necessity for the disappearance or reduction of the Brazilian crop; on the contrary, there will be an increased need for the Amazonian grade, and especially for the Hard-Cure Pará rubber.

Dr. Jacques Huber.

Of course, the wonderful development of the whole rubber industry would have been seriously checked had it not been for that very necessary asset. The plantations and their rapidly increasing production will enable the manufacturing industry to develop without fear of shortage. The opportunities for the manufacturing industry are increased by the low cost of the plantation rubber, which can be sold at much lower prices than those prevailing for Pará. There is, further, no doubt that in their downward movement, the prices of plantation rubber are bound to affect, to a greater or less extent, even the quotations for the highest grade of rubber—the upper Amazonian Hard-Cure, the prices of which (without the prodigious development of the plantations and the improvement of their product) would, of course, have steadily and considerably increased.

The Brazilian producing centres appreciate the changed position of the rubber market, and instead of trying in vain to force the prices to a higher level, they are now preparing themselves to improve the position of the article by lowering the cost of production. This, of course, involves some sacrifice, but as the life of a whole country depends on it, the sacrifice will be made without muttering.

It is now generally conceded in Brazil, that that country cannot monopolize the rubber production of the world, and that we have to reckon with the fact that within a few years the Eastern plantations may produce more good quality low-priced *Hevea* rubber than Brazil.

At the same time the people interested in rubber plantations will probably realize the fact that the Amazonian rubber, although at the present time more expensive to produce than the plantation grades, will hold its position, thanks to its superior qualities and thanks to the efforts which are being made to improve the conditions of the industry.

Perhaps the following statements will help to give an idea of the true position of wild rubber in comparison with its younger brother, the plantation rubber, and may contribute to strengthen the conviction above expressed, which, I believe, is shared by all who understand this very complicated problem.

SUPERIOR QUALITY OF AMAZONIAN RUBBER.

In spite of all the drawbacks of the native rubber industry on the Amazon, there is, fortunately, one great advantage—the *superior quality of the Amazonian product.* This remark has reference only to smoked rubber, and more especially hard-cure smoked Pará, the superior elasticity and strength of which (over the other grades, and principally over the plantation rubber) has been proved by the daily experience of the manufacturers, and by many scientific experiments.

It is hoped that we will before long have a complete comparison of the Pará Hard-Cure with plantation *Hevea,* as carried out according to the program of the Rubber Testing Committee.

For the moment I think that it is not yet possible to give definite figures, but I wish to call your attention to some points which seem to me to be even of more importance than the usual figures about tensile strength. I refer to the behavior with regard to the exterior influences—light and temperature—which together determine more or less the "keeping quality." The stock of rubber held by the Pará Syndicate is one very instructive example of the good keeping qualities of the smoked Pará rubber. After two years of keeping in more or less overheated stores, this rubber has only improved in quality. There are other more striking cases of the resistance of smoked rubber, which have always astonished me, when I heard on the other side, of the precautions which are necessary to preserve the plantation rubber from being injured by light or heat. Smoked rubber balls can be left for months in the sun without being spoiled, and this happens for instance in Bolivian *seringaes.*

Perhaps the keeping qualities of the raw rubber are not as important as those of vulcanized rubber, but it is probable that the raw rubber which better resists the action of sunlight and high temperatures, will continue to resist these influences when vulcanized. That is only a suggestion which I desire to bring to the attention of this conference.

One of the principal arguments of those who predict the disappearance of native *Hevea* rubber from the market, is the difficulty of exploiting scattered forest trees in comparison with the very easy exploitation of modern plantations. There is in fact a big difference in favor of the plantations, but it is compensated to a certain extent by the size and age of the native trees. It is worth considering that, in the Amazonian rubber forests a worker not only collects, but prepares by the tiresome smoking process from three to five or even ten kilograms of rubber, instead of the one or two kilograms furnished by one

tapper in the planting districts of the East. (One kilogram = 2.2 pounds.) The principal cause of this difference is of course the age of the trees. There is no doubt that full grown trees can be more economically tapped than young trees.

Of course the eastern planters have succeeded in making the best of their young trees and in obtaining from 4 to 6-year-old trees, crops never thought of in former years; but if they continue in the same way, many of them probably will never have old trees in full bearing.

Even the scattered location of the native trees has some advantages, as it guarantees a longer existence and protection against the spread of fungus diseases. It may, however, in many cases, be advantageous to augment the actual number of wild trees by interplanting.

Another argument of those who oppose native *Hevea* rubber is the exhaustion of some rubber districts on the Amazon. For *Castilloa,* this argument has of course some weight, as the trees are cut down for the extraction of latex. Even in this case, it must be remembered that only the biggest trees (more than 15 inches in diameter) are exploited, and after a number of years there are other full grown trees to take their place.

For the *Hevea* trees extinction cannot be thought of, as even the most roughly treated specimens resist rough treatment for many years, and there is always a free supply of young trees. It is true that in some districts, where the exploitation has continued since the middle of the last century—as for instance in the Cametá district—the full-grown trees are badly injured, so that their yield has been considerably reduced. As a rule the trees are allowed to rest if they show any sign of exhaustion. Owing to this precaution and to the scarcity of labor, perhaps only half of the known *estradas* are actually exploited.

LABOR.

This scarcity of labor has always been one of the drawbacks in the development of the Amazon region. Native free labor is available in agricultural districts about Belem (Pará) and along Bragança railroad, and on the lower Amazon (Santareus and Obidos); but it is not abundant, and is at least six times as expensive as the average coolie labor on the Eastern plantation. The labor force in the *seringaes* consists mainly of native inhabitants of the northern provinces of Brazil. They are not working for a fixed wage, and the special arrangements they have with the owner of the *seringal* give them apparently a much more considerable share of the profit on the rubber than they would realize as simple agricultural workmen. That is the reason why the *seringaes* have such a fascination for even the settled agricultural population, which is periodically drained of young men, when there is any rise in the price of rubber.

But the financial superiority of a rubber gatherer over an agricultural worker is often illusory, as the "patrão" takes back in exaggerated prices (for the articles of first necessity) the money he has paid the laborer. In all cases, however, the labor is expensive on the Amazon, and though it is much more efficient than the coolie labor, as regards the amount and value of rubber produced, this compensation is generally not sufficient to bring the cost of production to the same figure as in the Eastern plantations. Where communication is easy and the freight charges are low, the trees are generally more or less spoiled, and give less than the average; and in the districts where the trees give good yields, the freight is far higher.

Sometimes irregularity of supply is charged against native rubber. This of course is not so much the fault of the wicked *seringueiros,* who are sometimes accused of retaining their product for speculative purposes. It is rather attributable to the conditions of navigation on the remotest affluents of the Amazon. Speculating is of course always done to a certain extent by *seringueiros, aviadores* and export firms; and we have seen some attempts of this kind in late years, but the meteorologic and hydrographic conditions of the country are chiefly responsible for the irregularity of the supply.

It is not probable that the distribution of the working periods can be altered, as these depend entirely upon the weather conditions. For the regulation of the transportation of the rubber from the remotest districts, the Brazilian Federal Government has taken important steps, so that it is hoped that in the future the supplies can be better distributed over the whole year.

Those who predict the ruin of the Amazonian rubber industry point to the fact that in the last years the output of rubber from that region has been almost stationary, in spite of the generally favorable conditions of the market and the "corner" in 1910. This is generally attributed to the exhaustion of the yielding power of the rubber trees in the more accessible districts and to the difficulty of working the more remote districts. This of course is right to a certain extent, but there are many other reasons for the arrested development of the rubber industry on the Amazon.

In the first line, there is the deficient organization of the whole industry, especially its financial side, which is so bad as to make the careless distribution of money frequently possible.

Unfortunately only a small part of the money earned in rubber production has been applied in improvements in the *seringal,* and in the general conditions of the rubber districts. Had there been a sound policy in this respect, the Amazon would have made very much greater progress.

It is only in recent years that the Government and the leading men in the trade have awakened to the fact that without the introduction of a rational scheme of improvements and reforms in the rubber districts; and without a thorough reform of the whole organization of the industry, it will be impossible for the Amazonian trade to meet the competition of the Eastern plantations.

Considering the immense extent of the territory, the scarcity of population and the complexity of problems, the task of such a reorganization is a gigantic one, and it is certainly excusable, if in the proposed plans there are some points open to discussion.

Within the scope of this address it is not possible, of course, to cover the whole scheme of reforms planned by the Federal and the State Governments, but I shall ask your permission to present here some points, which seem to me of particular interest.

PROPOSED REFORMS.

As to the improvement of the means of communication there would be much to say. The first thing to do is to improve and cheapen river navigation, by which most of the actual producing centers are reached. Railroads are indispensable along the course of the rivers which are obstructed by rapids. How much an improvement in the means of communications is needed, is shown by the fact that the *seringueiros* of certain remote districts are sometimes exposed to actual starvation, because of the holding up of the steamers by bad conditions of navigability.

Better food supply will come with cheaper and quicker communication. There are always several agricultural centers, especially in the State of Pará, from which the food could be sent to the rubber producing centers.

In the scheme of reforms planned by the Federal Government the upper Rio Branco region, with its extensive *campos* for cattle breeding, is considered as the principal food-supply center for the rubber districts of the Upper Amazon. Food production within the limits of these districts will always be small, because of the attractions which the free life of the *seringueiros* always has for the other working classes.

Sanitation is of course closely connected with good food supply. *It is perhaps the most important problem in the Amazonian region.* The successful extinction of yellow fever in the State of Pará is a very important step in that direction, especially as it proves that the Brazilian Government has at its command good men to carry out the much more difficult problems of sanitation in the interior.

Of course, all these measures will augment the output of rubber, as the proportion of the sick will be reduced, and the work-

ing power of the healthy strengthened. Then again, the rubber districts will be more attractive to immigrants and will encourage the settlement of a permanent population. For the producing capacity of the country, these improvements are probably of more importance than any other, as they bear on a factor keenly appreciated in Amazonia—the human element.

That does not mean that there will not be other reforms regarding the conditions of work in the rubber forests.

First of all, I have always advocated the special protection of young *Hevea* trees in the rubber forests, and even interplanting in cases where this is possible. More than 10 trees per hectare (1 hectare = 2½ acres) are seldom met with in the natural rubber forests, and even if we do not intend to have a pure rubber plantation, it should be possible to obtain in favorable situations at least 20 trees per hectare by protecting the young trees and replacing only occasionally some of the other forest trees by *Hevea* trees.

I am sure that the methods of tapping used in the East could be applied to the old forest trees, thus increasing their yield, and the whole output of the rubber forest would be much larger, perhaps double the present amount.

There are, however, two principal reasons which have until now, prevented the introduction of these methods in native *seringaes*. First: most of the trees are already deformed by the old systems of tapping with the *machadinha*, so that it would be impossible to work them with the tapping knives without giving them first a rest of several years. Second: it would be difficult to train the *seringueiros* for systematic tapping according to the methods used in the East.

There are other reasons, for example, the moisture content of the bark in these forests, which would probably prevent the latex from flowing straight down to the cup. In spite of these circumstances, I thought it advisable to encourage some experiments of tapping forest trees, according to the best methods used in the East.

As is now generally admitted, the superiority of the Amazonian *Hevea* rubber is due principally to the smoking process. It would not therefore be prudent to introduce any other method of preparing the rubber, without having positive proofs of its superiority over the smoking process. In Europe it is known that a considerable part of the Amazonian *Hevea* rubber is produced in the form of scrap, and "Sernamby de Cameta!" Of course it would be better to produce this part also in high-grade quality, but that would not be possible even with the greatest care, as part of the latex always coagulates on the bark of the trees and on, or in, the collecting tins. The idea of turning out only one standard grade of Amazonian *Hevea* rubber, is therefore not feasible. It is, of course, possible to work the scrap into crepe, as is usual in the Eastern plantations, but then we should always have two grades. If the Cerqueira Pinto process—proving superior to the smoking process—should be carried out more commonly, it would allow us to reduce the scrap considerably; and as it permits the coagulation of watery latex, it would avoid the loss of considerable quantities of latex, which in rainy weather are actually not worked out either in form of smoked rubber or in form of scrap; but simply thrown away.

PLANTATIONS ON THE AMAZON?

Is it possible to start plantations successfully on the Amazon? This is a very important question, not only for the inhabitants of that region, but also, I think, for the whole rubber industry. As I have always advocated plantations on the Amazon, I have naturally followed with great interest the planting movement in Brazil, which some years ago—owing to the news of the splendid success of the eastern plantations, and thanks to official protection—has set in with renewed energy.

Of older plantations there are only a few, at least in the State of Pará, and these have as a rule not been very successful. Some private plantations may have given better results, but we have no records as to their production. On the other hand the new plantations, started under the protective State Laws, are now too young to permit a prophecy as to their future.

After the enactment of the State laws providing many advantages to the rubber growers, there was a rush in obtaining these advantages, especially the premium in cash. The registration at the Agricultural Department has reached in two years over eight million *Hevea* trees, to be planted in the next four years. Of these, 340,000 were reported as planted at the end of 1911. Most of the registrants are private planters, but the bulk of the proposed planting will be done by companies, one of which, on the river *Mojn*, is operating with American capital.

Comparing our conditions with those prevailing in the East, our chief advantage is that of cheap land, against which must be entered the very serious disadvantages of expensive labor and high export duties. It is true that the new laws reduce the duty to a considerable extent for rubber produced on plantations. There are other advantages, which have more bearing on lowering the cost of the first establishment of the plantations than of their production later.

Taken as a whole, planting on a large scale, by companies with foreign capital, is not at all out of the question in the Amazon region. Since I visited the Eastern plantations, I am, however, inclined to think that to operate our plantations in exactly the same way, as, for instance, in Malaya, is neither possible nor would it be advisable. This is impossible with the Brazilian worker, who is at least three times more expensive, even taking into consideration his higher working power. He is much more independent than the Indian coolie and imported coolies are undesirable in most cases.

I think that by introducing contract work to a great extent, some big plantations could be established in places where frequent supervision as well as free supply of labor and food can be assured. The neighborhood of Belem or the lower course of the Amazon offers these conditions. Of course, there will be some danger of frequent changes in the labor force, but the best elements, if well treated and reasonably paid, will stay and form a nucleus of skilled workmen able to introduce the new comers into the work.

In a general way, however, I am of the opinion that the rubber planting on the Amazon has to be carried out either by the actual occupants of the country or by companies with very large funds, which can combine the planting with an efficient scheme of colonization.

In any case—and this can not be sufficiently insisted upon—the first work of every planting company should always be the sanitation of the place and the creation of an attractive *milieu* for the workmen, either by giving them the opportunity of settling under favorable conditions, with their wives and children, or offering them good housing and good fresh food at a reasonable price, if they are to be employed only for a limited time.

I have always had a strong belief in the necessity and usefulness of rubber planting done by the native and settled population. If every owner of a small *seringal* would only plant a thousand rubber trees, there would be in ten years a very sensible increase of the output. It is true that planting in this line is now generally done in a very deficient manner, and it will require a serious campaign of agricultural education to improve the condition of these small plantations. Above all, these plantations should be operated upon good principles of selection. Then they should afford an opportunity for experiment and demonstration of the best tapping methods applicable to the proper *seringaes*. Finally, they should show the way to the best method of improving rubber forests by interplanting.

There is no doubt that the big plantations will have some influence upon the methods used in the native rubber forests, and the reverse is likewise true. It would seem strange that in the Amazon region, the very home of the *Hevea Brasiliensis*, its cultivation has not made more progress, in spite of the many efforts in that direction. The cause is not only in the general

conditions of the country, and in the scarcity of labor, but perhaps principally in a factor which unfortunately has too often been overlooked—that of management. In the East the rubber plantations were nearly all started by men of experience in the management of tea, coffee or other big estates. In Amazonia there are practically no plantations on a large scale and trained plantation managers are seldom to be found there. They have, therefore, to be contracted for, from Southern Brazil or from the Eastern plantations. They should be familiar not only with rubber planting, but should be able to adapt themselves to changed conditions of life and work.

In conclusion, we must admit that the evolution of rubber planting on the Amazon will probably be something quite different from what was witnessed in the Eastern plantations. There is no doubt, that during the immediate future the East will continue to lead in planting enterprises. On the Amazon the plantations will be established more slowly, but they will be of great importance as the necessary complement of the native rubber extraction.

The old method will be helped and develop from a crude empirical process to a scientifically established and more economically operated industry.

ENGLISH VIEWS ON RUBBER SITUATION.

DIFFERING to some extent in details, the annual reports of the leading English rubber authorities show an increase in the past and estimate a still further augmentation in the production for 1913.

One of the most complete presentations of the statistical position is that published by Messrs. J. A. Henderson & Co., Ltd., of London, including figures of actual production for 1911 and 1912, together with estimates for 1913. The table is subjoined:—

RUBBER SUPPLY AND CONSUMPTION ESTIMATES.

ESTIMATED WORLD'S SUPPLY (TONS).

	1911.	1912.	1913.
Amazonas and Brazils	39,000	40,500	40,000
West African	15,000	13,800	13,800
East African, etc.	5,300	4,000	4,000
Central American, etc.	2,500	2,500	2,500
Plantation	14,200	28,500	38,000
	76,000	89,300	98,300
Guayule	9,200	7,000	7,000
Malaysian, etc.	2,800	2,700	2,700
Totals	88,000	99,000	108,000

ESTIMATED CONSUMPTION (TONS).

	1911.	1912.	1913.
England	12,000	14,500	17,520
Germany, Austria, etc.	14,000	16,000	18,286
France	8,000	9,500	11,281
Russia	8,500	9,000	9,529
Italy, etc.	2,000	1,500	1,125
Japan and Australia	1,500	1,000	667
America and Canada	42,000	47,500	53,720
Totals	88,000	99,000	112,128

These figures indicate an augmentation of the supply by 9,000 tons for the present year. Leaving out of consideration the minor variations in receipts from other quarters, this result practically represents the increase in the estimated supply of plantation rubber from 28,500 to 38,000 tons. Mr. Lampard (prominent as a director of various planting companies), had named 40,000 tons as a probability. An estimate of an average of 3,000 tons a month of plantation rubber for 1913 seems generally accepted.

In their annual review, Messrs. S. Figgis & Co. comment on the freedom with which Brazil continues to supply the markets of the world, quoting the following shipments for the last four years: 1909, 42,000 tons; 1910, 40,500 tons; 1911, 39,500 tons; 1912, 40,500 tons. The improvement which has taken place in the preparation of rubber by Eastern planters, has proved of mutual benefit; having stimulated the forward order business. Further progress is urged in this direction, in conjunction with a renewal of the previous suggestions to standardize qualities into: No. 1 Latex pale; No. 2, clean light brown and grey, and No. 3 (from bark), dark and brown.

Messrs. Figgis estimate 950,000 acres as being the area under rubber cultivation in the East, and place the number of trees at probably 110 millions, of which only a moderate proportion have been tapped.

Messrs. Gow, Wilson & Stanton in their report for the year 1912 point out an interesting fact. Six years ago the production of rubber from the whole of the East was about one thousand tons; the price then realized averaging 4/9⅝ per pound. In 1912 the total product has exceeded 28,000 tons, while the price obtained at the London auctions averaged 4/7½, being only a slight reduction on the figure realized for the smaller quantity at an earlier date. The consuming power of the industry is thus clearly demonstrated. At the same time the development of the trade has shown that the physical properties of the best prepared samples of plantation rubber are fully equal to those of any other description. A large proportion of the whole crop is shipped in the form of crepe. The premium lately ruling on smoked sheet will probably stimulate its production, with the possible ultimate result of the premium not being maintained.

AS TO DIRECT SHIPMENTS FROM THE EAST.

IN the December issue of THE INDIA RUBBER WORLD there was an editorial advocating the shipment of rubber direct from the Eastern plantations to New York, instead of having it shipped, as at present, from the East to some Continental or English port, to be re-shipped to New York later. This article has elicited the following letter from the well-known firm of John Lang, Ltd., of London.

To the Editor, INDIA RUBBER WORLD—

Dear Sir: Referring to your very interesting article on the "Shipping of Rubber Direct to New York," we should like to state that, although this would be very desirable from a manufacturer's point of view, we fear that it will never assume large proportions, as it is, of course, common knowledge that the bulk of the plantation rubber sold either privately or in the auction here is graded by the buyers, each of whom have their own standard types by which they sell to the trade, and consequently the original parcels are sorted and divided into these various standards before they are sent to the manufacturers.

There is, of course, a certain reason, and sometimes a necessity, to deal with certain packages in this way, but the necessity is not unavoidable.

We have for years acted as buyers for manufacturers here and on the Continent, and always forward the original packages with the original marks as received from the East, so that the identity of the rubber is never lost or tampered with. We find it necessary only to see that the packages are put in good repair for shipment, and our experience always has been that the manufacturers appreciate the original packages, and we have never had any complaints either as to the quality of the rubber or the condition of the packages on arrival at their destination.

We should be pleased to hear from any firms desirous of buying on this market with the understanding that they buy and receive only first hand rubber in the original packages.

Yours faithfully,

JOHN LANG, LTD.

J. R. BRIGGS, Director.

Laboratory Organization in the Rubber Industry.

By Frederic Dannerth, Ph. D., Consulting Industrial Chemist.

PAPER READ AT THE INTERNATIONAL RUBBER CONFERENCE, HELD AT GRAND CENTRAL PALACE, NEW YORK, SEPTEMBER 23 TO OCTOBER 3, 1912.

THERE are certain persons to whom a manufacturer should tell the whole miserable truth of his failures—his lawyer, his chemist and himself. Above all, he should be absolutely frank with himself. After he has congratulated himself upon the perfect manner in which his goods are being bought and his factory is being managed, he should stop for a moment for a close scrutiny of his plant.

The Consulting Chemist would very often like to question

Dr. Frederic Dannerth.

the manufacturer on this point, but he is prevented from doing so for obvious reasons.

Successful corporations of today have either a written or verbal arrangement with the managing directors, which is in effect:

1. To purchase the best raw materials for a given purpose at the lowest possible market price.

2. To criticize the manner in which the factory manager is making up these raw materials into saleable goods, and help him to attain perfection.

3. To help the salesman, when it is found that competitors are offering better quality for the same or for less money.

4. To deliver to the factory manager, heat, light and power at the lowest possible cost.

One corporation president who had risen to a realization of the importance of chemical consultation, recently opened a conversation thus:

"Our competitors have us skinned to death on water-tank packing; we have been put out of the race with our air-brake hose; our railroad steam-hose has rotted away in actual use. Do not waste any time on theoretical considerations and research work, but go right ahead and give us these three things. What we want is results, and you will have to earn your fee every day, for we cannot afford to gamble away one hundred dollars without getting the results we want."

As a matter of record it might be added that that particular man is still wanting those results. He has failed to realize that the science of Applied Chemistry was not created in an off hour, but is the product of many years of arduous labor and thought. From the day when "the compound man" was the chief chemist of the works, we have come to a point in the development of factory management where all chemical problems should first be presented to the Supervising Chemist, an official who occupies a position parallel with the Factory Manager and the Operating Engineer. In some cases he is permanently employed by the organization, while in other cases he devotes only a portion of his time to his duties at one particular factory.

The constant growth in efficiency of the rubber industry is largely the result of organization that insures the orderly use of every talent required. Occupying a very important place in such organization is the fullest use of a laboratory staff with trained chemists. It is the duty of this department to:

1. Investigate all new processes.
2. Constantly improve existing ones.
3. Correct and explain irregularities of current operations.
4. Invent new and useful processes.
5. Determine the value and exact composition of all raw materials.
6. Determine the value and composition of competitors' products.
7. Advise correctly on "specification goods."
8. Control different stages of many processes.

Hence if these constructive forces are to be used to the fullest, it must be through the creation of an organization that will cause every department in that organization to cooperate with the laboratory. To accomplish this I present for your consideration methods which are the result of careful study for many years in some of the largest manufacturing plants in America.

The Supervising Chemist is valuable to the firm in proportion to his perspective, his ability to see from afar the possibilities of some new proposition, whether it be a problem in purchasing, manufacturing or selling. Directly under him he has a corps of five first assistants who are in some cases designated as chief chemists. They are: The Engineering chemist, the Buyers' chemist, the Factory chemist, the Sales chemist, and the Research chemist.

The organization of the Laboratory Department includes:

1. Systematic abstracting of the important foreign and domestic journals and of the patents of the principal countries.

2. Forwarding copies of these abstracts weekly to all who can use them, with instructions to study them carefully and advise the Laboratory immediately of those which might be of value.

3. Thorough abstracting of the literature, in the case of new work, thus presenting all that has been published relating to the subject. Repetition of the work of others is thus saved, valuable suggestions are received and new lines of thought are opened.

4. A pamphlet library containing catalogs of machinery, structural material, scientific apparatus, etc., is kept up to date by correspondence with the manufacturers of these materials. This collection can be made far more valuable than regularly published books upon identical subjects.

5. All translating, abstracting and indexing should be in charge of one competent man, with assistants, if needed.

6. Superintendents should present to the supervising chemist, monthly reports embodying all ideas of their own, or their assistants, that might in any way warrant investigation. Through such a system thoroughly carried out, valuable suggestions can be obtained that might otherwise be lost. This plan will also stimulate closer thought and observation concerning all the details of manufacturing.

7. There should be (through proper connections) systematic prompt advices of all improvements in European practice that would be of value to the corporation.

8. The Laboratory should place at the disposal of the sales department, whenever this is necessary to demonstrate the value or quality of the company's products—a competent testing engineer, who can instruct the customer in the standard methods of conducting physical tests of manufactured rubber goods.

The Engineering Chemist receives instructions from the Operating Engineer (through the supervising chemist). His first and most important field of activity is the examination of materials used by the power plant. This includes:

1. Periodic analysis of the coal supply.
2. The control of combustion by flue-gas analysis.
3. The examination of lubricants.
4. The examination of the water used for boilers.
5. The examination of boiler deposits and boiler compounds.
6. Practical tests on the quality of paints and varnishes used in the works.

As a result of his contact with the power plant, the engineering chemist is in a position to provide the factory chemist with exact data on the wearing qualities of rubber goods used in the power plant. Such materials include steam-packing, transmission-belting, water-hose, conveyor-belting and washers of all sorts. He also keeps his eye on the various structural materials, metals and lumber brought into the factory, in which case he co-operates with the buyer's chemist.

The Buyer's Chemist receives instructions from the purchasing agent (through the supervising chemist). He is essentially an analyst, for he must determine the purity and the comparative commercial value of mineral drugs, organic fillers, reclaimed rubber, crude gum, textiles (sheeting, duck and yarn), and the various metals—which have been offered to the purchasing department. He must control all work relating to sampling and analysis, because so much depends upon prompt and accurate results. He must be able to devise special methods, and should endeavor to make his methods conform to those of the vendor so far as this is consistent with good work. He must record all physical tests made on rubber and textiles, and enter these with the chemical tests in a special folio kept for this purpose.

He devises for the purchasing departments, rational specifications, so that it will be possible for the buyer to procure bids on a standard material which the vendors will be able to supply, without an abnormal rise in price for the commodity.

The Factory Chemist receives instructions from the factory manager (through the supervising chemist). He investigates problems which arise in the factory and endeavors, by simplifying operations, to reduce the cost of production. This may be attained by increasing the speed of machinery; by omitting unnecessary operations; or by eliminating waste. Before arriving at final conclusions regarding recipes for new compounds, he will, of course, have to make such examinations as "friction tests" on belting and hose; pressure tests on fire-hose; steaming tests on steam-hose and so forth.

Other problems which he must face from time to time are: the reclaiming of waste rubber; the correction of defective cures on molded goods and steam-cured articles; defective frictions on cotton-jacketed hose.

In addition to the actual manufacturing operations, he must follow up for the factory manager, the preparatory processes of washing and drying the crude gum; compounding, mixing and calendering the stock. In his record book he enters all improvements made in any of these departments and devotes a separate page to each department. By thus entering the date on which the improvement or new method was installed, he will be in a position to give the factory manager complete data on the advantages gained by the step. He also makes such analyses as are necessary in the intermediate steps of some processes in order to insure proper control and a uniform product.

The "premature hardening" of steam-packing; the "bootlegging" of belts; the "blooming" of hose; the "loose sleeve" effect on rubber covered rolls; the "dead-friction" effect on cotton-jacketed hose; the "uncurable" stamp gum; the abnormal "swelling" of extract-tank packing—these are but a few of the innumerable defects which must from time to time be investigated by the factory chemist.

Another field of activity is the writing of recipes to meet certain specifications. The various government departments, municipalities and railroad companies have at present sharply defined specifications for the delivery of manufactured rubber goods, so that it has become necessary for contractors to exercise considerable caution in the making up of these goods. In such matters the factory chemist as a rule works in conjunction with the foreman of the compounding room.

The Sales Chemist receives instructions from the sales manager (through the supervising chemist). To him are brought commercial rubber products put on the market by competing firms. His duty is to pick apart these products and determine the manner in which they were constructed, so that the desirable features of the sample can be duplicated if need be. He makes chemical analyses of these samples and carries out physical tests to determine in the laboratory their approximate value compared with similar products turned out by his employers. Thus he determines as far as possible the character of the textiles used and the particular fiber employed (whether it be cotton, flax, hemp, or ramie). He determines the "friction" value on belting and hose; the strength and stretch value of the rubber lining in articles like fire-hose; he also determines the tensile strength and other physical properties of such products as steam packings.

If the competitor's article is of inferior quality and is sold at a lower figure than the article made by his firm, he must give the sales manager information which will enable him to present these facts to the customer. The sales manager occasionally has turned back to him specimens of conveyor belting or transmission belting which have not stood the test of time. In such cases it is for the sales chemist to ascertain the exact conditions under which the belt has operated, so that he can determine whether or not the usage has been unexpectedly rough.

The Sales Chemist conducts the final physical and chemical tests on specification goods and places his "O. K." on all such orders before they are shipped.

The Research Chemist receives instructions direct from the supervising chemist. The raw material for his researches is obtained to a considerable extent from his colleagues in addition to the problems which are mapped out for him by his superior. He should have at his disposal a well arranged and adequately equipped index to periodical literature and the patent literature of all countries. It is from these sources that many valuable suggestions are obtained, and it should not be forgotten that many very important suggestions for development work are obtained from sources entirely outside

the rubber industry. Thus it sometimes happens that a chemical process which has been used in the leather industry, in the varnish industry, or even in some inorganic industry, has called forth in the mind of the chemist possibilities which would not appear at first thought. As the special chemist in charge of development work, he should be informed as to the latest advances in the way of machinery for all operations which involve chemical processes. Materials of construction for vulcanizing and relaiming apparatus should also be given due attention by him. His duties comprise:

1. Investigation of cheaper raw materials.
2. Creation of new uses for products manufactured.
3. Examination of new products to determine their present and future value.
4. Promotion of increased efficiency.
5. Improvement of the quality of products manufactured.
6. Utilization of wastes.
7. Procuring more efficient structural material for apparatus.

Great care should be exercised in the selection of the Research Chemist as he should embody all the varied talent and knowledge required in a wide field; and it is important here that only the very fit be retained, as the achievements of this department will very largely depend on two factors: (1) a highly efficient college-trained staff; (2) an organization that will, from every other department, invite periodic presentation of all questions worthy of research.

The collective talent of the research chemists should embrace:

1. Thorough scientific education in the principles of physics and chemistry.
2. The power to imagine new processes.
3. The power to discern the causes of various irregularities in manufacture.
4. The ability to submit these ideas to the test of experimental proof.
5. The habit of accurate observation.
6. The skill to deduce from such observation the correct conclusion.
7. The quality of discerning the one vital thing that counts amidst the maze of unessential generalities.
8. A knowledge of manufacturing that will make all conform to practical conditions.

"All these qualities, diligently applied," says Mr. William Ferguson in a recent communication, "are essential to the success of modern research."

The Research Chemist should have at his disposal, a properly equipped research laboratory, with miniature mixing-mills, calenders, presses and vulcanizers, where work can be carried on in a test tube or on a manufacturing scale as occasion requires, in order to determine practical difficulties and costs. Together with the supervising chemist and the factory manager he forms the Research Committee which meets regularly to consider and advise upon all important investigations.

Questions presented to this department are settled: (1) by carrying out the experimental work upon a small scale; (2) abstracting the journal and patent literature bearing upon it; (3) increasing in size the experiments, as occasion warrants. Each investigation should be made by a man particularly fitted for the job, and this man made responsible, but he should constantly consult with other members of the staff whose knowledge or skill would be helpful. The progress made and the difficulties encountered should be presented to the Research Committee at its regular meetings so that it can advise when necessary. At the conclusion of each investigation: (1) a detailed report is made to the supervising chemist; (2) an exact estimate of the cost is made for each investigation. This will show the profit or loss in each particular case and will demonstrate the value of the research work as a whole.

THE SUPERVISING CHEMIST.

If a corporation has more than one laboratory, uniform methods of sampling, of chemical analysis and physical tests must be used throughout. The selection of standard methods and the complete written description of each should be under the immediate charge of the supervising chemist. Their accuracy should be first proved by analyzing mixtures of known composition. The various precautions to be observed should be prominently outlined at the end of each method, together with the experimental data, and where possible, equations showing the accuracy of the method. These methods should be issued to the different laboratories, and all chemists of the corporation required to strictly adhere to them. Without this, uniform methods and uniform results are impossible.

He assigns to his first assistants all analytical work which will aid the departments for Purchase, Manufacture, Sales and Engineering. He carefully investigates new methods of analysis and considers complaints presented by the sales department. He should call a weekly meeting of the chief chemists to discuss:

1. The company's standard methods of analysis.
2. Abstracts of promising analytical methods; and physical tests.
3. Patents of interest to the rubber industry.

A digest of this meeting should be forwarded to all the chemists of the company for comment and for filing. He has in his office a card index which contains condensed abstracts of all relevant articles from the chemical journals. One file is devoted to "Rubber-chemical" articles while another contains indices to "Related Industries." Such an equipment facilitates considerably the investigation of any problem which is presented for his consideration. He should request of his chief chemists carefully worded reports of all work done and these should contain all results, whether favorable or otherwise. New methods (physical and chemical) suggested through the literature or through other chemists of the company, should be tried out, and if found to be an improvement they are incorporated in the Standard Methods of the company.

The policy of the supervising chemist should be to give his chief chemists a broad acquaintance with all the work of his department through the weekly meetings. All work should be systematically and independently checked by more exact or by different methods than those in daily use. Each man is held strictly responsible for the work entrusted to him, and he should be encouraged to become thoroughly familiar, through study and inquiry, with the theory and practical application of his work.

Foremen should, so far as possible, make simple tests to control processes under their charge, as they can often make a test in less time than it takes to send the sample to the Central Laboratory. Such work must, of course, be periodically checked by the laboratory. In order to estimate each man's capacity and to charge up the chemical work correctly a Laboratory Order Blank is used. These are numbered consecutively and a different color is used for each section (Factory, Buyer, Sales, etc.) One order accompanies each sample or request for laboratory investigation. It has a place to record:

Date on which the sample or request was received at Laboratory.

Actual number of hours spent on the investigation.

Date on which the results were handed in.

Results obtained; recommendations.

Signature of the chemist, the supervising chemist and the department for which the investigation was made.

The "History of the Case" can be conveniently typewritten on the back of the order. The completed order is filed in the laboratory, separate cases being used for each section. In order to prevent delay, due to loss of an "original" order, a carbon copy is made and this is filed in a case in its proper numerical order. No chemist undertakes any work without a Laboratory Order Blank of which a carbon copy has been filed. The "History of the Case" should be entered at least on the carbon copy. The laboratories of the several plants should be strictly subordinate to the supervising chemist. All standard methods of sampling and analysis must be standard methods of the company, so that superintendent and chemists should cooperate for their strict enforcement.

Salaries of the chemists should be standardized as far as possible and promotion made according to the kind of talent which the individual possesses. Thus it is found that some men are far better adapted for superintending factory work, while others are peculiarly fitted for research. The efficiency of the chemical department may be increased by:

1. Periodic visits to the different laboratories of the company by the supervising chemist, in order to see that the standard methods are being properly followed, and to enable him to compare the general efficiency of the plants.
2. Occasional visits of the supervising chemist to laboratories of other industries, in order to incorporate in his organization the favorable developments made by others.
3. Periodic general meetings of the chemists to promote cordial cooperation and to discuss specific subjects.
4. Periodic exchange of chemists between the different laboratories, to broaden the experience of the individual chemist.
5. Monthly reports by each laboratory of the company to the supervising chemist explaining all difficulties encountered in investigations, and making suggestions for improvements in existing methods.

Laboratory buildings should be roomy, adequately lighted, well ventilated, and equipped with all apparatus required for accurate, rapid work. Unhealthful, dismal surroundings and crowded quarters interfere considerably with efficiency and progress in chemical work. Slovenly arrangement of notes and samples should not be tolerated by the head of the laboratory.

The Central Laboratory and office should have all important chemical and engineering periodicals in an easily accessible file, and should possess a permanent library of the best books on these subjects. All the laboratories should be in the same building, so that the library may be easily reached and the individual chemists may have consultations. In the case of a corporation with plants in different cities, the Central Laboratory should be connected with one of the large plants, so that mechanics will be available for construction work in the laboratory. Such a location makes it possible for the chemists to ask advice of the foremen and superintendents. Certain rules, such as those given below, might well be posted in the laboratories:

1. The accuracy of balances, weights and measuring apparatus, thermometers, and hydrometers, must not be taken for granted. They must be checked for accuracy by comparison with standards of known accuracy as often as required.
2. All standard solutions must be checked by the head of this laboratory or one of the chief chemists.
3. All important determinations must be made in duplicate.
4. All clerical work and calculations must be checked.
5. Systems of weighing and manipulation, devised to prevent errors, should be employed, and adhered to even in the simplest determinations.

The form of organization, just described, must never take the semblance of dull routine. The personnel must be of the highest type and all necessary plans must be carried out with enthusiasm and thoroughness. The interest in the work can be decidedly sharpened by having the chemist come into personal touch with the department for which his work is being carried out.

The laboratory department should lead the way so strikingly, that its methods are never justly censured. It should, by precept and example, be an exponent of the profession of chemistry.

The plan just outlined provides for a chemical department with one supervising chemist and five first assistants, but it will readily be seen that the functions of these chemists must in certain cases be embodied in a smaller number of men. This should, however, not interfere with the sub-division of work, and great care should be exercised, in keeping records as to the time spent on any investigation and the results arrived at. For this purpose an adequate system of Laboratory Order Blanks should be installed in the manner indicated. (See "Supervising Chemist.") The supervising chemist must interview his assistants at least once each week and obtain from them written reports of progress.

In one case which was brought to the speaker's notice, the corporation professed that such a corps of men could not be maintained, as the cost would be prohibitive, yet that same factory was operated in such a manner that every three workmen were doing work which could, without any undue training, be performed by two men. That corporation was keeping down its production by employing unproductive men in quantity, at a minimum wage of $10 per week. A large part of the success of chemical supervision will, of course, depend on the use made of the laboratory by the factory manager, the buyer and the sales manager. Parkhurst has called attention to the need for showing clearly the line of authority and the responsibility of each individual. The duties of each person must be determined and the positions should be filled by men who have had an adequate training in chemistry. The factory manager should be so sure of his ground that he will not have to fear anything from an inspection of the factory by the supervising chemist; on the contrary, he should draw the chemist into his confidence and call his attention to "weak spots" in the chemical processes, so that he may benefit by his suggestions. This point is fully covered by that basic principle of factory management: "Each and every employe shall be supplied with written instructions describing fully his duties and responsibilities.' Important details of a process are sometimes forgotten, because an employe who was at one time given oral directions, has died or has been transferred to another department.

In the laboratory, as in all other departments, remarks such as "RUSH," etc., should be omitted from an order. In their place should be put a definite date on which a report is desired. This makes it impossible for any work to be postponed as a matter of convenience or on some other weak plea. If a new material is offered to the purchasing department, it is important to know at an early date whether it is desirable or not, and the same remark holds good for material which is tested previous to shipping, by the sales chemist.

Thus it is seen that scientific management includes not only the factory, but the purchasing and selling departments as well. It resolves itself into—buying the best material of a given grade at the lowest possible price and the sale of a finished product of a given quality at the lowest possible price. To accomplish this end, our most progressive manufacturers have drawn to their aid the services of one or more men exercising the above functions.

Note: For collateral reading see W. C. Ferguson on "Organized Research and Analytical Chemistry," read at VIII International Congress Applied Chemistry, 1912.

Some Observations on the Testing of Steam and Air-Brake Hose Used on Railway Locomotives and Cars.

By G. C. Bishop.

(Superintendent Motive Power of the Long Island Railrood Co.)

PREPARED FOR THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK IN 1912.

WE will first consider air-brake hose of 1⅛ inch x 22 inches and 1⅜ inch x 22 inches. We will pass over sizes and badge plates, which are not important as far as the observations in this paper are concerned. On a certain sample of hose the specification called for (1) a bursting pressure of 500 pounds per square inch exerted for 10 minutes; (2) at a pressure of about 200 pounds per square inch, the hose must not expand in diameter more than one-quarter inch or change in length more than one-quarter inch; (3) a friction test; with a weight of 25 pounds suspended from the end the separation must be uniform and regular and the average speed must not exceed six inches in 10 minutes; (4) a stretch test: between marks two inches apart on a piece one-half inch wide, stretched quickly until the marks are 10 inches apart, released, then re-marked as at first and again stretched to 10 inches, the specimen must remain 10 minutes without breaking; and (5), after release the distance between the marks must not show a permanent set of more than one-quarter inch.

The 1⅛ inch x 22-inch air hose is used with an automatic connector of the general appearance shown below:

Data sheet "A" shows the number of hose lengths removed for all causes during the year from November, 1911, to November, 1912, this being classified under (1) the general causes for removal, and (2) the life. The total number of hose purchased of each make for a period of three years is also shown as an indication of the proportion of the different makes of hose in service. The different makes of hose are designated by the letters "A" to "H" inclusive.

It will be noticed that a large proportion of the hose is removed because of being damaged in service. This is largely due to the automatic connector, which increased the chafing and cutting of hose.

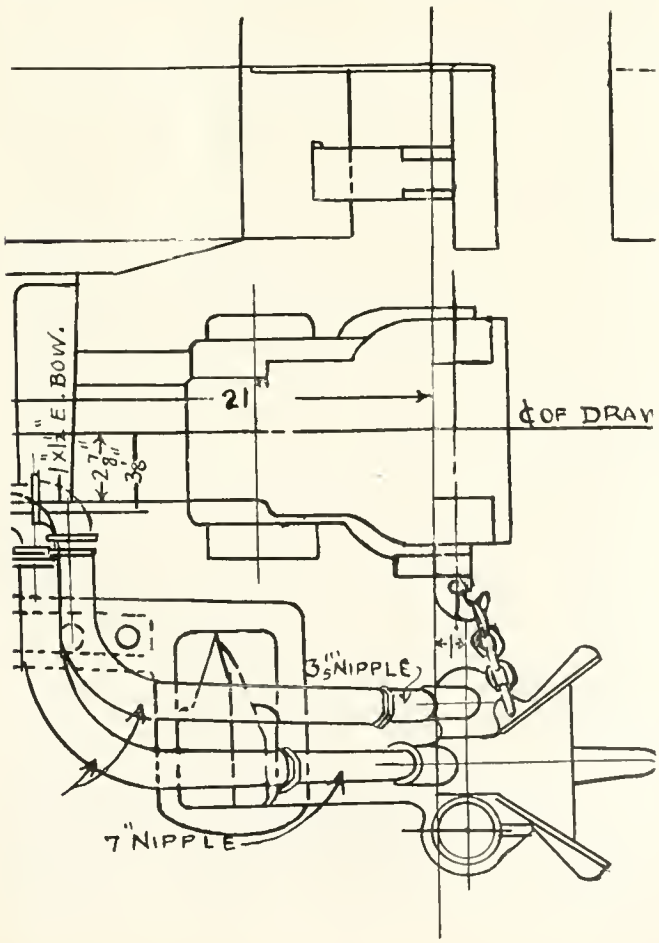
Little can be learned from makes "B" and "H," as they represent purchases made three years ago, and only the oldest hose was removed in the period covered by our data. It is interesting, however, to note that the removals of "B" hose represent a comparatively high percentage of the amount purchased, and the high *average life* checks with the high *average characteristics* shown by the tests.

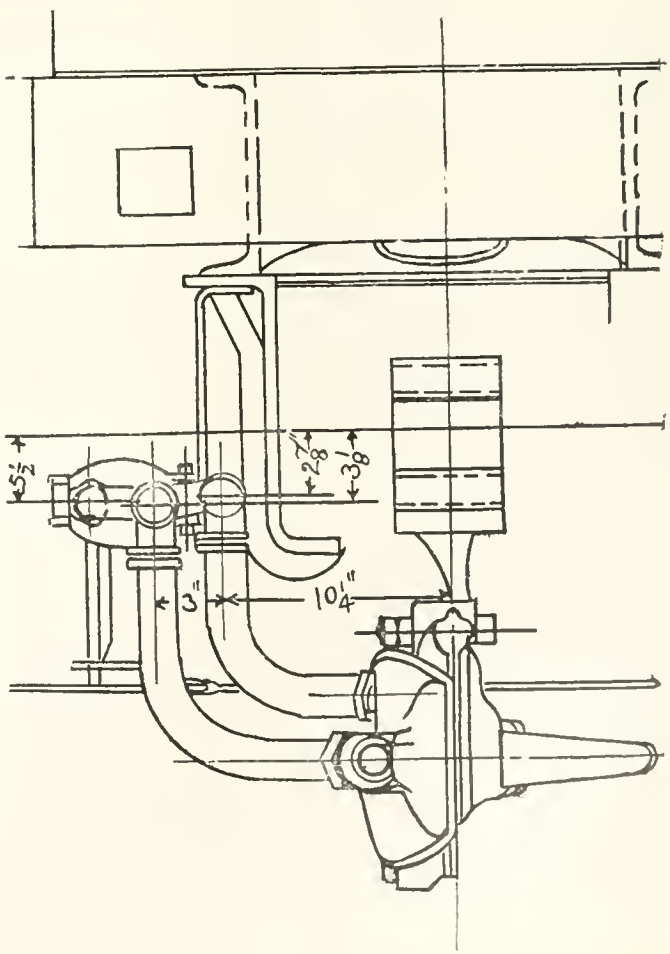
"F" hose, it will be noted, shows a large percentage of rejections and from our inspection of the results of the tests the reason is apparent. The friction is below the average, and the stretch just passes. Although the bursting tests are not shown, the rejections are numerous and the lots accepted were just within the requirements. This hose was all purchased in the year 1912.

"A" shows a fair life, and the results of the tests closely approach the general average.

"C" represents one purchase only, but the test results were uniform and very good; the explanation of the low life is that the hose was soft and a considerable quantity failed shortly after application due to inability to properly clamp the hose around the nipples.

"D" shows a good life, even though the percentage of damaged





DATA SHEET "A."

PERFORMANCE 1⅛ INCH AIR HOSE, PASSENGER.

Cause of failure, per cent. Average life in months — Item	A	B	C	D	E	F	G	H	Totals
Damaged in service	410	174	28	46	23	109	21	5	781
Per cent. of total	24.2	29.0	24.6	41.8	38.3	50.2	22.6	41.7	26.9
Average life, months	14.8	14.0	9.9	10.5	7.68	5	11	27	12.62
Bursted in service	441	107	19	34	12	47	26	2	6.85
Per cent. of total	26.0	17.8	16.7	31	20.0	21.6	28	16.65	23.6
Average life, months	15.5	16.43	9.68	14.1	15.75	7.53	14.24	27	15.1
Deteriorated	574	251	23	51	23	36	29	3	9.68
Per cent. of total	33.8	41.8	20.2	46.4	38.3	16.6	31.2	25	33.4
Average life, months	19.4	19.7	9.65	31.6	25.4	16.54	18.85	27	19.0
Other causes	270	98	44	10	2	25	17	2	4.62
Per cent. of total	15.9	16.35	38.6	9.1	3.33	11.5	18.3	16.65	15.9
Average life, months	15.6	16.8	9.52	11.8	19	6.96	12.75	2.55	1421
Total failures	1695	600	114	110	60	217	93	12	2896
Amount purchased in 3 years	7500	2100	500	1900	500	2800	1000	300	16600
Per cent. failed in 1 year	22.6	28.5	22.8	5.8	12	7.75	9.3	....	17.75
Average life	16.05	17.5	10.26	16.5	16.11	8.3	17.73	25	17.5
Amount inspected	7709	2100	500	1900	500	4000	1000	300	18000
Amount accepted	7500	2100	500	1900	500	2800	1000	300	16600
Amount rejected	200	....	....	....	....	1200	....	....	1400
Per cent. rejected	2.6	....	....	....	....	30	....	....	7.85
Average friction in 10 minutes at 25 pounds	1.28″	.99″	1.167″	1.15″	1.38″	2.07″	1.23″	4″	1.29
Outer tube stretch	.199″	.204″	.142″	.194″	.135″	.208″	.20″	.125″	.1952
Inner tube stretch	.216″	.142″	.142″	.163″	.225″	.227″	.225″	.125″	.1955

hose is high the removals are small, and the test results are better than the general average.

"G" has a good average life probably due partly to the small percentage of hose damaged in service. The average result of the test is good, with the exception that the stretch of the outer tube is above the average.

1⅜ x 22-inch air hose is used on freight cars only, and is not subject to the peculiarities of the auto hose connector as is the case with the 1⅛ x 22 inches.

Data sheet "B" shows number of this hose removed for all causes during the year from November, 1911, to November, 1912, this being classified in the same manner as the 1⅛ inch x 22-inch air hose.

Makes "E" and "H" represent small purchases made about three years ago, and may be eliminated from a study of the data as our records cover only the hose having probably the longest life.

The same criticism which applied to make "F" of the 1⅛ inch x 22-inch air hose applies in every particular to the 1⅜ inch x 22-inch air hose.

"G" may also be eliminated as none was purchased during the three-year period and only five failures are recorded.

"A" and "B" represent a considerable number of lengths with sufficient failures to afford proper comparison. The results of tests indicate that "B" is the better hose and this is confirmed by increased life.

"C" hose has a friction inferior to the average and the life is low.

"D" has the highest average life and the tests show a good inner tube and the best friction.

DATA SHEET "B."

PERFORMANCE 1⅜-INCH AIR HOSE, FREIGHT

Cause of failure, per cent. Average life in months — Item	A	B	C	D	E	F	G	H	Totals
Damaged in service	28	60	6	1	7	7	....	5	112
Per cent. of total	13	17	28.6	4.06	13.4	22.6	....	5.9	14.25
Average life, months	10.25	17.55	5.34	12	21.2	9.14	....	35.0	14.4
Burst in service	128	193	7	14	29	14	2	46	43.3
Per cent. of total	59.3	54.7	33.3	58.1	55.6	45.2	40	54	55
Average life, months	21.45	22.4	12.05	25.43	23.3	11.15	16.5	26.9	21.02
Deteriorated	53	87	3	7	15	6	2	34	207
Per cent. of total	23.1	24.7	14.2	29.1	28.8	19.3	40	40	26.3
Average life, months	21.8	20.8	12.33	27.5	24.3	17.3	27	26.4	22.5
Other causes	7	14	5	2	1	4	1	....	34
Per cent. of total	3.24	3.97	23.8	8.12	1.92	12.9	20	....	4.33
Average life, months	11	17.35	9.8	14.5	24	12	6	....	14
Total failures	216	352	21	24	52	31	5	85	786
Amount purchased in 3 years	3900	5500	500	500	500	2200	....	800	13900
Per cent. failed in 1 year	5.6	6.4	4.2	4.8	10.4	1.41	....	10.6	5.65
Average life	20.7	22.3	12.0	26.9	23.3	11.9	16.2	27.7	21.9
Amount inspected	3900	5500	500	500	500	3500	....	800	15200
Amount accepted	3900	5500	500	500	500	2200	....	800	13900
Amount rejected	....	....	....	....	....	1300	....	....	1300
Per cent. rejected	....	....	....	....	....	37.2	....	....	8.55
Average friction in 10 minutes at 25 pounds	1.57″	.835″	2.5″	.48″	1.5″	1.68″	....	2.13″	1.265
Outer tube stretch	.178″	.165″	.083″	.208″	.23″	.23″	....	.234″	.1505
Inner tube stretch	.194″	.185″	.073″	.146″	.15″	.23″	....	.190″	.1573

From a study of the relation of the service of air hose to results obtained from tests of sample pieces, we draw the following conclusions:

1st—To prolong the life of hose from a possible bursting failure a good friction is necessary.

2d—The quality of the inner tube as determined by the stretch test gives an indication of the probable life of the hose before it fails due to deterioration.

3d—That the outer tube merely serves as a protective coating and the chief requirement is that it remain intact.

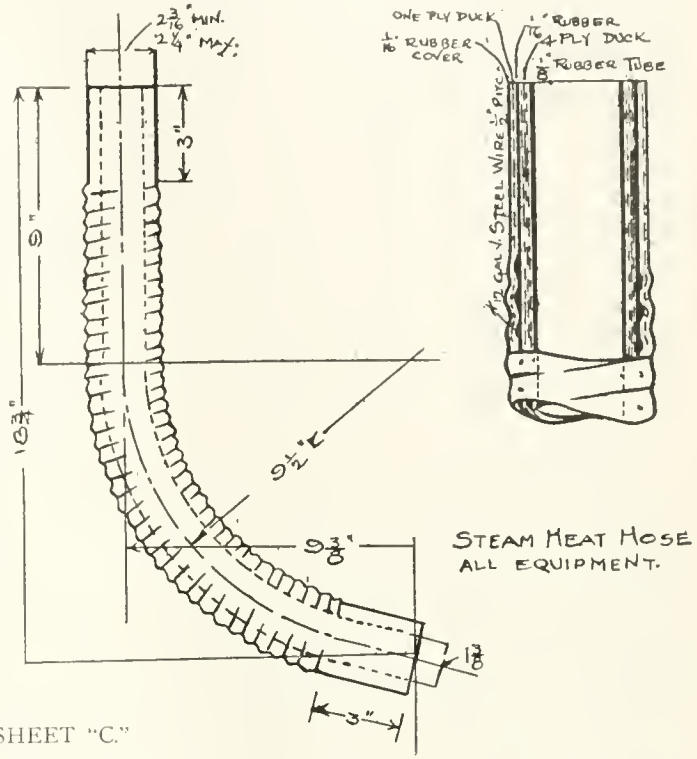
STEAM-HEAT HOSE.

The steam hose from which the following data are compiled was of one size, 1⅜ inch x 24 inches, used on passenger cars, locomotives and tenders. All this is used with an automatic connector illustrated under the discussion of air hose. The construction and shape of this hose are shown annexed.

The essential points of the specification under which this hose is purchased are that the sample piece is to be tested as follows: A piece of the inner tube one-half inch wide cut circumferentially with the grip ends one inch wide, must show an elongation to not less than six inches before breaking (between two marks that have been placed two inches apart). The ultimate tensile strength of this piece must be not less than 600 lbs. per square inch. The friction of a section one inch wide must be such that the duck will not start to unwind with a pull of less than 20 lbs. The remainder of the sample is then placed in a closed vessel, known as a digester, and subjected to dry saturated steam at a pressure of 45 lbs. per square inch for a period of 48 hours. The hose is removed from the digester and sufficient time allowed for it to cool naturally. The tests are then repeated and the stretch test must not show a deterioration of more than 20 per cent. while the tensile strength and friction test must not show a deterioration of more than 30 per cent.

Further, an inspection of the hose after its removal from the digester must not disclose any swelling in diameter or increase in thickness of the various parts and there must be no indication of blisters or loosening of the inner tube.

Data sheet "C" shows number of this hose removed during the year from November, 1911, to November, 1912. The data show: (1) the general causes for removal and (2) average life of hose. The total number of hose of each make purchased is shown as an indication of the proportion of the different makes in serv-



DATA SHEET "C."

PERFORMANCE 1⅜ INCH x 24-INCH COR. STEAM HOSE.

Cause of failure, per cent. Average life in months — Item	A	B	C	D	E	F	G	H	Totals
Damaged in service	....	....	8	....	7	....	1	....	16
Per cent. of total	....	....	2.43	....	4.02	....	33.3	....	3.08
Average life, months	....	....	12.3	....	6.86	....	15	....	11.25
Burst in service	....	....	168	....	102	....	1	....	271
Per cent. of total	....	....	51.4	....	58.5	....	33.3	....	53.7
Average life, months	....	....	12.74	....	67.5	....	15	....	10.26
Deteriorated	....	....	111	....	64	....	1	....	176
Per cent. of total	....	....	34	....	36.8	....	33.3	....	35.0
Average life, months	....	....	13.84	....	7.97	....	27	....	12.02
Other causes	....	....	40	....	1	....	....	....	41
Per cent. of total	....	....	12.22	....	0.58	....	....	....	8.15
Average life, months	....	....	12.53	....	6	....	....	....	12.4
Total failures	....	....	327	....	174	....	3	....	504
Amount purchased in 2 years	400†	....	400	....	800	....	400	....	1600
Per cent. failed in 1 year	....	....	82	....	21.5	....	.75	....	31.5
Average life	....	....	13.1	....	7.43	....	10.0	....	11.95
Amount inspected	....	....	400	....	1400	....	400	....	2200
Amount accepted	....	....	400	....	800	....	400	....	1600
Amount rejected	....	....	....	....	600	....	....	....	600
Per cent. rejected	....	....	....	....	43.0	....	....	....	27.0
Average friction before and after digester test	....	....	25 lbs.	....	23.7 lbs.	....	27.3 lbs.	....	24.3 lbs.
	....	....	17.5 lbs.	....	16.6 lbs.	....	22.5 lbs.	....	18.2 lbs.
Inner tube elongation from 2 inches before and after digester test	....	....	9"	....	8.2"	....	8.5"	....	8.45"
	....	....	6.5"	....	7.3"	....	6.3"	....	6.8"

Average No. steam-heated cars operated in last two years 407
Average No. steam-heated cars operated in 2 years previous to above 384
Specification hose purchased in last 2 years 2000
Non-specification hose purchased in 2 years previous 3,300
Specification hose used per car year 2.5
Non-specification hose used per car year 4.3

†This hose considered only as to total consumption in last two years. No records as to tests.

ice. Further, a comparison is made between service life of hose purchased from November 1, 1910, to November 1, 1912, under the specification described and hose purchased the previous two years without specifications.

Make "A" represents hose purchased about November 1, 1910, under specification, but there is no record of tests; so this hose is not considered except in the comparison with the non-specification hose.

"C" has a high life, and the tests show results well within the requirements.

"E" hose has a fairly low life, and the tests show the quality of the hose to be the poorest of the makes considered.

"G" hose shows an average life of only ten months, but it will be interesting to note that the most of this hose was placed in service in November, 1911, and the record of failures covers only three pieces. This is but ¾ of 1 per cent. of the hose purchased of this make. The indications are that a high average life may be expected from this hose when a sufficient number of lengths have been removed to give accurate data. The quality of the hose as shown by the tests would confirm this belief.

A study of the information collected shows:

1st—The desirability of purchasing hose under proper specification as the consumption has dropped from 4.3 pieces of non-specification hose per car per year to 2.5 pieces of specification hose.

2d—That the service life of steam hose is largely dependent on the quality of the friction between the layers of duck, as indicated by tests made after removal of test hose from the digester.

3d—Tests made of this hose before being subjected to steam pressure do not give much information as to the suitability of the hose for the required service. This indicates that a satisfactory specification need not include this steam test. It is thought, however, that better steam hose can be procured by raising the friction test and stretch test. A specification now being tried requires that the properties before and after the digester test be the same.

PRIVATE ENTERPRISE IN THE BELGIAN CONGO.

According to a statement of Grisar & Co., Antwerp, in their annual review, the cession to private enterprise of the gathering of vegetable products in the domains of the Belgian Congo, has been of general application, since July 1, 1912. The Governor-General has given instructions to his staff to promote in every way the establishment of business houses and the success of their operations.

While it is possible that the lactiferous stores of some forests may have been in some degree exhausted by several years of uninterrupted tapping, it is not less true that a good many districts are immensely rich in plants yielding latex, some of which have never been exploited. The hope is expressed that companies and individuals will now devote their efforts to deriving the utmost possible advantages from the resources of the colony in rubber and gum copal.

It is to be regretted that since immense zones of territory came into the control of individuals, the blacks, stimulated by competition, abandoned their previous rational methods of cultivation, and are now delivering rubber of an inferior grade, lots of good quality forming the exception. Hence, it is hoped that conservative measures will be adopted, to preserve to the colony its principal article of export. This end would be attained by refusing permission to export rubber badly coagulated, imperfectly dried or defectively packed. Rubber containing an excess of impurities, indicating a fraudulent intention, should also be stopped. Such regulations have been, it is added, adopted in certain French West African colonies, to the general benefit.

But, it is urged, these measures can only be regarded as palliatives. The idea must be more and more developed, that the future belongs to the planters, whose trees, under rational treatment, will supply the industry with a product of high quality, at prices with which the forest industries cannot compete.

With the object of promoting the creation of agricultural or planting enterprises, the Government accords the right of occupation for five years, of open domain lands, with the privilege, at the expiration of that time, of purchasing or leasing them.

Facilities are granted to parties desirous of establishing and operating factories, for the acquisition of suitable locations on lease or by purchase.

UNIFORMITY IN PLANTATION RUBBER.

In commenting editorially upon this subject, the "Times of Ceylon" remarks that when there is a type of rubber produced in fairly large quantities, of uniform and known quality, it is naturally much sought for, being set apart for the manufacture of particular articles, for which it has been found suitable. If such a quality is not available when required, considerable inconvenience results.

Attention is called to the fact that the usual forms of plantation rubber are subject to varied treatment on different estates, and even, sometimes, on the same estate. They are coagulated with such varied percentages of acetic acid (sometimes with different acids), that the buyer never knows what he is to expect at the different auctions. As a result, Brazilian rubber, such as fine hard Pará, which can always be depended upon, has a material advantage over its competitor.

The concluding words of the article thus emphasize its salient points:

"Whether or not it turns out that Eastern producers have been proceeding on erroneous lines, and will have ultimately to fall back on the old Brazilian methods of treatment, it is certain that either collectively or individually they will sooner or later have to standardize their factory work. It is, of course, open to sufficiently large producers to settle the matter for themselves; for by producing rubber of uniform qualities they can secure a steady market for their own marks. This is practically what has been done by the estates which realize such excellent prices for their smoked sheet."

This opinion on the part of the "Times of Ceylon" is founded upon the results of the personal investigations made by its editor at the late rubber exposition. It will therefore doubtless be appreciated by planters, as illustrating the practical side of the question from the standpoint of an acknowledged expert.

THE RUBBER CURING PATENTS SYNDICATE.

According to the "Malay Mail," an English company has been registered with a capital of £45,000 ($225,000) for the general purpose of acquiring inventions relating to the drying, smoking, curing and coagulating of rubber latex. The objects of the company include the adoption of an agreement with the Rubber Chemical Co., Limited. The process specially in view consists of a portable and simple smoking apparatus, the working of which is said by those who have seen it, to be effective and at the same time cheap.

NEW PLANTATION PROCESSES.

Exclusive patent rights in the Straits Settlements have been granted Mr. Noel Fisher, of the Harpenden Estate, Selangor, for a spout to be used in tapping rubber trees. Similar rights have been granted Mr. D. W. Weigel, Colombo, for a process of coagulating and defecating latex; as well as to Mr. Walter Jackson, of Singapore, for a compound intended to produce smoke for curing rubber.

TRADE MARKS FOR PLANTATION RUBBER.

In line with the idea of standard qualities of plantation rubber, is the registration of trade marks by rubber plantations. English advices report that the Highlands and Lowlands Pará Rubber Co. has taken out a trade mark. This consists of its established shipping mark—a crescent and star, with the word "Highlands."

Imitation Horn and Whalebone.

AN interesting article on this subject has recently been published in Germany by Hood, and it is here given in free translation.

Whalebone is used in great quantities for different industrial purposes, for instance, as inlays for ladies' hats and corsets, for walking-sticks, umbrellas and whips, for certain kinds of artificial flowers, buttons, boxes, etc.

Its advantages lie in its great elasticity; for this reason it has been so largely used in corset manufacture. In order to work it up for buttons, boxes and similar articles, it must first be softened by steam or hot sand; it may then be pressed in molds and afterwards polished.

The consumption of this rather expensive material is so great that the various industries could not do without imitations thereof. It is imitated in several ways and in great quantities. A good imitation should, however, possess as far as possible, and to as high a degree as possible, all the good qualities of the natural whalebone; for this reason, it is well to discuss these latter qualities.

The so-called black whalebone comes from the mouth of the bearded whale; the sickle-shaped bent horn-like plates, which are in the mouth on each side of the upper jaw, to the number of 250 to 300, with the wide sides lying together, take the place of the teeth of the ordinary whale. These so-called "beards" are fringed at their outer edges, and hang in strands from the jaws, forming the so-called "beard." They not infrequently reach a length of 12 to 16 feet, and are from 12 to 14 inches wide, and about 2½ inches thick. A single whale will yield about 1,600 to 3,500 pounds of whalebone. When the "beards" are removed from the mouth of the dead whale, they must be cleaned and split into sheets—this latter process being very readily accomplished; then dried and cut into as long pieces as possible and boiled soft in water. The plates are then separated, according to the use which is to be made of them, into rods, which are then shaved and wet polished. For the latter operation pumice-stone and felt are used; these rods are then rubbed with air-slaked lime.

The principal advantage of the natural whalebone lies, as before said, in its great elasticity. But the material possesses also great tensile strength and toughness, with no low degree of hardness; and is readily split. It is exactly this facility of splitting, making it possible to cut thin strips without any trouble, that makes the material especially valuable for corsets and the like. The shops in which the whalebone is freed from the fringes are called whalebone tearing shops; there are such in Berlin, Hamburg, Bremen, Vienna, Amsterdam and Copenhagen, which cities are the principal centers of the whalebone industry. The fibers which result as waste from the manufacture of whalebone for umbrella-makers, tailors and whip-makers, are used for upholstery. They are very similar to horse hair and are used for the same purpose.

Another material of quite different character is the so-called "white fishbone" coming from the cuttle-fish, which has a yellowish white limy shell which shines like mother-of-pearl, and is used almost exclusively for polishing fine wood, meerschaum, ivory, etc.; also for tooth powder. It has nothing in common with whalebone.

As regards the cheaper imitation whalebones, there are some which are not to be compared with those of india-rubber. For instance, there is the process covered by Munk's German patent No. 72923, which treats hides with lime and a solution of sulphite of soda, and then with a heavy solution of chromate of lime; then dries the material and subjects it to heavy pressure. The material thus obtained possesses the essential properties of corset whalebone, but is readily damaged by moisture; it must therefore be impregnated with varnish or a solution of india-rubber to make it weather- and sweat-proof.

A very remarkable substitute for whalebone is an elastic material patented by Tharin & Petit in Germany (No. 77218).

Paper is cut into thin strips and about 20 of these are laid together and drawn through a bath of concentrated sulphuric acid. If these strips are then passed between rollers, they are united into a firm parchment-like elastic piece, which may be cut into strips or rods that may be employed for corset making and the like.

According to the German patent of Pirazzi & Co. (No. 72551), a substitute for whalebone may be made by bleaching certain intestines after thoroughly cleaning with strong lye, and then treating them with a thin adhesive material. The product thus obtained is made water-tight by dipping in tannic acid, next dried and then varnished.

These are only some of the substitutes for real whalebone. There are numerous other recipes, and the substances made thereby are most varied in quality.

But the imitations made by the employment of india-rubber—for instance "balenite" and "plastite"—not only are good substitutes for whalebone, but serve to replace horn in the manufacture of articles for which whalebone would not be suitable.

"Hard" or "horn" rubber (also called ebonite) may be made into a good substitute for horn and whalebone. According as it is compounded, the resulting mass has a greater or less degree of elasticity, color, hardness, resistance to pressure, etc. Sometimes the substances are added only to cheapen the product; sometimes to perfect it. This is true in the case of balenite and plastite, which may be called imitation whalebone. We must not lose sight of the fact that horn has very much the same qualities as whalebone.

Natural horn is yielded by ordinary cattle, goats, giraffes and the "rhino." The so-called "horns" of deer are not made up of horn at all, but of bone; being only an excrescence of the skull; and may be considered the same as a tusk.

The composition of balenite varies according to the articles which are to be made therefrom. Elasticity is the main consideration. The mixture is usually about 100 parts by weight of india-rubber, 20 each of shellac, calcined magnesia, sulphur and flowers of sulphur. The hard ingredients are pulverized, well mixed and then kneaded with the india-rubber. From this plastic mass there are made plates which are cut into strips. Then comes the vulcanizing, which according as an elastic or a hard tough material is desired, is done under a comparatively low or a high temperature. But no balenite is as hard and brittle as hard rubber. The product is used for cane-handles, sheaths of sabres, cigar cases, knife and tool handles, etc.; but more especially as a substitute for whalebone. It may be polished just like ebonite.

An equally useful product is plastite, which has a deep rich black color and may be planed, turned and polished. This material also is suitable for use in place of whalebone. By proper handling it may be given a very high degree of hardness and is often used to make articles which would otherwise be made of stone or metal; also to take the place of horn. In making the plastite mass, many different materials may be used as "fillers"; especially magnesia, by reason of its light weight. A common recipe is 100 parts of india-rubber, 40 to 50 each of magnesia and flowers of sulphur, 20 of sulphur, and 50 of coal-tar. Laboratory tests are always necessary to determine for what purpose the mass is best adapted. In order to make the mixture more plastic, it is first worked, next pressed in molds, and then vulcan-

ized. A great advantage of the mass is that it contains but a very small proportion of india-rubber; but for all that has about the same properties as the pure material. The price depends entirely upon the greater or less proportion of india-rubber; the efforts of the manufacturers being always in the direction of obtaining perfection in the product with as low a proportion of india-rubber as possible.

"FELRUBITE" AND "MASCOLITE."

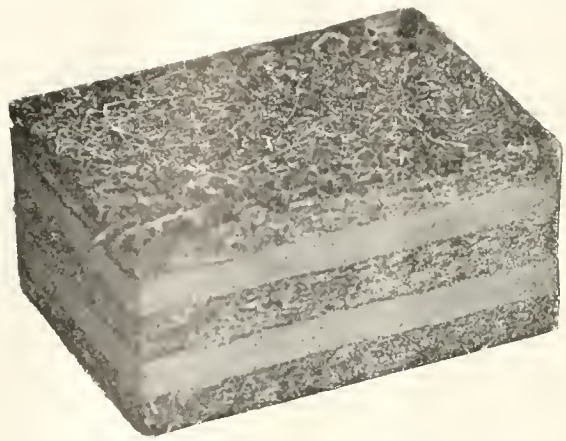
A COMPARATIVELY new material has come upon the market for use in covering floors and walls where it is especially desirable to avoid vibration and sound. It is called "Felrubite" and consists of a layer of felt covered with a layer of rubber. These two layers are joined together so effectively that they produce practically a solid uniform material which does not come apart under any conditions of use. The specially prepared felt backing acts as a cushion and gives resiliency that materially decreases the wear on the rubber surface, and thus increases its serviceability. This material is made in various thickness from 1/16 to 1/4 inch and even thicker. The accompanying illustration is made from a photograph of a section nearly 1/2 inch thick.

The advantages of this material in places where it is desirable to deaden noise and stop vibration are obvious. It is particularly serviceable in railway cars, motors and boats, and for all vehicles where there is more or less jar from machinery. It is well adapted, too, for passage ways and corridors which are not particularly well heated, as it is proof against cold as well as against sound. As a wall covering it can be fixed to any surface

A Car Platform with "Felrubite" Flooring.

and is not shaken loose even where there is considerable vibration. As all the joints are made with a special pliable waterproof cement, preventing the penetration of water below the rubber surface, it makes a water-proof and moisture-proof covering. It is less expensive than solid rubber covering, and is made in all the ornamental designs, marbles, mosaics, etc.—in which rubber tiling is usually made, and in whatever colors the design may call for. It can be used to advantage in lavatories and other places where rubber flooring is particularly desirable. It makes a specially good flooring in a billiard room.

Another material similar in principle and made by the same English manufacturers who have put "Felrubite" on the market, is "Mascolite," which has been in use on the Continent for quite a number of years. "Mascolite" is made in several different ways.



Insulated "Mascolite" of Felt and Rubber.

One form is simply a layer of felt made of a special mixture of fibers selected after long tests as the best sound and vibration absorbers, and then treated so that it is damp and insect-proof, and will stand any climate changes without alteration. A little more advanced form consists of interposing between layers of this prepared felt layers of cork; and a still different form which is used for insulating purposes, consists of five layers of material, the two outside and the middle layer being of felt, and the two alternating layers being made of vulcanized rubber. In its various forms this "Mascolite" is used as a bedding for machinery where there is a great deal of jar, or in the roadbeds of railroads for the purpose of absorbing the vibration. Its usefulness under machinery is obvious, especially where machines are installed in buildings with steel frames, as is often the case in this country. Here, if the engine or machine—particularly if it it is a grinding machine—rests upon the floor or even is placed upon a bed of cement, the vibration is communicated to the steel structure of the building; and the effect—particularly where there are many machines, as in buildings occupied by printers—is to impart to the entire building a continual quiver which is not only uncomfortable, but which greatly increases the wear and tear of the machinery. The layer of "Mascolite"—particularly of the thicker varieties—absorbs practically all of this jar, and many machines can be in operation simultaneously in the same building with little effect, either upon the building or upon one another.

It is also a useful material in the roadbed of railroads, and especially in underground railroads where the noise, unless means are taken to deaden it, is almost deafening. This material has been used in certain Russian railways for the last seven years, and the result in decreasing the wear on the rails and on the rolling stock has been very perceptible. It is used in railway tracks to best advantage by putting a layer under the chair or plate that holds the rail to the sleeper. Where the railway is an elevated structure, "Mascolite" can be used to advantage at the foot, or at the top, of the column, or in both places, and also between the rail and the sleeper. This material is so thoroughly water-proof that it is not affected by exposure to the weather, and, it remains resilient, while at the same time it will stand the greatest weight without being pressed out of its original shape, or taking what builders call a "permanent set."

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

AT the time of writing this, a strike among the rubber workers in Akron has been under way for ten days, and has assumed a serious aspect. The leaders of the I. W. W. and of the American Federation of Labor have been exceedingly active in getting the rubber workers to join their organizations. A great many of the employes are standing loyally by their employers, but it cannot be denied that the work of the rubber factories at the present time in this city is badly crippled. The origin of the strike came about through a dispute between the management of the Firestone Tire & Rubber Co., and the employees, over a new schedule for tire finishers; the management contending that under this new schedule finishers could make $3.50 a day, while the employes contended that this could be done only by exceptional men under exceptional conditions.

This new schedule was proposed February 11 or about that date. Mr. H. S. Firestone made the following statement regarding it: "This new schedule, which will give the average tire finisher $3.50 per day, was occasioned by the use of more machinery in the production of the tire. By this new machine method one man builds the carcass and the other finishes the tire. That makes two processes where formerly there was but one. The tire finisher was therefore a new feature for us to deal with. We desire to fix a rate that will give the finisher $3.50, believing that to be a just and reasonable wage. While experimenting with the machine we made a rough allowance to the tire finisher of one-third the price formerly given the man who made the whole tire by hand. This allowance was to last only until a reasonable just rate could be arrived at by practice. The temporary rate given tire finishers lasted only a few weeks. It is true that finishers made unusually large wages during that time, but it was understood that it was merely a provisional arrangement. This led to the differences that appeared when our $3.50 scale was reached.

"The rate first decided upon, it was felt, would bring this result. The men in the tire finishing department agreed that under this scale they could on some days earn $3.50, but they felt that they could not maintain this rate week in and week out. After another careful consideration of the whole subject, we decided upon the scale now in force. It enables beyond question any experienced tire finisher who is an average worker to make $3.50 a day.

"The installation of machines for the making of tires makes the labor of building tires lighter, and while the output of tires would be increased, and the rate paid the tire maker less for each tire, the tire makers are able to earn the same average of $3.50 a day with lighter work.

"The new scale affected less than sixty men, but later would have affected more. I am sure that now our men in their own hearts have no grievances and are perfectly satisfied."

Mr. Firestone further said, "There has been nothing in the present situation that we could not or would not have adjusted to the satisfaction of the company and its employes, and all the present trouble in the rubber industry is caused directly by the agitation of men who do not live in Akron, who have no real interest in Akron or its people, and who would, when peace has been restored here, pass on to the next place where trouble will be started."

The workmen refused to accept the schedule and walked out, and have been endeavoring to create a sympathetic strike by inducing the other rubber workers to come out and by threatening to have the strike extend through all the rubber factories in the United States, and by trying to induce the allied trades and the railroad and street car men to walk out. The local and national organizers of the I. W. W. have been in Akron and have tried to arouse discontent among the rubber workers, and to prevail upon them to join the I. W. W. Many without knowing the purpose of this organization have joined it. Several of the smaller factories have felt the effects of the strike more than the larger factories.

Work in the rubber plants is to a great extent dependent upon the different departments working together, and the loss of a few men in one department may tie up a whole plant, so that it is hard to state how many are actually striking, and how many are home on account of some other person striking upon whose work their work depends. At present the State Board of Arbitration is endeavoring to bring about an adjustment. The strikers are peaceful and most of them claim no cause of discontent with their present employment and wages. The conditions of Akron rubber workers have been good and cannot be compared with Lawrence, and with rare exceptions the Akron rubber employe is well dressed, well fed and well housed, which is evidenced by the large number of workingmen's homes which are owned and paid for, or being paid for, by the rubber employes of Akron.

It is believed that all differences will be speedily remedied and efforts to this end are being put forth by the Akron Chamber of Commerce, State Board of Arbitration of Ohio, and by men influential with employers and employes of Akron industries.

A STATEMENT BY THE AKRON CHAMBER OF COMMERCE.

On February 19, the Board of Directors of the Akron Chamber of Commerce issued, and published in the local papers, the following statement, under the caption:

A PLAIN STATEMENT OF FACTS IN BEHALF OF AKRON:

In view of the many misleading and exaggerated reports sent out regarding the rubber strike and rubber strike conditions in Akron, it is only fair to those who have the best interests of Akron at heart and earnestly desire a speedy and fair minded settlement of any difficulties which have arisen, to recount something about where Akron stands in relation to its rubber industry, and reversely, where the Akron rubber industry stands in relation to the welfare of the community at large.

Whatever plea is contained in this article is directed towards but one end—the keeping with us of that prosperity which has made Akron conspicuous—not only as a great manufacturing center, but beyond all, as a good town to work in—a good town to live in.

Wages In General. The 1912 report of the Ohio State Bureau of Labor Statistics is compiled from figures covering the year 1911. The general average of wages paid in Akron rubber factories is considerably higher at the present time than in the year 1911, yet the Bureau's figures show that for 1911 the average annual income of Akron rubber workers, not including superintendents, salesmen, and office help, was $655.08 each, for an average of 278 days at work—the average daily earning for workers (both men and women), being $2.36. The average work day was 10 hours.

Comparing the general average of wage conditions in Akron with other cities, from figures contained in the same report, it is seen that Akron factories paid to wage earners in 1911 a total of $14,259,262.30, as against a total of $13,984,129.09 so paid in Dayton and $13,561,048.95 so paid in Toledo, each of these cities being much larger in point of population than is Akron.

Akron Pays All Workers Well. The tremendous growth of the rubber industry in Akron and the consequent ever-growing demand for workers, has established in this city a wage standard above the average in every other field of industry. Manufacturers in other lines than rubber have been obliged to keep steadily recruiting the ranks of employes because their men were attracted away from them by the rubber industry.

Merchants have experienced the same difficulty. Laundrymen in Akron are paying higher wages for women workers than in any other city in Ohio, for the same reason.

The wages on farms adjacent to Akron average above those of most other sections, for the same reason.

Akron Is a City of Homes and Home Owners. There is practically no building in Akron that could in any sense be styled a tenement house. The very great majority of Akron people in every walk of life live in detached dwellings. Figures compiled the past year by the Akron Real Estate Board, *show 68 per cent. of the heads of families in Akron to be home owners*, a figure high above the average, if, indeed, it is equalled anywhere. More than two of every three married men you see in Akron, then, are living in homes of their own.

The Oppression of Labor is so uncommon as to be almost unknown in Akron. Conditions are not all ideal, but as to sanitation, light, ventilation, and proper working surroundings, Akron factories are nearly all modern, and in the rubber factories particularly is this true, as most of the buildings have been erected in recent years, and fire-proofing and sanitary conditions have received large attention.

The Employment of Minors, whether boys or girls, is a subject of the strictest attention in the Akron rubber factories, and the laws governing these matters, both as to age limitations and limits upon hours of work, are almost universally observed to the utmost in letter and spirit.

There Is Little Poverty In Akron. In shops, in offices, and in stores, Akron is a hive of workers. There is no idle class and there are no vagrants. It may well be a matter of pride, indeed, to every one interested in Akron, that the very ranks of those now on strike in this city, show rarely any but well dressed, and never any but well fed men and women.

Unanimously adopted by the Board of Directors of the Akron Chamber of Commerce, Wednesday, February 19, 1913.

J. Edward Good, President.
Vincent Stevens, Secretary.

* * *

On Saturday, February 15, the Swinehart Tire & Rubber Co. announced that they had let a contract for a new building 102 x 70 and three stories high, absolutely fireproof, being constructed of reinforced concrete. This new addition will be erected on ground just west of the present building at the corner of North Howard and North streets. The rumor that the Swinehart company might remove from its present location to some site where there is more room to expand was confirmed by Mr. Walsh, president of the company. "It is true we are expecting to move to a new site where we will have more room. At present we are looking for a site to build. On account of this new building which we will put up, it will be at least two years before any removal will take place. This building we are forced to build at once as all our output for the coming year has been contracted for, and with our present limited means we will be unable to meet our contracts."

The present number of men employed at the plant is about 300 and the erection of the new building will give employment to many more. The new building will be equipped with an entire new steam plant, new boilers and new engines. The entire three floors will be given over to the manufacture of pneumatic and solid tires.

Other rumors that have been afloat concerning the consolidation of the Swinehart Tire and Rubber Co. were characterized by Mr. Walsh as false. "There is absolutely no truth in these statements. We are an independent company doing business under our own charter."

* * *

F. A. Seiberling, president of the Goodyear Tire and Rubber Co. says: "Goodyear sales for the year 1912 approximated $25,000,000 which came near to doubling the sales of 1911. For several years past, each year has shown a doubled output. It is fair to suppose that this is going to continue. We have twice as many users as two years ago. Contracts from makers are larger than ever before and this means two million tires next year, enough to equip 500,000 cars.

* * *

L. M. Latta, formerly of the Diamond branch of the B. F. Goodrich Co., has resigned his position and is now Office Manager of the tire department of the Swinehart Tire and Rubber Co.

* * *

The B. F. Goodrich Co. expects to break ground as soon as the frost is out of the ground, for a plant at St. Catharines, Canada, to take care of their Canadian trade. This plant will start with approximately 1,000 men and will be increased as business demands.

* * *

On February 18, James C Baldwin was appointed receiver for the Ohio holdings of the New York Commercial Co., by Judge Doyle. The appointment of a receiver followed a suit filed by A. H. Alden & Co., an English corporation. The Ohio holdings of the New York company are said to aggregate $40,000.

* * *

H. W. French, who for the last several years has successfully represented in Akron the New York Commercial Co. and The Geo: A. Alden & Co., has severed his connection with these companies and is at present with Ed. Maurer. He has opened offices at 513 First-Second National Building, Akron. His many friends wish him continued success. J. C. Baldwin now represents the New York Commercial Co. and the Geo. A. Alden & Co. in this city.

* * *

Among those convicted at Indianapolis for dynamiting were Messrs. Smith and Anderson, of Cleveland, Ohio, who on July 5, 1910, dynamited structural iron in the yards of The Burger Iron Co., at Akron, Ohio, which was being prepared for The Diamond Rubber Co.

* * *

The B. F. Goodrich Co. has just issued its route book covering the territory from St Louis to Denver. The Goodrich Tough Tread tire is the selection of The Studebaker Automobile factory as the standard equipment for 1913.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

BUSINESS in the various lines of the rubber industry is unequally affected by what many consider an unusual winter. The tire men are all as busy as can be, and probably every factory devoted to this line is beating last year's record. The boot and shoe factories are far from busy, the present season so far having been unpropitious for this business. The rubber clothing men and also those making other lines of raincoats have had a good season, and the demand continues brisk. Druggists' hard and soft rubber goods are seasonably active and, in fact, should naturally be so with two leading syndicate drug concerns competing with each other and extensively advertising these goods at cut prices.

The makers of fire hose are laying plans for town appropriations next month, and garden hose is being ordered for early spring shipment. Belting and packing lines are moderately active, though manufacturers note the tendency on the part of consumers to let the mill supply houses and manufacturers carry the bulk of the stock by buying in smaller quantities and only as needed. The crude rubber people seem to be satisfied with present conditions and reclaimers are active, so much so that they have boosted the prices of scrap rubber way above normal at this season of the year.

* * *

The vicinity of Congress street and Atlantic avenue has become still further a rubber district, so by the removal thereto of one well-known concern and by the opening of an entirely new distributing agency for rubber clothing and footwear. Both stores are large, high-studded, with broad plate-glass windows in both front and rear with excellent light, splendid shipping facilities and right in the heart of downtown business.

The store numbered 524 Atlantic avenue is to be formally dedicated and opened the day this journal is dated, March 1, by J. D. Stiles, manager of the Boston house of Jenkins Bros., whose pump valves, packing and discs are sold in almost every civilized country. This store and basement will enable Mr Stiles to carry all his stock in one place instead of having a large portion of it in a separate storehouse. The offices are fitted up according to the most up-to-date requirements and the store and basement so arranged that the entire stock is available for immediate shipment. The shelving on the side wall, for instance, contains, sorted out into sizes and styles, over 25 tons of brass

valves. The celebrated black and "Jenarco" rubber packing and the valve discs are also sorted out for instant filling of orders. Mr. Stiles has been with this house 25 years, and manager of the Boston store 16 years, being for most of this time a director in the Jenkins Bros. corporation and the Jenkins Rubber Co., of Elizabeth, New Jersey.

* * *

Next door, at 520, the Arco Rubber Co. has opened a jobbing house for the distribution in New England of the clothing and footwear manufactured by the Apsley Rubber Co., of Hudson, Massachusetts. This store is a commodious one, well lighted both in front and rear. It is fitted up in oak, conveniently arranged with offices and sample rooms at the front, while the main part of the floor and basement is arranged to carry, sorted out, all the lines represented in the catalogs of the company. The store is in charge of Mr. H. G. Cressinger, who has been connected with the Apsley interests for some years. This jobbing house will cover New England by means of a corps of salesmen, who will undoubtedly still further extend the sale of the well known lines of rubber clothing and the various brands of rubber boots and shoes made by the Apsley company.

* * *

The New England Leather and Shoe Finders' Association held its annual business meeting and banquet at the American House on the 13th ultimo. Among those who participated in the meeting or attended the banquet which followed were quite a number of gentlemen connected with the rubber heel business, which is becoming quite an industry. The Foster Rubber Co., with its usual enterprise, furnished the cigars for the banquet and these were distributed in envelopes emblazoned with the cat trade mark of the house. The White Rock Water and the champagne were furnished with the compliments of Mr. F. W. Whitcher, of the company bearing his name, manufacturers of the Velvet rubber heel. The O'Sullivan Rubber Co. distributed to each guest a neat silver key chain with a number tag to be registered so that if the keys are lost they can be returned.

* * *

The new reinforced concrete building of the United States Tire Co., at the corner of Massachusetts avenue and Beacon street, is nearly completed and already the sign of the company is emblazoned on both fronts. The building is somewhat wedge-shaped and not very wide at the junction of the two avenues; and with the large plate-glass windows will be one of the best lighted establishments of the kind in the city. It is also one of the best situated at the very beginning or entrance to that section which is fast becoming the recognized automobile centre of the city.

* * *

The Fisk Rubber Co., of Chicopee Falls, in this State, which late last fall gave up its Delaware charter as a $5,000,000 corporation, and reincorporated under Massachusetts laws with an authorized capital of $10,000,000, is now having constructed a new storage house, 240 by 90 feet, three stories and basement, of steel, brick and concrete, to be completed by June or July. This building, which is to cost $400,000, will be parallel to the tracks of the Boston and Maine Railroad and a new siding will be built, giving facilities for loading ten or twelve cars at one time. Their mill No. 7 is being enlarged by the addition of two more stories, thus enabling the company to materially increase its manufacturing facilities—a necessary measure with the present steadily increasing demand.

* * *

Hon. L. D. Apsley, president of the Apsley Rubber Co., was tendered a banquet recently by the Progressive Committee of the town of Hudson and the Progressive Glee Club, which did active duty during the last political campaign. Mr. Apsley, during his term in Congress and ever since has been a close personal friend of ex-President Roosevelt and he was a strong advocate for the principles of the Progressive party; but he is reported to have positively declined to allow his name to be used in connection with any political office, preferring to remain a private citizen and confine his activities to his own steadily growing manufacturing and mercantile business.

* * *

The Boston Chamber of Commerce has planned a most important and interesting trip to and across South America, starting from Boston April 25 and lasting until July 30, during which eighteen important cities will be visited in six South American countries. It will give the tourists an opportunity to study at close range the possibilities of increased trade between the United States and these countries. Prominent in the committee in charge is William H. Gleason, of the Revere Rubber Co., who is doing his full share of the work of securing recognition for those who will take the tour, among the representative business organizations in the various cities visited. Letters have been received from the officials of the various South American governments promising most hospitable welcome.

* * *

The strike of the garment workers last month in this city has hit the rubber trade. The raincoat makers' union of the I. W. W. announced a strike and a number of concerns had the experience of seeing their workmen and workwomen walk out. Up to the present time but few of the large producers have had any very serious trouble with their help.

* * *

The Monatiquot Rubber Works Co. is to build a two-story store house near its factory at South Braintree, Massachusetts. In digging for the cellar a fine quality of granite was discovered and this incipient quarry has been drawn upon for stone for the foundation of the building. The structure will be 70 feet wide and extend 140 feet along the railroad siding, thus facilitating the shipment of goods.

* * *

The Boston Retail Shoe Merchants' Association at its regular monthly meeting on February 13 held a rubber shoe night, when the members were addressed by Geo. H. Mayo, of the Hubmark Rubber Co.; A. S. Foster, formerly of Lamkin & Foster, now in charge of the rubber department of Winch Brothers Co.; George Hutchinson, of Clark-Hutchinson Co., and Fred F. Schaffer, superintendent of the Goodyear India Rubber Glove Co.'s factory at Naugatuck, who told the retail shoe dealers a heap of facts about rubber boots and shoes, which were of interest. The question of multiplicity of styles, the necessity of fit, and the methods of manufacture were the main topics considered.

* * *

The steady and continued increase of business in the clothing department of the Enterprise Rubber Co., of this city, has compelled the enlargement of their sample room devoted to this line of goods. This has been accomplished by moving their sample lines of druggists' hard rubber goods to another location and throwing the space thus secured into the garment sample room, which is now double its former size. This allows for a much better display of the lines and adds greatly to the convenience of their customers.

* * *

Some foreigners are thrifty. A man named Hagop Hadjulian, who works in the Hood Rubber Co.'s factory, charged a fellow-countryman ten dollars for getting him a job in that factory. Later Judge Luce charged Hagop twenty-five dollars for the affair, and Hagop wept.

* * *

The Republic Rubber Co., of Youngstown, Ohio, manufacturers of Republic automobile tires, are making arrangements for opening more adequate quarters for stockrooms, salesrooms and general offices in this city. W. S. Carleton, who has been in charge of the New York office of the company for several years will be in charge.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

WHILE the strike in Akron, Ohio, has affected the Chicago rubber market to some degree, the general tone of business may be described as good, and the majority of the trade are predicting that a settlement of the difficulties will soon take place. There is absolutely no feature of the rubber market (aside from the labor difficulties) to worry the local trade, and investigation of the most representative houses in Chicago reveals that they have about all they can do to get orders out on time, and that many large demands for immediate delivery are in hand. The absence of snow during February and the many days of rain-threatening weather had a tendency to cause activity in clothing. The rubber houses that feature their clothing departments had been very much disappointed over business conditions for December and January, and the early part of February gave little promise of better conditions, but since the middle of the month there has been a decided change in conditions and some of the larger houses have employed additional help.

About the only complaint heard is from the scrap rubber men who had been enjoying marked prosperity during December and January. The Akron strike appears to have affected this element to such a degree that there is a manifest feeling of dissatisfaction over general market conditions.

"I may say that there is nothing to be enthused about so far as the scrap rubber market is concerned," said a representative of H. Muehlstein. "The strike at Akron, Ohio, has been of incalculable detriment to the Chicago rubber market, and we are hoping that the trouble may be terminated without unnecessary delay. The present strike is a good example of just how serious labor troubles may affect the rubber market. Perhaps in no other line of the rubber industry in Chicago has there been more general satisfaction among jobbers and dealers than in 'scraps,' because the market has been going along better than normal throughout the winter. Just when we were feeling our best the Akron strike dawned and now we are simply at sea."

Mechanical rubber goods, which have been taking their normal course during the last three months, are now in much greater demand than at any time since the fore part of December and the trade in general reports that they have not the least complaint to find. Drug sundries, which were running ahead of other lines at last report, continue to maintain their excellent showing, and dealers are buying with the confidence that business will continue to be brisk for an indefinite period.

The hoof pad market has not been as encouraging during the last three months as could be wished, and now that spring is near there is a feeling of general dissatisfaction over conditions. The reason for the slack business is that the winter has been marked by so little snow and sleet that at no time has there been active buying. Despite the fact that certain reform organizations have been exerting themselves to the utmost to have the city council make provision for the better shoeing of horses their efforts have been unavailing. Concerns that last winter reported the largest business in their history, due to the extreme cold that prevailed for so long a period, are now complaining of the quiet trade conditions.

* * *

According to the Goodyear Rubber Co. there has been a slight improvement in footwear during the month of February. The present winter has not been a particularly active one so far as footwear is concerned, most jobbers reporting that their volume of sales has been less than in former years. "Now that spring is near there is no question that the footwear market is deserving of a degree of activity," said the representative of the Goodyear Rubber Co. "We are sorry to report that the present winter has not been up to expectations so far as footwear is concerned, but this situation was due to the comparatively mild weather and virtual absence of snow. Whenever such situation obtained in past years the spring trade that followed has always been brisk, and history will undoubtedly repeat itself."

* * *

The Raven Mining Co., which maintains a large office in the Marquette building, has placed several large orders for mechanical rubber goods during the present month. This concern feels that the boom in mining which has prevailed throughout the winter will become permanent and that many of the larger mines will be heavy buyers of mechanical goods during the spring.

* * *

Former Senator Albert J. Beveridge of Indiana is to erect a six-story and basement building at the southeast corner of Michigan avenue and Sixteenth street to cost approximately $125,000, and has contracted to lease the same to the Goodyear Tire and Rubber Co. The building will occupy a lot fronting 50 feet with a depth of 165 feet, and the lease provides for an annual rent of 5 per cent. on a valuation of $125,000 for the first ten years and 5 per cent. on $150,000 for the second ten years. The lessee is to pay the usual rate on the cost of the building and in addition the taxes and insurance. The Goodyear Tire and Rubber Co. has also purchased the Ford-Johnson warehouse at Indiana avenue and the Illinois Central tracks for $95,000. This concern's Chicago business in the future will be centralized in this locality.

* * *

Dealers who carry a large line of garden hose are now preparing for the opening of the spring trade. To date a number of the larger houses have orders that have reached them much earlier than anticipated, and this situation is taken as an indication that the spring trade will open earlier than last year and will also be much heavier.

* * *

Two meetings of particular interest to the rubber industry were held in Chicago recently. The Friction Plug Heel Association held a meeting that was attended by a number of men from various parts of the country who are well known to the rubber trade. Among those who were here were Mr. Pitcher of the Pitcher Rubber Co., Boston, and Mr. Platt of the Foster Rubber Co., Boston. The second meeting was that of the Finders' Association, which is composed of the shoe jobbing interests of Chicago. This meeting was held at the La Salle Hotel and was one of the most largely attended in the history of the organization. Many from out of town attended this meeting. Various matters of vital importance to the association were discussed.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

THERE has been a healthy volume of business transacted by the local tire houses during the first two months of this year, and orders from traveling salesmen and mail orders have made the rubber trade quite active locally. There has been no falling off in the demand for rubber footwear, despite the fact that in this section there has been an open winter with weather conditions unfavorable to creating a demand for rubber clothing and footwear.

* * *

W. G. Brown, the executive head of the W. G. Brown & Co., rubber brokers of this city, was tendered a complimentary dinner at the Business Men's Club in recognition of his past services as chairman of the Santa Clause committee. For several years past Mr. Brown has been one of the stanchest supporters of the movement, and its success was largely due to his untiring efforts.

* * *

The Ideal Steel Wheel Co. has secured title to a valuable man-

ufacturing site, which was practically purchased last November, mention being made in this column at the time. The company will be in full operation as soon as special machinery which is being built is installed. The product to be manufactured by the company is a patented steel wheel which makes possible the use of a puncture-proof cushion tire at all speeds.

* * *

While the agreement entered into by the rubber tire manufacturers of the country prohibits exhibits of their products at the automobile shows given outside of the cities of New York, Chicago and Boston, several of the managers of the big companies maintaining branches in this city arranged to run side shows of their own at their respective branches during the Cincinnati Automobile Show, which opened February 24 and continues to March 5. Manager B. M. Lovell, of the B. F. Goodrich Co., has a display at the spacious quarters of that company on Race street in the form of a rear automobile system equipped with safety treads. A similar exhibit has been held in other parts of the country and always with marked interest to the public. The Firestone Tire and Rubber Co., The Diamond, The Fisk and The United States Tire companies are also making a special point to interest visitors to the show in their products.

* * *

The Seamless Rubber Co., represented locally by Bumiller & Remelin, dealers in automobile and bicycle accessories, golf balls and sporting goods, has a large display of its products at the Automobile Show. The display is unique for this city, as it shows the process of manufacture of rubber goods in their various forms, from crude rubber to the finished product.

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The I. J. Cooper Rubber Co., at 717 Main street, has taken over the agency of the Motz Tire and Rubber Co., which was formerly held by the Selden Motor Co. The Cooper company also handles Racine tires.

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Dr. C. L. Bonifield, president of the Cincinnati Automobile Club, and Gustav Drach, an architect, are the president and secretary of the National Cement and Rubber Co., which has its principal offices in Toledo, Ohio. The specialty of this company is a patented clamp by which any make of casing or inner tube may be cured of blow outs and punctures in five minutes.

* * *

The Fisk Rubber Co. has become a prominent factor in the local rubber field. It has recently opened a branch in this city at 816 Main street and placed M. J. Kirby in charge. The local branch will cover the Central states from this city.

* * *

Edward Barrett, who was formerly connected with the Federal Tire Co.'s branch at Columbus, Ohio, as assistant manager, has resigned and has taken a position with the Fisk Rubber Co. here.

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John Barrett, the director-general of the Pan-American Union, and former United States Minister to Panama and other South American countries, in an address at the annual dinner of the Chamber of Commerce, urged Cincinnati business men to be awake to the trade possibilities which the Panama canal will develop. He advised them to make preparations to study the buying and selling field of all of the South American countries and canvass the trade conditions, in order that this city may not be outstripped in the race for commerce there. Declaring that he recognized the strategic position which this city occupies in the commerce of the United States and especially in the great Ohio and Mississippi valleys, the speaker said he wanted to see it awaking to the importance of the Panama canal and of Pan-American commerce. He laid particular stress upon the rubber-producing countries of South America and the importance of Cincinnati becoming one of the leading points of distribution of that product, in view of the fact that it has as its immediate neighbors some of the most important rubber manufacturing cities in the world. Mr. Barrett in speaking of the rubber trade possibilities in the South American countries said: "I urge upon the Cincinnati Chamber of Commerce, manufacturers, the business men, the exporters and importers to take a direct interest in what the Panama Canal actually means not only to Cincinnati, but to the entire country, and to study intimately the twenty sister republics of the Western hemisphere lying south of the United States. Nothing better could happen to Cincinnati than that you should start here what might be called a Panama Canal and Pan-American movement which would not only benefit this city, but expand all over the Ohio Valley and the Central West. 'Get ready for the Panama Canal, and go after Pan-American trade' should be the slogan of your Chamber of Commerce."

* * *

Local representatives of the manufacturers of anti-skid and non-skid tires are lending every possible encouragement to the movement started by city officials to follow New York in tabooing the use of tire chains on asphalt streets. With the increase in use of motor vehicles in this city it has been found that many of the more travelled thoroughfares, paved with asphalt, are rapidly becoming destroyed, it being claimed that the constant wear and friction of the steel edges of the chains cut into the asphalt. The agitation, however, is meeting with a storm of protest on the part of accessories dealers and auto owners who have invested in chains.

* * *

Recently the Schaefer Rubber Co. entered into a lease for its present quarters on East Fourth street for a term of years. After the lease was executed the owner decided to improve the premises by building a skyscraper, and it was necessary for this company to seek other quarters. As a result, and in order to accommodate the owner, it will be necessary for the Schaefer company to move twice before it will be permanently located again. The company will occupy temporary quarters at 418 Vine street until April, 1914, at which time it will again be located on East Fourth street.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

WORKMEN have just finished their labors on the new storehouse for the Revere Rubber Co. in Providence, and the contractors are ready to turn the structure over to the company. The building is of modern construction and is connected with the main building of the plant by a bridge 150 feet long. It was erected as a result of the increasing business of the company. It is the second storehouse that the concern has erected during the past year. It is of reinforced concrete of flat slab construction, no beams or girders being used to support the floors. The size is 75 feet by 300 feet. The five floors give a floor area of more than 100,000 square feet. The floors are designed for a live load of 250 pounds per square foot. Brick curtain walls enclose the building, while each floor is divided into three rooms by terra-cotta fire walls provided with automatic fire doors. All the concrete is reinforced with Havemeyer deformed steel bars, and steel sash and wire glass are used in all the windows. The roof is of concrete slab, with tar and gravel roofing. This building was erected for the storage of raw materials and manufactured goods. As soon as the building is occupied the space now used for storage will be available for manufacturing purposes, and this, together with other extensions and improvements, will provide for about 50 per cent. increase in the production of tires.

* * *

Judge LeBaron B. Colt, who on January 21 was elected United States Senator from Rhode Island by the General Assembly, mailed to President Taft on February 3 his resignation as United States Circuit Judge from the First Judicial Circuit. The resig-

nation took effect Saturday, February 8. Judge Colt has served in the United States courts since March, 1881, when he was appointed District Judge for Rhode Island by President Garfield. His term of service in the Federal courts was for a period of more than 30 years.

On the day that Judge Colt sent in his resignation, February 3, Col. Samuel Pomeroy Colt, head of the National India Rubber Co. of Bristol, and president of the United States Rubber Co., gave a dinner at the Squantum Club, Squantum, to the members of the General Assembly, State officials and prominent citizens of Rhode Island in honor of his brother, Judge Colt. About 100 guests were present. Following the dinner addresses were made by Col. Colt, Governor Aram J. Pothier, Lieutenant Governor Roswell B. Burchard, Albert B. West, Democratic leader of the House of Representatives, and Judge Colt.

* * *

Forty-seven years in the employ of the National India Rubber Co., Bristol, is the record of James H. Hoar, foreman of the Vulcanizing department of the factory, who recently celebrated his 66th birthday. Mr. Hoar is the oldest employe of the company in point of service. In all the 47 years of his service in the company, as laborer, assistant foreman and foreman, Mr. Hoar has not missed a day because of illness. He has held the position of foreman for 26 years.

James H. Hoar.

When a young man Mr. Hoar was associated as a gardener with his father. In the autumn of 1866 when the factory of the National India Rubber Co., then the National Rubber Co., had been in operation but a year, Mr. Hoar gave up his position with his father and entered the employ of Bristol's new industry. For several years he worked at varnishing and curing of rubber goods, until he had acquired a thorough knowledge of his trade. It was while Stephen Bourn, a former well-known rubber man, was foreman of the department that Mr. Hoar was made assistant foreman. This was in 1877. In 1887 Mr. Bourn retired and Mr. Hoar succeeded him.

Mr. Hoar has 40 men under him today in the vulcanizing department. This department is one of the most important of the many in the big Bristol factory. The product of the mill—boots, shoes, arctics, carriage cloth and many other articles of every-day use—have to pass through "the heats" before being ready for the market. It is here that Mr. Hoar's long training stands him in good stead, for it requires skill and knowledge of the rubber business to determine when the goods are vulcanized to the proper degree.

Mr. Hoar tells many interesting stories of the work in the rubber mill in the early days of the industry. "I used to work many hours overtime," said Mr. Hoar. "It was customary in those days when there was a rush to begin the day's work at 5 o'clock in the morning and keep it up without stopping, with the exception of when we went to our meals, until 11 or 12 o'clock at night. They don't do that nowadays," he added with a smile. He explains his ability to keep up this high tension by his habit of taking rest when he could, and by living a moderate life. "I never had a vacation," said Mr. Hoar, one day recently, "being content to enjoy freedom from work when the factory was closed for repairs or other causes." Although his work keeps him on his feet, Mr. Hoar says he feels no ill effects.

* * *

The factories of the National India Rubber Co. and the Consumers' Rubber Co., of Bristol, resumed operation February 3, the former after a shutdown of two days for repairs to a cylinder and the latter after about two weeks' cessation of work for repairs and improvement to the machinery.

* * *

Manager LeBaron C. Colt of the factory of the National India Rubber Co., of Bristol, left February 5 for Denver, Colorado, where he will spend some time resting. Mr. Colt has had a busy season and will remain in Colorado for two months or longer. He was accompanied by his family.

* * *

A new steam boiler was installed at the factory of the International Rubber Co. at West Barrington February 3. A new 350-horse-power engine will soon be set up in that mill. Because of the rush of business night work has been started at this plant.

* * *

The Woonsocket Rubber Co. had a booth at the Arts and Crafts exhibit at the Baptist Church, Woonsocket, on the evenings of February 4 and 5. The booth was one of the most interesting in the whole exhibit. A rubber "ham" from South America was on exhibition and was examined with great interest by those present. Other articles displayed at the booth were other samples of crude rubber, and the finished rubber boots and shoes. This was the first exhibit of its kind ever held in Woonsocket. The manufacturers of the city plan another large one soon in some local hall, so that residents in Woonsocket may learn of the various articles manufactured in the city.

* * *

The annual meeting of the American Wringer Co. was held January 31 at 75 Westminster street, Providence. The following were elected directors: W. S. Granger, Lyman A. Mills, W. S. Ballou, A. G. Beardsley, Jr., J. F. Hemenway, Dr. James E. Sullivan, and Latimer W. Ballou. At a meeting of the directors held immediately after the adjournment of the stockholders' meeting, W. S. Ballou was elected president, and A. G. Beardsley, Jr., was elected treasurer.

* * *

Marcus L. Carder has filed suit for $10,000 against the American Electrical Works of Phillipsdale, manufacturers of wire insulating, alleging that a stroke of paralysis that he suffered on May 20 of last year was due to the poisonous fumes arising from the burning of arsenic, in which the defendant company forced him to work.

* * *

Frank Salisbury, for a number of years employed at the factory of the National India Rubber Co., died February 7 at his home in Bristol, after an illness of several months. He had been a sufferer from tuberculosis. He was a native of Bristol, and was 27 years old.

* * *

Arthur L. Kelley, president of the Mechanical Fabric Co., makers of rubber goods, and president of the Narragansett Elec-

tric Lighting Co. of Providence, was recently operated upon for appendicitis in a Boston hospital. Mr. Kelley has been in poor health for some time, although he has shown considerable improvement since the operation.

* * *

Francis Munro, a veteran of the Civil War and for years an employe of the National India Rubber Co., of Bristol, died at his home in Bristol February 11, after a few days' illness, of heart trouble. He was 73 years old. After serving in the War of the Rebellion Mr. Munro returned to Bristol, where he obtained a position with the National India Rubber Co. He was a machinery belt maker in that plant for about 30 years, until he retired several years ago, owing to ill health.

* * *

Considerable interest has been awakened among the employes of the Consumers' Rubber Co. in Bristol this winter over the work of the basketball team, which is composed of men from the plant. On February 8 the team defeated the second team of the Bristol Naval Reserves by a score of 16 to 8. The officers of the company are also taking an interest in the sport, and are encouraging the employes in their loyalty to the team.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

LOCAL manufacturers of mechanical rubber goods, hard rubber, automobile tires and sundries are much concerned regarding the attitude of labor in this city, and to judge from the activity of labor organizers of the American Federation of Labor a general strike of workmen in the local plants is a possibility of the near future. For weeks the labor organizers have been working quietly among the more skilled men of the rubber industry, and their efforts to form a union and have the operatives affiliate with the A. F. L. appear to be bearing fruit.

The labor leaders have already organized the operatives employed in the manufacture of hard rubber, and the employees of several other rubber companies in this city and in Morrisville, across the river from this city, have formed a union and applied to the Federation for a charter. Delegates have been named to the Central Labor Union, a county organization affecting practically all skilled labor in this section of the State. About 400 men are employed in the hard rubber branch of the rubber industry in this section.

The labor organizers are holding meetings every Sunday for the organizing of the rubber workers, a state of affairs which naturally is not viewed with any great favor by the manufacturers.

The memory of the strike of the rubber workers of this city in the winter of 1904 is still fresh in the minds of the manufacturers, the majority of whom are not anxious to go again through such an experience. In this strike, conditions become so bad that the strikers were indicted by the county grand jury and some sent to prison for assaults on men who replaced the strikers in the plant of the United and Globe Rubber Co., Home Rubber and one or two other places. It was a long, drawn-out battle, marked by fierce fighting on the part of the strikers, but at the finish they were glad to go back to work. The strike leaders were unable to secure employment in any of the plants.

* * *

The Industrial Workers of the World members are taking an active part in the rubber strike, and also in the strike of artisans and operatives in other industries in the city. There are now six different strikes on in the city, and business has become affected to such an extent that the merchants and tradespeople in general have appealed to the Chamber of Commerce to settle the strikes. In the John A. Roebling's Son's mills several thousand employes are on strike with no immediate chances of a compromise.

General C. Edward Murray, treasurer of the Crescent Belting and Packing Co., in discussing the strike situation said: "After my experience in the general rubber workers' strike in 1904, which it will be remembered ended with a tremendous loss for both sides, I feel that everything should be done to arrive at some definite conclusion without the necessity of either side losing anything. I find, submitted by a committee of employes, a statement containing a list of advances desired, and it is such as would indicate that the committee has given very little thought or possessed little knowledge of the earnings of the different employes; for example, we have 43 girls employed on our braider machines and spoolers. With an idea of making it possible for them to earn more money without additional labor, two or three weeks ago we increased the speed of our machines, and also made some changes to our take-offs which increased the daily capacity of the machines while in operation, with the result that 26 of the 43 girls averaged 49 hours and received 12.7 cents per hour, which would equal for a week of 55 hours $6.98, while the amount asked for by the committee is 12½ cents per hour, or $6.88 for the week.

"The management of the Crescent Belting and Packing Co. hasn't any objection to organized labor, or to treating with any committee representing their employes, but they feel that any difference should at least be discussed before strike action is taken, as was done in this case. It has been our policy to pay the maximum amount of wage paid by our competitors, which is all anyone can possibly do and compete successfully."

George R. Cook, of the Acme Rubber Co., and J. L. Lambert, also an officer of the concern, declare that the strike of the men in that plant has not seriously hampered business.

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President and General Manager of the Essex Rubber Co., C. H. Oakley, announced in the week of February 17 a 10 per cent. increase in the wages of all the employees of this rubber concern, a piece of news which was enthusiastically received by the 200 or more operatives. If a strike is declared it is hardly probable that this progressive concern will be affected, as the best of feeling exists between employers and men.

* * *

The Delion Tire and Rubber Co., Inc., of this city and New York, has contracted with Burton & Burton, builders of this city, for the erection of a three-story fireproof building on East State street, just outside the city boundary line. The building is to be modern in every particular and will be of steel construction, with reinforced concrete floors and other material calculated to make it fireproof. The work of construction was started February 19, and the contract calls for the completion of the building by May 1, when the manufacture of high-grade automobile tires will commence. The company is to make a tire which it will guarantee for 5,000 miles' service. The building is to cost in the neighborhood of $60,000. Freeman & Halstead, of New York City, are the architects. R. S. Peale, of 111 Broadway, New York, is president of the corporation, and he has interested local capital in the enterprise. Some of the Trenton stockholders include: R. C. Manning, automobile dealer; I. Harper Clayton, contractor; Newton A. K. Bugbee, civil engineer and contractor, and Burton & Burton, contractors. Contracts for the new building have been filed in the office of the county clerk.

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Thomas B. Holmes, Jr., who covered the States of Pennsylvania, Ohio and West Virginia for the Empire Rubber Co., has quit the rubber business and is traveling for a linoleum concern, the Turford Co., of this city.

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The M. & M. Tire Co., with offices at 214 East State street, was incorporated in this county a fortnight ago with a capitalization of $150,000. Seventy-five thousand shares of common stock are placed at $1 a share, and 7,500 shares of preferred

shares are held at $10 a share. The incorporators named are: William McGinnis, of this city; William Morgan, of Ewing, and A. Trapp, of Trenton. Mr. McGinnis is named as the president of the concern.

THE RUBBER TRADE IN SAN FRANCISCO.

(By a Resident Correspondent.)

CALIFORNIA has suffered considerable loss as a result of the material damage to the orange crops in the southern part of the State. Such a loss is felt by nearly every industry. The rubber industry has felt it through certain lumber mills and box factories which supply the lumber and boxes for the oranges. A sufficient number of orders have been cancelled for boxes to affect such mills and factories to such an extent that they will not order rubber belting this year. In other respects the State has shown great growth and increase of commercial activity, and the improvements which are being made in and about San Francisco, in preparation for the 1915 fair, certify to the big increase which business of this city is to receive.

* * *

Mr. Nat. Dodge, of the Western Belting & Hose Co., on Mission street, has taken an interest in the American Rubber Manufacturing Co. The death of Mr. Griffiths, whose guiding hand had done much to bring the business of the concern to a high state of success, made it necessary to secure some one who would assist in maintaining the high standard which Mr. Griffiths had set. The business of the company, which has many important eastern connections, will continue as before.

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The Panama Rubber Co. has been organized for the purpose of making automobile and motor tires in a factory to be erected in or near San Francisco. The new company, when the incorporation is fully perfected will have a capital stock of $1,000,000, and the men connected with the enterprise are prominently associated with big automobile and extensive financial enterprises on this coast. W. D. Newerf, one of the best known rubber tire merchants in the West, has been the prime mover in the new plan, and will have an important connection with the company. Mr. Newerf is at present coast distributor for the Miller tires. The exact location of the big factory has not been determined upon, but it will be either in San Francisco or in one of the cities close by on the bay, and as soon as the site is selected the work of erecting one of the most thoroughly equipped tire plants of the country will be rushed to completion. This western territory has been a wonderful field for the sale of tires, and a big factory located here can hardly fail to succeed.

* * *

A new concern known as the Acme Rubber Co. has opened an establishment on Golden Gate avenue, near Van Ness. Considerable machinery has been installed. The rubber used, however, is artificial, being a substance derived by a patented process of a local inventor. Mr. Schwartz, who was formerly with the Plant Rubber & Supply Co., has become associated with the new company.

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Some big houses are wondering why it should be necessary to have automobile shops and tire shops out on Golden Gate avenue, strictly in the residence district. This of course was natural after the fire of 1906, when business of all kinds located there, but now all business has moved down to the regular business quarters except the automobile shops and tire shops. The big dealers have moved down, but they still maintain branch stores there, which doubles their expense. Setting a suitable example, the Gorham-Revere Rubber Co. has closed its Van Ness avenue and its Oakland tire branch, and has moved everything down to the factory on Freemont street.

W. L. Eaton, with the New York Belting & Rubber Co., has returned from a recent trip to Honolulu in the interests of the firm.

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N. Lincoln Green, of the United States Rubber Co., has been a recent visitor in San Francisco.

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E. J. Day & Co., of Oakland, an old established automobile supply firm have just completed arrangements with the Federal Rubber Manufacturing Co. to distribute Federal tires in Alameda and Contra Costa counties. Day & Co. are making extensive alterations in their present store in order to accommodate a large stock of Federal tires, and in connection with the tires a service department will be maintained, so that automobilists will get the same service for repairs as from a direct factory branch. H. V. Overington, who has been with the Diamond Rubber Co., as manager of their Oakland branch, has accepted a position with Day & Co., to take charge of their new tire department.

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Frank E. Carroll, manager of the San Francisco branch of the Goodyear Tire & Rubber Co., held in February the first of a series of monthly conferences with the employes selected from all of the branch stores.

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The Plant Rubber & Supply Co., of this city, has recently bought out the stock and business of the Magnesia Asbestos Co., a concern of this city.

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Mr. Oliver, formerly superintendent of the American Rubber Manufacturing Co., and now proprietor of a factory of his own on Telegraph avenue in Oakland, is enjoying a big business on his specialty of inner tubes for automobile tires.

NO OFF AUTO SEASON THIS YEAR.

Unfortunately all rubber manufacturers cannot be equally happy at the same time. When the ground is covered two feet deep with snow the footwear makers are in a most contented state of mind, while the tire makers begrudge every day that the snow remains on the ground. This past winter the makers of boots and shoes have had considerable ground for complaint—one might say, bare ground for complaint—while the tire makers have looked upon it as their lucky year. Owing to the open character of the winter and the meager fall of snow thousands of autos have remained in commission which ordinarily would have remained in the garage.

This naturally has made an appreciable difference in the demand for tires. Sales manager J. D. Anderson, of the United States Tire Co., recently made the following statement: "From a sales standpoint this is proving by all odds the best winter I have ever known in the industry. And the logical explanation for this fact is that owners owing to good weather, have deferred laying up their cars until it commences to look as though they would keep them in operation straight through the winter months. Our factories all have been running night and day, still we haven't been able to keep so very far ahead of our orders. This winter has proved conclusively that the motor car is now distinctly a year round utility."

A RUBBER PLANT AT LOS ANGELES.

Los Angeles, California, is to have a rubber factory for the manufacture of tires, belting, hose and other kinds of rubber goods. The company back of this enterprise is the W. C. Hendrie Rubber Co., of Denver, Colorado. Its operations have hitherto been confined to Denver, where it has been simply a distributing concern, handling the various articles manufactured by the Republic Rubber Co., of Youngstown, Ohio. It purposes now to go into the manufacturing line, and will erect a $100,000 factory in Torrance, in the suburbs of Los Angeles.

News of the American Rubber Trade.

THE APSLEY RUBBER CO. INCREASES ITS CAPITAL.

THE Apsley Rubber Co. increased its capital in February from $750,000 to $1,000,000 by adding $50,000 to its common stock and $200,000 to its preferred stock, bringing each of these stocks to a full issue of $500,000.

Both are 7 per cent. stocks which have never failed to earn and pay their dividend. The stock has been selling in the open market at $114 whenever it appeared upon the market, which has been very seldom. The present stockholders have been given the right to subscribe to this new issue of stock at par, and we learn that the rights, where anyone wished to dispose of them, are selling at $5.00 and $6.00 premium. The date of subscription and the date of payment both expired February 25.

The Apsley Rubber Co. did the largest business last year they have ever done; and notwithstanding the open winter, they are now ahead of last year at the same date. They are putting in some new heavy machinery, which they have bought of the Farrel Foundry & Machine Co., which is now being installed, for the purpose of making heavy rubber clothing.

THE FISK CO. INCREASES ITS CAPITAL STOCK.

The Fisk Rubber Co., of Chicopee Falls, Massachusetts, has issued $3,000,000 additional in 7 per cent. first preferred stock. The new authorized capital is $15,000,000, of which $5,000,000 is first preferred, $2,000,000 second preferred, convertible and common, and $8,000,000 common. The directors of the enlarged company will include H. T. Dunn, H. G. Fisk, J. C. Cole, R. B. McGraw and G. A. Luddington. The officers will be as follows: President, Mr. Dunn; treasurer, Mr. Fisk; vice-president, Mr. Cole, secretary, Mr. McGraw.

The Fisk company is in need of increased factory facilities, although the capacity of the plant has been increased 40 per cent. during the past year and the factory has been in operation day and night. Since 1908 the output of automobile casings or shoes has increased from 57,695 to 221,826; of inner tubes from 40,960 to 198,925, and of bicycle tires from 84,387 to 240,623. The company is now manufacturing 1,300 automobile tires a day, and expects through the use of the new buildings now under construction to increase this to 1,800 a day.

AMERICAN TIRE COMPANY INCREASES CAPITAL.

At the recent annual meeting of the American Tire and Rubber Company of Akron, Ohio, the following new directorate was elected: Adam Duncan, Charles F. Fosnight, F. L. Kryder, Gus Sieberling, C. M. Wertz, G. C. Waltz, F. M. Lapp, Frank Pfeiffer and James Shaw.

In the subsequent election of officials, Adam Duncan was chosen as president and treasurer, but from the pressure of business, declined to serve in the latter capacity, Frank Pfeiffer being thereupon elected treasurer. G. C. Waltz was chosen vice-president and F. E. Rowe, secretary and assistant treasurer.

The first business undertaken by the new board of directors was the increase of the capital of the company from $200,000 to $500,000. It is not, however, intended to issue at the present time more than $50,000 of the new stock. A new solid tire is being perfected by the company, which will soon be placed on the market. Patents for the new tire will shortly be issued.

FIRESTONE GETS BIG TIRE ORDER.

An order for 200,000 tires is said to have been booked by the Firestone Tire and Rubber Co., Akron, from the Ford Motor Co. of Detroit. The order represents over $2,000,000.

The Seamless Rubber Co. of New Haven has filed a certificate of issue of five thousand additional shares of capital stock, making the outstanding stock $500,000 of common stock and $500,000 of preferred stock.

THE CINCINNATI RUBBER MANUFACTURING CO.

The annual meeting of the stock holders of this company was held February 11. The old board of directors consisting of Casper H. Rowe, J. A. Green, S. E. Hilles, George McG. Morris and J. M. Crawford was re-elected, and the following officers were chosen for 1913: S. D. Baldwin, president; Fred A. Geier, vice-president; F. D. Scherl, secretary and treasurer, and A. D. Rogers, sales manager. The results of the company's operations for 1912 were very satisfactory, and during the present year substantial improvements and additions will be made to the company's plant.

CHICAGO RUBBER CLOTHING CO.

At the recent annual meeting of the stockholders of the Chicago Rubber Clothing Co., Racine, Wisconsin, the same board of directors was re-elected, and the following officers were also re-elected: Honorable Charles H. Lee, president; E. V. Laughton, treasurer, and George G. Bryant, secretary and general manager.

THE M'GRAW OFFICERS AND DIRECTORS.

The McGraw Tire & Rubber Co., East Palestine, Ohio, at the meeting recently held, elected the following officers and directors:

Officers—E. C. McGraw, president; R. W. McGraw, vice-president; R. B. Taggart, treasurer, and L. M. Kyes, secretary.

The following were elected directors—E. C. McGraw, Mrs. E. C. McGraw, R. W. McGraw, John Morgan, L. M. Kyes, R. F. Taggart, R. B. Taggart, J. C. Chamberlin, C. L. Merwin, H. C. Fraser, Geo. Flaccus, J. C. Chaplin, J. S. Wilson, F. H. Rea and C. H. Bolton.

The report of the company shows that $1,160,000 worth of automobile tires were manufactured and sold by the company in the year 1912. The company hopes to double its output during 1913.

RECOVERING UNCURED FRICTION SCRAP.

The Acushnet Process Co. has been trying some experiments in the recovering of uncured friction scrap, in which they have been very successful. Their process differs radically from those commonly used, and is more costly to operate, but the rubber obtained is said to be entirely free from any effects of vulcanization, which allows it to be put to more uses.

The Acushnet Co. has recently produced a rubber which it claims possesses the characteristics of guayule, and which is said to be already in active request. The Acushnet Co. has devoted a great deal of time and thought to the development of this new product, which seems likely to prove very popular. The new rubber is soft and capable of absorbing a large amount of compound, cures quickly and is sold washed and dried. The company is prepared to furnish samples, crude and vulcanized, and to quote attractive prices, and also to guarantee deliveries as per specifications.

TRUE—AS FAR AS IT WENT.

The February issue of THE INDIA RUBBER WORLD had a paragraph to the effect that the Air-Brake Department of the Republic Rubber Co., made a record on January 7, in producing short length hose—turning out on that day 11,500 feet. This was quite true as far as it went, but it was too modest a statement. The paragraph should have read 11,500 pieces instead of feet; and as each piece was 22 inches long, the record for the factory on that particular day was 21,083 feet of air-brake hose—very nearly four miles. The company believes that this is the record for one day, and as far as there is any information available at the present time, the company appears to be right in its belief.

AN ORDER FOR 20,000 FEET OF FIRE HOSE.

The city of Montreal, Canada, invited tenders early in February for supply of 20,000 feet of 2½-inch cotton, rubber-lined fire hose, for use by the Fire Department in that city.

Bids were offered by various Canadian companies. After considerable investigation and delay the city finally placed the order with the Canadian Consolidated Rubber Co., Ltd., Montreal, for 20,000 feet of 2½-inch wax and gum-treated "Keystone" fire hose at $1.10 per foot coupled. The company was represented in this transaction by Mr. J. M. S. Carroll, district manager.

When this large order has been delivered the city of Montreal will have in use over 90,000 feet of "Keystone" brand fire hose.

A PATENT FOR A PROCESS FOR PRESERVING EXTRACTED RUBBER.

Mr. H. O. Chute, of New York, has been granted patent No. 1,051,987, dated February 4, 1913, for a process of preserving extracted rubber by washing with pyroligneous products or the liquid of wood distillation. It is claimed that while it is well known that Pará rubber is treated with smoke from palm nuts, it is new to treat a deresinated rubber with the liquid products of wood distillation, and that this process preserves the rubber and prevents it from softening and running. The claims cover the process of extracting the resins, and then treating the rubber with the liquid, the product consisting of extracted rubber having incorporated the products of wood distillation. Specifically, deresinated Pontianak rubber impregnated with pyroligneous acid is claimed as a new product.

DIVIDENDS PAID BY RUBBER COMPANIES.

The B. F. Goodrich Co. paid on February 15 a quarterly dividend of 1 per cent. on its common stock to stockholders of record on February 5.

The B. F. Goodrich Co. reported February 24 for the nine months ending on December 31, 1912, net profits from operations of $3,719,334. Other income amounted to $571,844. The surplus after paying preferred and common dividends amounted to $806,235.

The Hood Rubber Co. paid on February 11 a quarterly dividend of 1¾ per cent. on its preferred stock to stockholders of record on January 31.

The Manufactured Rubber Co. pays on March 1 a quarterly dividend of 1¾ per cent. on its preferred stock to stockholders of record on February 24.

SAVINGS BANK LIFE INSURANCE IN RUBBER COMPANIES.

Massachusetts Savings Bank Life Insurance now has more than 7,000 policyholders with insurance in force to the amount of $2,700,000. Two hundred agencies have been established by manufacturers and at these agencies premiums are collected from the pay envelopes of the employees, and once a month transmitted to the insurance departments of the banks. The Tyer Rubber Co., Andover; Hood Rubber Co., Watertown; American Rubber Co., Cambridge; and the Boston Woven Hose & Rubber Co., Cambridge, have agencies and many policies are in force among their employees. An agency has recently been established at the Revere Rubber Co., Chelsea. Massachusetts Savings Bank Life Insurance affords an opportunity for the employer to give his employees the advantages of insurance at a low cost.

THE TUXEDO TIRE CO., INC.

The Tuxedo Tire Co., Inc., the incorporation of which was recently announced, has taken over the business of the Tuxedo Tire Exchange, Bronx, New York. It states that it is open to consider good selling propositions from makers of automobile accessories. Mr. Hugo Liedtke has recently visited the South, on the lookout for new selling ideas.

A BOSTON OFFICE FOR THE LOEWENTHAL CO.

The Loewenthal Co., of New York, announced on February 20 the opening of a Boston office in order to insure better service for the company's New England customers. This office will be in charge of Mr. George Friedman.

A STATEMENT FROM THE N. Y. COMMERCIAL CO.

Referring to the announcement made February 17—received everywhere in the trade with much regret—of the appointment of a receiver for the New York Commercial Co., the company issued the following statement:

"We deeply regret to announce to you that we have felt it in the interest of all our creditors to consent to a receivership, not on the ground of insolvency, but for the purpose of preserving our assets for the equal benefit of our creditors and, after them, of our stockholders.

"This immediate step was necessary on account of large payments falling due next week which we could not, and in all fairness ought not, to pay, in view of certain banking facilities which we had heretofore enjoyed having been suddenly withdrawn.

"Immediately that the receiver is able to make up a statement of the company we propose to call a meeting of all the creditors for the purpose of showing them that our assets exceed our liabilities, and of determining what further action they may require."

Judge Seabury of the Supreme Court appointed John Z. Low, Jr., receiver for the company's property in New York, Pennsylvania and Virginia, on the application of James N. Taylor, attorney for A. H. Alden & Co., Ltd., of London. A receiver was appointed at Norfolk, Virginia, February 13, as it is a Virginia corporation.

This receivership in New York made it necessary for the firm of Geo. A. Alden & Co., of Boston, to consider what action it should take to protect the interest of its creditors, and after considering various possible courses, it decided that the most satisfactory action to take in the interest of all concerned would be to make an assignment which was done on February 17.

The assignees are: Mr. Archibald Blanchard, of the firm of W. O. Gay & Co.; Arthur H. Brooks, of the law firm of Myers & Brooks, both of Boston, and William L. Wadleigh, a commission merchant of Boston who is familiar with the rubber business. A public accountant has already been placed upon the books and a report of the firm's financial condition will be made at an early meeting of the creditors. Efforts are being made to accomplish a reorganization in order that the business in which the firm has been so long engaged may be continued.

Arrangement have been made by the Standard Asphalt and Rubber Co., 137 La Salle street, Chicago, to carry stocks of the material widely known as Alden's "M. R. X." These stocks will be carried in Chicago, Boston and Trenton, as well as in Liverpool, Hamburg and Paris, and rubber manufacturers may be supplied by sending to any of these addresses, or by writing to Mr. Geo. Watkinson, who has temporary quarters in the Alden offices at 77 Summer street, Boston.

AN AMERICAN FACTORY IN RIO DE JANEIRO.

In the December issue of The India Rubber World there was a paragraph referring to the fact that the Goodyear Tire and Rubber Co., of South America, had just been incorporated under the laws of Maine, with a capital stock of $3,000,000, for the purpose of operating rubber plantations and manufacturing rubber in South America. It was stated at that time that representatives of the company were in Brazil investigating the field.

Reports received within the last few days from Rio de Janeiro state that the representatives of the Goodyear company have met with much encouragement in their plans for a rubber factory in that city, and that the establishment of such a factory there is one of the probabilities of the near future.

A FINE RUBBER WINDOW ON BROADWAY.

The Rubber Exposition which was held in New York last Fall naturally excited a great deal of interest in the rubber industry, not only among those who visited the exhibition, but among the hundreds of thousands who read more or less about it in the daily print. One large manufacturing concern, at least, seized upon this general awakening of interest to give the public some further information regarding the industry. The Hodgman Rubber Co., at its large New York store on Broadway just North of Eleventh street, devoted one of its spacious display windows for several weeks preceding and during the holidays to an educational rubber display. As the window is 20 feet wide and 12 or 15 feet high, it gave ample opportunity for a creditable exhibit.

In the center of the window there were two large balls of Pará rubber which had previously been displayed at the exhibition, while at either side there was an exhibit of plantation rubber. These exhibits were described on large placards hanging immediately over them, which told what sort of rubber they were, and where they came from. In the background, and filling the rest of the window, were a great many manufactured articles made by the company, including their famous hot-water bottles and numerous rubber cushions, rings and bags—many of them covered with silk in attractive patterns. The window told at a glance the story of rubber from the crude product of the tree to the most finished product of the factory; and as the display was in the very heart of the downtown shopping district, it is safe to say that 100,000 people, probably more, stopped to look in this window and went away with a much more intelligent idea of what rubber is, and the uses to which it can be put, than they ever had before.

THE HODGMAN EDUCATIONAL RUBBER DISPLAY.

INDICTMENTS QUASHED.

Judge Dodge in the United States District Court in Boston, on February 6, quashed the indictment against Warren B. Wheeler, Stillman B. Shaw and G. Alden Wittemore, who were connected with Wheeler & Shaw, Inc., charging them with using the mails in a scheme to defraud in connection with the sale of stock of the North American Rubber Company.

The court held that the averments in the indictment, while they set up a scheme to deceive, do not show a scheme to defraud, and as it is only the latter that is prohibited by statute, no criminal offense was charged.

It is stated, however, that the government will seek a re-indictment.

THE FISK CO.'S NEW STOREHOUSE.

The Fisk Rubber Co., of Chicopee Falls, Mass., recently awarded the contract for the erection of a storehouse 240 feet long by 90 feet wide. The building will cost about $400,000 and will, when completed, add approximately 385,000 square feet to the present floor area of the concern, or nearly double the present area. The building will be located parallel to the tracks of the Boston & Maine Railroad and will be three stories high.

This company has just opened at Winnipeg a completely equipped branch house where it will carry a full line of Fisk tires.

THE HARMER RUBBER RECLAIMING WORKS RESUME.

The Harmer Rubber Reclaiming Works, of East Millstone, New Jersey, will resume operation on or before March 10.

On October 28, 1912, a fire, which started in the drying room destroyed practically their entire plant. The plant that was destroyed has been replaced by a number of fine fireproof buildings, the three largest being 105 by 140 feet, 60 by 140 and 30 by 76. In addition there are a number of smaller buildings.

The company will have an 800-horsepower plant equipped with new engines, and with the latest type rubber machinery, thus enabling them to double their former capacity. Their shipping facilities by both water and rail are good, as they have the Delaware and Raritan canal and the Pennsylvania Railroad siding.

Business will be resumed with orders booked ahead, and it is expected that a night shift will have to be added in order to make quick deliveries to their customers, who have patiently waited during the course of reconstruction. Recently, Mr. Marcus called on the Eastern trade and found all their customers pleased to see him again ready for business. At a recent meeting of the company, Mr. Laurie, president, and Mr. Marcus, secretary and treasurer, were re-elected for the ensuing year.

This company makes a special brand for supplying the insulating wire trade. It also has installed a separate department for the making of White Shoddy exclusively.

I. W. W. AFTER RUBBER RECRUITS.

The organization known as The Industrial Workers of the World, and generally referred to simply as "The I. W. W.," has been extremely active during the last month among the rubber and waterproof garment makers in Massachusetts, seeking to enroll them among its membership.

PERSONAL MENTION.

Mr. James H. Stedman, treasurer of the Monatiquot Rubber Works Co., accompanied by Mrs. Stedman, is enjoying a four weeks' sojourn at Hampton Terrace, Augusta, Georgia.

Mr. John M. Miller, Jr., the popular manager of the Goodyear Rubber Co., St. Louis, has recently returned from his annual visit to New York, and reports business for the past year very good and prospects for 1913 promising.

Alexander Adamson, of the Adamson Machine Co., Akron, Ohio, is spending a well-earned vacation in Florida.

L. M. Franklin, formerly with the Knight Tire and Rubber Co., Akron, Ohio, is now one of the Goodyear Tire and Rubber Co.'s Boston sales force.

Mr. P. W. Koebig, dealer in packing and rubber goods, moved his office on February 10, from 150 Nassau street to 116 Broad street, New York.

MR. I. R. BAILEY GOES TO THE GOODYEAR CO.

After an association of ten years with the Diamond Rubber Co., Mr. I. R. Bailey has joined the Goodyear Tire & Rubber Co., and will act as sales manager of the mechanical goods department. The company intends, beginning about the first of April next, to manufacture a complete line of mechanical goods, including belting, hose and packing.

The manufacturing department will be under the direction of William M. Metzler, who was for many years assistant general superintendent of the Diamond Rubber Co., and superintendent of the mechanical goods department.

WILL REPRESENT EASTERN PLANTERS IN NEW YORK.

A number of the Eastern planters have secured New York representation, and undoubtedly more desire it. A rubber man of excellent character and standing, still young, although he has had ten years' experience in inspecting and passing on crude rubber imports, wants to act as representative in New York for an Eastern planting company. This would appear to be a good opportunity for planters who want to do so to get in direct communication with the American market.

MESSRS. FROST ON A FLYING TRIP

We Americans rather pride ourselves on the rapidity with which we go through life. But evidently there are some Englishmen who are not so particularly dilatory. Messrs. Harvey and William Frost, of Harvey Frost & Co., Ltd., London, have recently paid the United States a flying trip. They landed from the Mauretania on Saturday, February 8, and embarked on the Baltic on Thursday, February 20. Taking out Sundays and Lincoln's Birthday they had eight working days. During that time they covered New York, Philadelphia, Washington, Buffalo and various points west of Buffalo.

Harvey Frost & Co. are known the world over for their repair equipments—particularly tire vulcanizers and repairers. They make all kinds, from large equipments for factory use, down to little $15 outfits with which the car owner can do his own repairing. It is stated that they own more patents on vulcanizing apparatus than any other concern in the world. They came to this country to look over the ground and learn what they could about the needs of the American trade. They met a great many people—particularly among tire manufacturers and dealers—absorbing much information and reciprocally imparted much.

If the Messrs. Frost were Americans we should call them hustlers, but being Englishmen we can only say that they are exceedingly energetic and enterprising men, and it is not at all surprising that their business, though established only nine years ago, has reached its present large proportions.

DATES ON TIRES.

According to reports, automobile tire manufacturers and others are scheduled to have another fight on their hands in New York, in connection with a proposed law requiring the placing of the date of manufacture on each tire produced.

TRADE NEWS NOTES.

The Century Rubber Manufacturing Co., of Plainfield, New Jersey, is making a fabric cord tire, for which there is an active request. This company has a completely equipped plant, including a well appointed laboratory, which might naturally be expected as the president, Dr. Harold Von der Linde, and the factory manager, Maurice L. Allard, are chemists of recognized efficiency.

The Baumann Rubber Co., of New Haven, Connecticut, has added to an already extensive product a line of high grade ice caps.

The Bay State Insulated Wire Co., of Hyde Park, Massachusetts, has recently completed its new laboratory, which is now one of the best in its particular line in that section. The company is preparing to make a fibre heel and sole which will be marketed under the name of Springwell Gum Fibre.

Terkelsen & Wennberg, 90 High street, Boston, are said to produce an excellent line of molds for rubber work. They are also making molds for composition or hard rubber substitute devices.

The Hoyt Rubber Co., of 58 Reed block, Boston, is making a line of footwear specialties, which are interesting the shoe manufacturing and retail trade.

C. J. Bailey & Co., of 22 Boylston street, Boston, are about to issue a new one-hundred-page catalogue, showing cuts and descriptive matter of the very extensive Bailey line, which will be sent to any address on application.

Ernest Jacoby, of 79 Milk street, Boston, is manufacturing a black and white substitute which has earned considerable reputation. The Jacoby factory is located in South Boston.

E. W. Furbush, manager of the Walpole Rubber Co., 185 Summer street, is one of Boston's busy rubber men. This company, in itself an important concern, controls several subsidiaries, all of which are working full capacity.

E. W. Graves, of Graves & Graves, of 95 Milk street, Boston, is the inventor of a complete line of rubber plantation tools and devices. Among the Graves' inventions are tapping knives, a latex cup and a unique type of ladder, all of which are highly esteemed by rubber growers.

The extensive plant of The Monatiquot Rubber Co., South Braintree, Massachusetts, is producing large quantities of the various brands of Indian-named rubbers made by this concern. The company's Boston manager is Merton A. Turner and its offices are located at 565 Atlantic avenue.

The Wellington Rubber Co., with factory located at Wellington (Medford), Massachusetts, and offices at 79 Milk street, Boston, are proofing for the trade.

The Hyde Park Rubber Co., proofers, now occupy the premises in Clarendon Hills, formerly occupied by The Atlantic Rubber Manufacturing Co., which is now operating in a new factory in Hyde Park proper.

The Dove Machine Co. is now occupying its new factory on Broadway, South Lawrence, Massachusetts. This concern, which specializes in various types of rubber machinery and devices, has a complete and up-to-date equipment, with ample facilities for extension, which is already among its early plans for the future. In addition to its rubber machinery business it has acquired the Ford automobile agency and in a very short time proposes to commence the manufacture of business trucks.

The Derby Rubber Co., Derby, Connecticut, now under the management of P. B. Price, a successful reclaimer, is producing what is known as "The Derby," a floating reclaimed rubber, which is giving remarkable results in the manufacture of hard rubber without the addition of any crude material to the compound. The Derby Co. is also making a high grade tire and tube stock as well as a wire-covering rubber, which is proving very satisfactory.

A FEW MORE CALENDARS.

Several calendars really worthy of mention were received too late in January to be included in the column devoted to such publications in our February issue.

Among those later calendars is a large and handsome one issued by The Republic Rubber Co., Youngstown, Ohio. The entire calendar is nearly 3 feet wide x 30 inches deep, and the essential feature of it, a handsome lithograph in ten or a dozen colors, is 30 inches wide x 20 inches deep. This shows an old farmer with his horse at the watering-trough. The two are gazing with much interest on a red touring car that has just whizzed by, leaving in the road the familiar tracks made by the Republic "Staggard" tread. The title of the picture is "It begins to look like we're back numbers, Billy." The picture is worth framing, and probably many of them will be.

De Lagotellerie, crude rubber importer, 24 Stone street, New York, has issued a wall calendar in bright colors, giving a half dozen half-tone pictures of rubber-shipping scenes in Brazil, and scenes on the New York docks where the rubber is received. The most useful feature of the calendar, however, is a map of the world, about 12 or 14 inches in width, which is a very convenient thing to have on the wall for reference.

The Eugene C. Lewis Co., bookbinders, 214 William street, New York, have distributed a very artistic little wall calendar, with a block pad devoting a leaf to each day of the year. This is mounted on a heavy card printed in gold and several shades of brown, the whole enclosed in a suitable cardboard box.

The Omo Mfg. Co., Middletown, Conn., makers of dress-shields, are also represented by a very tasteful calendar. It is intended for the wall, being about 16 inches long. It is printed in gold, black and gray on heavy cream-colored paper, which is mounted on gray cardboard and finished with a pearl-gray ribbon for hanging purposes.

H. F. Taintor Mfg. Co., makers of whiting, Paris white, chalk and China clay, have distributed a small desk calendar, each sheet showing the current month in figures of good size, while the preceding and succeeding months are shown in smaller figures at the sides.

A FINE LITTLE POCKET DIARY.

John Royle & Sons, Paterson, N. J., manufacturers of tubing machines, insulating machines and circular looms for the rubber trade, have distributed to their customers a very attractive little pocket diary, gilt-edged and leather covered. They explain the somewhat delayed appearance of this diary by the statement that an earlier edition was just about to be shipped when the publishing plant took fire and their whole edition was destroyed, making it necessary to print another. In the front and back of the diary there are several pages devoted to an interesting recital of what the company has done and is prepared to do. The following paragraph is taken from the story:

"Go over your equipment carefully. Find out what it costs to run each machine and what it gives you in return. Then look into Royle machines and see what an investment in better tools would pay in the way of annual returns. Financiers consider six per cent. a splendid return on an investment. We have built machines that paid the user nearly one thousand per cent. on the investment; and while we may not be able to do quite so well every time, we can do something for you well worth your while."

A DESK CALENDAR AND PAD COMBINED

A convenient combination of calendar and writing pad has been received by the customers of Stanley Doggett, 11 Cliff street, New York, dealer in chemical colors and compounding ingredients for the rubber trade. The writing pad, which is of excellent paper, is attached to a heavy mount about 3½ by 8 inches in size. Over the pad there is a calendar having a card for each month, the cards being inserted in a leatherette case. While the calendar is attached to the same mount as the pad, by reason of a double fold, it can be pushed up to the head of the pad and kept in an upright position where it stands, at a convenient optical angle, and leaves the pad uncovered for use.

THE THEODORE HOFELLER PLAYING CARDS.

Theodore Hofeller & Co., of Buffalo, New York, dealers in old rubber, have favored their friends with a very attractive set of playing cards, the face of the cards being, of course, like those in general use, except that the joker shows a half-tone print of the large Hofeller factory. On the back the cards are printed in crimson and gold and display this text artistically arranged: Theodore Hofeller & Co., Buffalo, New York; largest Dealers in Old Rubber in the World. It is a souvenir that is bound to receive a cordial welcome.

TRADE NEWS NOTES.

The Rubber Tire Repair Co., located at 915 East 15th street, Kansas City Missouri, is acting as a distributing center for the Shawmut brand of tires and other rubber goods for the territory around Kansas City.

About 85 per cent. of the second preferred stock of United States Rubber Co. has been deposited for exchange into first preferred on the basis of three shares of first preferred for four of second preferred. This represents approximately 85,000 shares.

The Alling Rubber Co., having a chain of stores in a number of cities in New England, New Jersey and New York, will open a store in Binghamton, New York, about April 1, at 157 Washington street.

The directors of the Boston Woven Hose and Rubber Co., have declared a quarterly dividend of $3 per share on the common stock, payable March 15, 1913, to stockholders of record March 5, 1913.

The International Auto and Tire League of Buffalo has reorganized, and its present name is the Northland Rubber Co., Inc. It is capitalized for $2,000,000 and has just completed a factory costing $350,000 with a daily capacity of 1,000 tires. The company has approximately 8,000 stockholders to whom they supply tires at cost. The secretary and general manager of the company, Mr. W. J. Hayes, is well known in New York banking circles.

The Keystone Rubber Manufacturing Co., of Erie, Pennsylvania, manufactures the "Keystone No-Cement Patch" for use on inner tubes made of Pará rubber, requiring neither cement nor acid to apply. This patch, now being extensively used, is a distinct innovation which will doubtless appeal to automobilists. In addition to the patch "Keystone Imperial Reliners" and a general line of automobile accessories are among the varied output of this company, which is now making everything in rubber goods with the exception of heavy mechanicals. The Keystone Co. has made remarkable progress since its inception, and its present factory is commodious, well-stocked and thoroughly equipped.

The Vulcan Rubber Co., Erie, has recently commenced the manufacture of mechanical goods.

The Allen Machine Co., Erie, is a recently organized corporation, now making rubber machinery.

The Speedway Tire Co. is a new rubber manufacturing concern at Louisville. H. S. Luman, the president of the company, is also president of the Falls City Construction Co. The secretary is Dr. Fred. L. Kauntze, a prominent Louisville physician. The practical department will be under the charge of H. W. Green, formerly of the Shawmut Tire Co.

The mill and washer equipment for the Speedway Tire Co., Louisville, was supplied by the Turner, Vaughn & Taylor Co., Cuyahoga Falls, which has recently added much up-to-date equipment to its plant.

A new rubber manufacturing company is in early prospect at Alliance, Ohio. No name has as yet been selected.

NEW INCORPORATIONS.

Albion Raincoat Co., Inc., February 17, 1913; under the laws of New York; authorized capital, $5,000. Incorporators: Henry E. Sanson, 149 Vermilyea avenue, New York, Edward B. and David C. Helwitz—both of 303 Marlborough Road, Brooklyn, New York. Location of principal office, New York.

Amper Electric Co., Inc., February 21, 1913; under the laws of New York; authorized capital, $25,000. Incorporators: Theodore D. Robinson, 453 Willow street, Lockport, New York, Ernest W. Jones, 61 Highland avenue, Buffalo, New York, and Charles L. Nichols, 45 Main street, Lockport, New York. Location of principal office, Lockport, New York. To deal in automobiles, automobile locks and switches.

Brooklyn Rubber and Metal Co., Inc., February 21, 1913; under the laws of New York; authorized capital, $9,000. Incorporators: Allan A. Deutsch, 405 Graham avenue, Brooklyn, New York, Morris Reicken, 86 Jefferson street, Hoboken, New Jersey, and Julius Pepperman, 368 Hicks street, Brooklyn, New York. Location of principal office, Brooklyn, New York.

Define Raincoat Co., Inc., February 1, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Rubin Fine, 54 East 11th street, Isaac Merlub, 106 Hester street, and Joseph Eisenberg, 52 East 117th street—all of New York. Location of principal office, New York. To deal in raincoats and rubber apparel.

Empire Rubber and Tire Co., January 2, 1913; under the laws of New Jersey; authorized capital, $1,000,000. Incorporators: Charles H. Baker, C. Edward Murray, and J. Cornell Murray, all of Trenton, N. J. To manufacture and sell rubber hose, tires for automobiles, etc., and to manufacture and sell rubber goods of every kind.

Goodyear Apparel Co., Inc., February 19, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Samuel Rosenstein, 308 East 72nd street, Henry Pearlman, 1001 Faile street, Bronx, and Carmie A. Panaro, 70 East 106th street, all of New York. Location of principal office, New York. To deal in waterproof and other apparel.

Kenneth Kernan Co., Inc., January 30, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Kenneth and Henrietta Kernan, and Elizabeth Graf—both of 428 59th street, Brooklyn, New York. Location of principal office, New York: To manufacture and deal in artificial limbs, elastic bandages, etc.

Motor Cycle Tire Co., Inc., January 27, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Henry W. Torney, 65 Park avenue, New York; Earl E. Beyer, 454 Riverside Drive, New York, and J. E. Beyer, Rochester, Indiana. Location of principal office, New York.

No Shock Wheel Co., Inc., February 21, 1913; under the laws of New York; authorized capital, $400,000. Incorporators: J. W. Ebbs, Englewood Cliffs, New Jersey, R. H. Waddell, 220 Broadway, New York, and A. A. Kelley, Montclair, New Jersey. Location of principal office, New York. To deal in autos, tires, auto parts, etc.

Panama Rubber Co., December 9, 1912; under the laws of California; authorized capital, $1,000,000. Incorporators: W. H. Newerf, W. E. McClune and John F. Roe—all of Los Angeles, California. Location of principal office, Los Angeles, California To manufacture automobile tires and all kinds of rubber goods.

Puncture Cure Sales Co., February 11, 1913; under the laws of New Jersey; authorized capital, $50,000. Incorporators: Frances B. Stewart, Howard F. Kirk and Charles H. Stewart—all of Newark, New Jersey. To acquire or purchase patents covering the manufacture of any device, substance or material to be used in the repair of automobile tires, etc.

Rex Tailored Raincoat Co., February 15, 1913; under the laws of New York; authorized capital, $900. Incorporators: Jacob Singer, 272 New York avenue, Brooklyn, New York, Moses Satz, 945 Fox street, Bronx and Isidor H. Brown, 1182 West Farms Road—both of Bronx, New York. Location of principal office, New York. To manufacture raincoats, etc.

The S. & M. Tire & Rubber Co., January 13, 1913; under the laws of Ohio; authorized capital, $20,000. Incorporators: Aleis Michler, Ervin S. Kintz and Charles M. Smith. To manufacture and deal in rubber and metallic tires and accessories for vehicles and other rubber products.

Savoie Tire Co., February 7, 1913; under the laws of Rhode Island; authorized capital, $100,000. Incorporators: Joseph Savoie, Central Falls, Rhode Island, Edward C. Glines, 33 Eddy street, and Harry D. Reed, 177 Westminster street, both of Providence, Rhode Island. To promote, develop and manufacture tires and protectors for automobiles and other vehicles, etc.

The United States Tire Filler Co., January 17, 1913; under the laws of New Jersey; authorized capital, $125,000. Incorporators: Robert B. and Harry E. Patton, 709 Linden street, Camden, New Jersey, and John R. Gorman, 219 South Fourteenth street, Philadelphia, Pennsylvania. To manufacture, buy, sell, trade, deal in and with patented and all other fillers of all manner and kind for automobile tires, etc.

UNITED STATES RUBBER CO.'S ISSUES.

Transactions on the New York Stock Exchange for four weeks, ending February 22.

Common Stock, $25,000,000.

[The treasury of a subsidiary company holds $1,334,000.]
Last dividend, October 31, 1912—1%.

Week Feb.	1	Sales	13,800 shares	High	66⅝	Low 65
Week Feb.	8	Sales	18,800 shares	High	68⅛	Low 65⅝
Week Feb.	15	Sales	16,750 shares	High	68	Low 63⅝
Week Feb.	22	Sales	44,700 shares	High	64	Low 60¼

For the year—High, 68¾, January 10; Low, 60¼, February 20.
Last year—High, 67⅞; Low, 45¼.

First Preferred Stock, $39,824,400.

Last Dividend, October 31, 1912—2%.

Week Feb.	1	Sales	2,525 shares	High	107½	Low 107
Week Feb.	8	Sales	1,100 shares	High	107⅜	Low 106⅝
Week Feb.	15	Sales	1,600 shares	High	107⅜	Low 105⅜
Week Feb.	22	Sales	2,010 shares	High	106	Low 105

For the year—High, 109, January 8; Low, 105, February 17.
Last year—High, 116; Low, 105⅝.

Second Preferred Stock, $9,965,000.

Last Dividend, October 31, 1912—1½%.

Week Feb.	1	Sales	.... shares	High	....	Low ....
Week Feb.	8	Sales	.... shares	High	....	Low ....
Week Feb.	15	Sales	360 shares	High	79½	Low 78¾
Week Feb.	22	Sales	.... shares	High	....	Low ....

For the year—High, 81½, January 9; Low, 78¾, February 13.
Last year—High, 85½; Low, 75.

Six Per Cent. Trust Gold Bonds, $18,000,000.

Outstanding of the 1908 issue of $20,000,000.

Week Feb.	1	Sales	15 bonds	High	103¼	Low 103
Week Feb.	8	Sales	52 bonds	High	103¾	Low 103¼
Week Feb.	15	Sales	30 bonds	High	103¾	Low 103¼
Week Feb.	22	Sales	43 bonds	High	103½	Low 103

For the year—High, 103¾, February 15; Low, 102¾, January 18.
Last year—High, 105; Low, 102½.

"THE INDIA RUBBER WORLD'S" NEW MEMBER.

The force of The India Rubber World was increased on February 26, by the arrival of Henry Pearson Norton, nephew of Mr. Henry C. Pearson, the Editor, and son of Mr. A. B. Norton, of the editorial staff. The young man has not yet fully decided what department he will assume, but as at present writing he is not quite a day old, there is still time to decide this important question.

A VERY PLEASANT COMPLIMENT FROM THE PAN-AMERICAN BULLETIN.

THE Bulletin of the Pan American Union gave an exceedingly comprehensive and interesting account of the Rubber Exhibition held in New York last fall, in the issue immediately succeeding that exhibition; and in the description there appeared this extremely gracious paragraph regarding the exhibit of THE INDIA RUBBER WORLD:

"One exhibit which was of absorbing interest to all visitors, whether personally interested in the industry or not, was the booth of THE INDIA RUBBER WORLD, the greatest industrial magazine not only in this country, but probably in the world, devoted solely to the india-rubber industry. This exhibit, while confined to a space of 20 x 35 feet, was unique and could not have been duplicated anywhere on earth, should it have been destroyed, for many of the interesting articles shown were the only ones in existence. Among these were relics of the days of Goodyear, some being products of his personal skill, other souvenirs of the triumphs of his later years. They included the book, made entirely of india rubber—leaves, covers, and all—which Goodyear labored on so long, and of which there is no duplicate. There were also the two fine life-size portraits, one of Goodyear and one of Daniel Webster, painted on hard-rubber panels, by Walsh, a distinguished artist of those days. There were also speciments of hard-rubber jewelry made by Goodyear and the Cross of the Legion of Honor conferred upon him by the French Government in 1854. Other interesting exhibits in this booth were articles and curios gathered by Mr. Henry C. Pearson, editor of THE INDIA RUBBER WORLD, during his sojourn in the rubber-growing countries of South America. Among these were unique designs made from rubber, such as a miniature rubber tree with a tiny *seringueiro* tapping it; snakes, insects, etc., molded out of balata or gutta-percha; and many other articles of interest to the casual visitor. The most instructive feature, however, of this exhibit was the extensive herbarium, showing the various botanical speciments of rubber, which was arranged around three sides of the booth. Large photographs of *Castilloa* trees and other plants decorated the walls and added to the attractiveness of the exhibit."

THE AMERICAN RUBBER MANUFACTURING CO.

The American Rubber Manufacturing Co., of Emeryville, Cal., has recently elected the following officers: President, A. Borland, of the firm of Bates, Borland & Ayer, general contractors; treasurer, H. C. Norton, formerly manager of the Pacific Coast Rubber Co.; secretary and factory manager, H. A. MacKusick; superintendent, F. I. Young. Mr. N. C. Dodge, formerly manager of the Western Belting & Hose Co., of San Francisco, has been appointed general sales manager.

The company is now building in its own machine shop a 25-foot by 50-inch belt press, and also another circular loom to take care of its increased fire hose business. They have also taken up on an extensive scale the recovering of paper mill rolls, and recently received one of the largest single orders ever given a rubber company for this class of work, consisting of ten 20-inch diameter by 120-inch face rolls. They have just been awarded 8,000 feet of 2¾-inch fire hose for the city of Oakland, 3,000 feet for the Isthmian Canal Commission, 2½-inch size, besides 7,200 feet 2½-inch for Manila.

THE U. OF P.'S AMAZON EXPEDITION.

The expedition which the University of Pennsylvania has been organizing during the last year for the purpose of exploring the Amazon, and particularly the tributaries of the Upper Amazon, will be ready to sail from this country within the next few days. The leader of the expedition is Dr. William Curtis Farabee, the Commander of the yacht is Captain J. H. Rowen, U. S. N., retired, and the physician is Dr. Franklin H. Church.

MID-WESTERN FLOODS AND THE RUBBER BOOT TRADE.

IT is truly an extremely ill wind that blows nobody good, and even at the heart of the gale some one is sure to benefit. Just for example, while most of the unfortunates who live close enough to the margin of the mid-western rivers to be reached by the usual spring inundations, yearly bewail their lot, the dealer in rubbers—and particularly in rubber boots—looks upon the situation with a great deal of complacency, not to say positive satisfaction. The recent floods that visited this section were the highest ever recorded, but as usual, people in the "bottoms" all knew that the flood could not come so high as to reach *them*. Government flood-warnings? They knew better! Over-night the rivers would surely go down. So they delayed and waited, and took things calmly.

And then it happened! The muddy, relentless water crept up and up. It filled the cellar. It came into the first story. It rose

A CINCINNATI STREET IN THE RECENT FLOOD.

to the ceiling, and still higher. Skiffs came to the second-floor windows to bring the prisoners supplies. In other places, skiffs rowed in and out the parlor windows.

Then came the demand for rubber boots. One needed these, and high ones, too, to wade about in the water, rescuing one's possessions. They couldn't be had quick enough; nor did it seem as if one could buy enough of them to supply the family, and willing rescuers. Rubber boots went up to a premium and, even when the river began descending, they were still above par,—for the work of clearing cellars, and of floundering through the mud left behind.

The picture, taken in Cincinnati, gives a good idea of the indispensability of rubber boots at flood-time.

A NEW RUBBER COMPANY IN ST. LOUIS.

A new rubber company, the British American Rubber Co., has taken a long lease of property on the corner of Tenth and St. Charles street, St. Louis, Mo., for the manufacture of rubberized cloth, raincoats and other waterproof garments, and will soon install machinery. Among those interested in the company are Gerard B. Allen, John H. Gundlach, H. Lueddinghaus, Jr., and W. H. Geisse.

A CHANGE OF NAME.

The name of the Simplex Electrical Co., with offices in Boston, Chicago and San Francisco, was changed on February 1 to Simplex Wire & Cable Co. This does not, however, involve any change in the management or interest.

Official India-Rubber Statistics for the United States.

Fiscal Year Ended June 30, 1912.

INDIA RUBBER.

IMPORTS OF CRUDE INDIA RUBBER BY COUNTRIES.

From	Pounds.	Value.
Europe:		
Austria Hungary	22,792	$30,571
Belgium	6,101,346	6,011,823
France	4,139,109	3,820,294
Germany	8,820,516	6,889,740
Italy	120	93
Netherlands	283,210	253,056
Portugal	1,449,790	963,516
United Kingdom	29,728,994	31,544,048
Total	50,545,877	$49,513,141
North America:		
British Honduras	22,866	$18,609
Canada	74,922	88,210
Costa Rica	134,842	105,089
Guatemala	166,843	85,936
Honduras	108,011	75,593
Nicaragua	820,523	608,440
Panama	111,997	78,755
Salvador	25,473	19,684
Mexico	2,226,541	1,602,046
British West Indies	4,480	3,905
Total	3,696,498	$2,686,267
South America:		
Brazil	46,762,744	$31,888,425
Chile	397	556
Colombia	843,009	588,433
Ecuador	986,215	655,546
British Guiana	209	188
Dutch Guiana	492	408
Peru	608,802	484,773
Venezuela	418,049	347,841
Total	49,619,917	$33,966,170
Asia:		
China	2,300	2,691
British India	478	200
Straits Settlements	2,989,032	2,318,239
Other British Indies	3,271,168	4,460,491
Dutch East Indies	77,452	61,543
Total	6,340,430	$6,843,164
Africa:		
British South Africa	7,451	4,513
Total	7,451	$4,513
Grand Total	110,210,173	$93,013,255
Total 1910-11	72,046,260	$76,244,603
Total 1909-10	101,044,681	101,078,825
Total 1908-09	88,359,895	61,709,723
Total 1907-08	62,233,160	36,613,185
Total 1906-07	76,963,838	58,919,981
Total 1905-06	57,844,345	45,114,450

IMPORTS OF MANUFACTURES OF INDIA RUBBER BY COUNTRIES.

[+ indicates increase; — indicates decrease, compared with the preceding year.]

From—	Value.
Austria-Hungary	$20,522+
Belgium	31,217—
Denmark	304+
Germany	375,353—
Italy	2,597—
Netherlands	1,431+
Norway	7—
Russia in Europe	37,259+
Spain	30+
Sweden	155+
Switzerland	878+
United Kingdom	285,491—
Canada	4,241—
Mexico	72+
West Indies	7—
Argentina	2+
China	61+
Hong Kong	25—
Japan	972+
Australia	101—
France	114,011+
Total, 1911-12	$874,736
Total, 1910-11	875,125
Total, 1909-10	1,154,347
Total, 1908-09	1,391,770
Total, 1907-08	1,956,590
Total, 1906-07	2,262,783
Total, 1905-06	1,992,413

RE-EXPORTS OF IMPORTED INDIA RUBBER.

By countries (for year ending June 30, 1912.)

	Pounds.	Value.
Austria-Hungary	5,971	$4,443
Belgium	210,456	156,568
France	283,258	301,985
Germany	256,518	165,911
Italy	11,928	6,270
Netherlands	4,475	2,019
Portugal	10,677	8,008
Russia in Europe	1,128	755
United Kingdom	335,629	280,001
Canada	4,353,904	3,811,536
Mexico	1,713	1,225
Jamaica	50	71
Japan	135,244	151,113
Total, 1911-12	5,610,951	$4,890,905
Total, 1910-11	5,267,588	$5,439,282
Total, 1909-10	6,492,947	7,629,380
Total, 1908-09	3,791,971	2,964,496
Total, 1907-08	4,110,667	2,994,208
Total, 1906-07	4,215,350	3,593,912

RE-EXPORTS OF MANUFACTURES OF INDIA RUBBER.

	Value.
Belgium	$50
Germany	3,071
United Kingdom	1,867
Canada	1,613
Mexico	10
Cuba	63
Venezuela	7
Total, 1911-12	$6,681
Total, 1910-11	29,356
Total, 1909-10	13,568
Total, 1908-09	36,401
Total, 1907-08	176,129
Total, 1906-07	32,712

GUTTA PERCHA.

IMPORTS OF CRUDE GUTTA PERCHA BY COUNTRIES.

From—	Pounds.	Value.
France	2,781	$2,734
Germany	172,675	109,020
Netherlands	2,422	408
United Kingdom	44,447	10,644
Canada	499	100
British India	4,506	2,824
Straits Settlements	967,929	87,718
Japan	9,147	11,449
Total, 1911-12	1,204,406	$225,797
Total, 1910-11	1,648,921	390,548
Total, 1909-10	784,501	167,873
Total, 1908-09	255,559	82,136
Total, 1907-08	188,610	100,305
Total, 1906-07	546,890	201,339
Total, 1905-06	500,770	188,161
Total, 1904-05	665,217	210,188

IMPORTS OF MANUFACTURES OF GUTTA PERCHA BY COUNTRIES.

Belgium	$1,050
France	6,243
Germany	30,277
United Kingdom	3,528
Total, 1911-12	$41,098
Total, 1910-11	61,283
Total, 1909-10	80,567
Total, 1908-09	71,819
Total, 1907-08	93,545

RE-EXPORTS OF GUTTA PERCHA.

	Pounds.	Value.
Canada	1,011	$945
Total, 1911-12	1,011	$945
Total, 1910-11	62,391	19,235
Total, 1909-10	74,137	13,886
Total, 1908-09	9,370	3,730
Total, 1907-08	.....	.....
Total, 1906-07	5,000	700

RE-EXPORTS OF MANUFACTURES OF GUTTA PERCHA.

	Value.
Canada	$15
Chile	50
Total, 1911-12	$65
Total, 1910-11	8,687
Total, 1909-10	13,955
Total, 1908-09	31,308
Total, 1907-08	944
Total, 1906-07	5,005

GUTTA-JELUTONG.

IMPORTS OF GUTTA-JELUTONG (PONTIANAK).

From—	Pounds.	Value.
France	330,482	$13,443
Germany	732,642	33,281
Netherlands	229,492	20,989
Portugal	22,400	1,437
British India	456,000	21,783
Straits Settlements	46,345,637	2,142,516
Dutch East Indies	678,285	21,576
Philippine Islands	330	25
Total, 1911-12	48,795,268	$2,255,050
Total, 1910-11	51,420,872	2,872,633
Total, 1909-10	52,392,444	2,419,223
Total, 1908-09	24,826,296	852,372
Total, 1907-08	22,803,303	1,039,776
Total, 1906-07	28,437,660	1,085,098
Total, 1905-06	21,390,116	733,074
Total, 1904-05	19,104,911	641,319

RE-EXPORTS OF GUTTA JELUTONG (PONTINIAK).

	Pounds.	Value.
Germany	109,646	$5,483
Canada	8,840	596
Total, 1911-12	118,486	$6,079
Total, 1910-11	.....	.....
Total, 1909-10	2,139	112

BALATA.

IMPORTS OF BALATA.

From—	Pounds.	Value.
Germany	12,217	$6,079
Netherlands	39,932	41,572
United Kingdom	97,238	70,995
Panama	53,821	19,465
Trinidad and Tobago	26,838	12,429
Other British	6,883	5,506
British Guiana	221,711	163,504
Dutch Guiana	454,858	358,750
French Guiana	7,357	5,069
Venezuela	596,211	300,643
Total, 1911-12	1,517,066	$984,012
Total, 1910-11	878,305	624,702
Total, 1909-10	399,003	196,878
Total, 1908-09	1,157,018	529,872
Total, 1907-08	584,582	276,756
Total, 1906-07	709,029	305,041
Total, 1905-06	374,220	152,689

RE-EXPORTS OF BALATA.

	Pounds.	Value.
Germany	23,370	$13,893
United Kingdom	32,122	18,463
Canada	7,037	6,067
Total, 1911-12	62,529	$38,423
Total, 1910-11	264,589	230,575
Total, 1909-10	.....	42,750
Total, 1908-09	.....	223,907
Total, 1907-08	.....	18,741
Total, 1906-07	.....	12,659

GUAYULE.

IMPORTS OF GUAYULE GUM.

From—	Pounds.	Value.
Belgium	187,069	$79,567
Germany	84,882	40,019
Mexico	13,966,674	6,344,201
Total, 1911-12	14,238,625	$6,463,787
Total, 1910-11	19,749,522	10,443,157

RE-EXPORTS OF GUAYULE GUM.

	Pounds.	Value.
France	17,362	$7,773
Germany	27,014	11,397
Italy	388	194
Canada	139,867	73,516
Australia	13,317	5,637
Total, 1911-12	197,948	$98,517
Total, 1910-11	340,405	175,995

(Not reported until 1910-11.)

IMPORTS OF ELASTICON AND SIMILAR SUBSTITUTES FOR INDIA RUBBER.

From Europe—	Value.
Austria-Hungary	$94
France	38,425
Germany	1,275
United Kingdom	47,534
Total, 1911-12	$87,328
Total, 1910-11	115,601
Total, 1909-10	114,516
Total, 1908-09	60,625
Total, 1907-08	27,000

RE-EXPORTS OF ELASTICON, ETC.

	Value.
Canada	$231
Total	$231

(Not reported before 1911-12.)

SCRAP RUBBER.

Quantity and Value of Imports, by Countries.

From—	Pounds.	Value.
Belgium	790,322	$62,530
Bulgaria	25,683	2,167
Denmark	288,556	25,798
Finland	167,400	12,152
France	3,400,546	299,258
Germany	2,410,362	202,856
Italy	37,924	3,283
Netherlands	265,013	20,134
Norway	339,891	30,493
Russia in Europe	5,220,921	404,159
Sweden	1,050,117	93,134
Switzerland	62,020	5,603
Turkey in Europe	649,204	52,035
United Kingdom	6,455,762	505,705
Canada	4,102,962	299,458
Panama	34,603	1,438
Mexico	211,520	17,476
Newfoundland and Labrador	67,084	5,586
British West Indies	8,712	463
Cuba	185,573	15,641
Brazil	1,727	124
Chile	10,172	930
Uruguay	18,260	858
Venezuela	552	30
China	1,200	86
Hong Kong	22,400	1,116
Japan	99,397	6,514
Russian Asia	306,999	22,312
Turkey in Asia	46,074	3,747
Australia and Tasmania	12,236	519
Total, 1911-12	26,293,192	$2,095,605
Total, 1910-11	26,948,000	2,334,870
Total, 1909-10	37,364,671	2,998,697
Total, 1908-09	20,497,695	1,543,267
Total, 1907-08	16,331,035	1,496,822
Total, 1906-07	29,335,193	2,608,987
Total, 1905-06	24,756,486	1,721,678
Total, 1904-05	15,575,214	953,439

Quantity and Value of Exports, by Countries.

To—	Pounds.	Value.
Austria-Hungary	87,762	$12,197
Belgium	782,442	83,961
France	780,270	119,348
Germany	993,561	129,968
Italy	40,189	4,096
Netherlands	628,119	88,466
Norway	4,530	360
Switzerland	4,000	450

EXPORTS OF AMERICAN RUBBER GOODS, FISCAL YEAR ENDED JUNE 30, 1912.

EXPORTED TO—	Belting, Packing and Hose.	Boots and Shoes. Pairs.	Boots and Shoes. Value.	Tires. For Automobiles. Value.	Tires. All Other. Value.	Other Goods. Value.	Total Value.
Europe:							
Austria-Hungary	$6,444	64,450	$37,637	$375	$862	$19,261	$64,579
Azores and Madeira Islands	176	224	389	.....	.....	187	752
Belgium	7,733	104,485	57,016	51,620	5,468	78,576	200,413
Bulgaria	.....	30,710	17,622	.....	.....	.....	17,622
Denmark	10,423	22,751	13,030	288	197	12,920	36,858
Finland	.....	.....	.....	.....	.....	353	353
France	27,448	72,345	38,779	316,629	13,947	159,408	556,211
Germany	40,233	176,546	102,220	1,160	800	397,256	541,669
Gibraltar	.....	456	402	.....	.....	.....	402
Greece	400	5	15	.....	.....	147	562
Italy	2,237	88,769	50,325	2,387	13,425	43,917	112,291
Netherlands	3,830	7,658	3,442	405	100	42,810	50,587
Norway	5,212	23,452	14,121	79	.....	6,897	26,309
Portugal	142	21,835	16,139	271	.....	1,399	17,951
Roumania	216	14,612	9,378	174	.....	.....	9,768
Russia in Europe	5,929	3,934	2,183	.....	608	15,974	24,694
Spain	939	72,340	39,321	.....	2,059	5,791	48,110
Sweden	2,563	672	595	7,545	13,758	3,033	27,494
Switzerland	601	104,791	57,557	.....	.....	2,570	60,728
Turkey in Europe	.....	306,027	146,602	.....	.....	18	146,620
United Kingdom	210,547	644,251	348,863	1,177,746	134,153	1,340,853	3,212,162
Total, Europe	$325,073	1,760,313	$955,636	$1,558,679	$185,377	$2,131,370	$5,156,135
North America:							
Bermuda	$221	596	$380	.....	$1,995	$1,765	$4,361
British Honduras	1,343	.....	.....	$612	238	368	2,561
Canada	441,222	13,112	30,752	696,433	21,371	981,250	2,171,028
Costa Rica	14,307	310	269	1,863	2,230	5,626	24,295
Guatemala	6,179	225	318	2,178	871	2,612	12,158
Honduras	2,494	.....	.....	402	117	1,908	4,921
Nicaragua	4,779	.....	.....	130	131	7,870	12,910
Panama	103,209	5,553	11,227	4,073	7,137	28,104	153,750
Salvador	8,214	60	33	346	177	21,643	30,413
Mexico	378,391	4,884	4,939	148,480	37,367	133,513	702,690
Miquelon, etc.	9	1,153	1,116	.....	.....	.....	1,125
Newfoundland and Labrador	3,409	48,523	35,972	1,144	1,360	7,265	49,150
West Indies—							
British	10,442	463	396	25,710	17,468	15,876	69,892
Cuba	156,819	8,579	7,322	21,714	80,586	129,762	396,203
Danish	284	196	199	190	30	649	1,352
Dutch	469	.....	.....	173	202	1,291	2,135
French	.....	.....	.....	134	438	544	1,116
Haiti	2,893	25	27	.....	137	1,283	4,340
San Domingo	10,798	1,014	652	2,934	3,472	7,113	24,969
Total, North America	$1,145,482	84,693	$93,602	$906,516	$175,327	$1,348,442	$3,669,369
South America:							
Argentine	$38,751	12,388	$16,346	$10,196	$5,935	$73,586	$143,814
Bolivia	3,040	144	107	.....	3	564	3,714
Brazil	40,777	68,157	41,036	24,952	11,273	81,201	199,239
Chile	57,315	7,134	7,056	354	23,682	25,833	114,240
Colombia	5,594	1,712	1,075	5,268	2,162	8,499	22,598
Ecuador	7,416	954	353	615	855	4,313	13,552
Guiana—British	1,537	4,133	1,905	1,804	1,663	2,376	9,285
Dutch	107	48	24	.....	174	947	1,252
Paraguay	77	.....	.....	.....	.....	179	256
Peru	22,325	1,072	1,166	745	275	5,179	29,690
Uruguay	1,830	20,729	12,233	849	3,186	20,687	38,785
Venezuela	8,874	440	239	1,835	1,612	11,649	24,209
Total, South America	187,643	116,911	$81,540	$46,618	$49,820	$235,013	$600,634
Asia:							
Aden	.....	.....	.....	$30	.....	.....	$30
China	$10,221	934	$1,342	850	.....	$2,788	15,201
Japanese China	.....	516	273	181	.....	.....	454
Korea	5,787	537	901	.....	.....	701	7,389
British India	6,745	2	4	676	$1,192	8,037	16,654
Straits Settlement	2,516	.....	.....	1,312	119	637	4,584
Other British	.....	.....	.....	407	545	309	1,261
Dutch East Indies	1,850	.....	.....	6,170	479	1,385	9,884
Hong Kong	4,032	436	334	5,468	608	4,262	13,804

SCRAP EXPORTS—Continued.

United Kingdom	2,671,774	207,029
Canada	1,342,426	133,780
Japan	1,911	533
Total, 1911-12	7,336,984	$780,188
Total, 1910-11	7,049,729	723,664
Total, 1909-10	6,143,610	578,944
Total, 1908-09	4,071,795	402,897
Total, 1907-08	4,255,789	449,727
Total, 1906-07	4,756,621	548,695
Total, 1905-06	*a*	339,507
Total, 1904-05	*a*	204,945

(*a*) Not officially reported.

RE-EXPORTS OF SCRAP RUBBER.

	Pounds.	Value.
Canada	302,105	$28,196
Total, 1911-12	302,105	$28,196
Total, 1910-11	401,231	43,338
Total, 1909-10	61,395	5,373
Total, 1908-09	38,506	2,093
Total, 1907-08	21,713	2,943
Total, 1906-07	105,463	9,444

RECLAIMED RUBBER.

Quantity and Value of Exports, by Countries.

To—	Pounds.	Value.
Belgium	133,043	$25,775
Denmark	4,660	671
France	360,405	50,444
Germany	165,731	34,425
Italy	49,838	7,527
Netherlands	2,446	430
Sweden	7,880	1,530
United Kingdom	902,480	148,524
Canada	3,391,958	541,895
Japan	274,828	47,589
Australia and Tasmania	104,537	16,691
Total, 1911-12	5,397,806	$875,501
Total, 1910-11	4,994,527	781,650
Total, 1909-10	3,622,556	535,795
Total, 1908-09	3,196,551	414,861
Total, 1907-08	2,947,974	418,738
Total, 1906-07	4,550,788	665,109
Total, 1905-06	4,084,696	511,843
Total, 1904-05	*a*	522,902

(*a*) Not officially reported.

EXPORTED TO—	Belting, Packing and Hose.	Boots and Shoes. Pairs.	Boots and Shoes. Value.	Tires. For Automobiles. Value.	Tires. All Other. Value.	Other Goods. Value.	Total Value.
Japan	74,721	44,130	31,350	13,531	9,703	80,426	209,731
Asiatic Russia	1,094	91	244	.....	.....	.....	1,338
Siam	.....	.....	.....	.....	295	324	619
Persia	.....	.....	.....	.....	12	.....	12
Turkey in Asia	.....	77,686	43,269	159	.....	1,218	44,646
Total, Asia	$106,966	124,332	$77,717	$27,884	$12,953	$100,087	$325,607
OCEANIA:							
Australia and Tasmania	$127,706	399,544	$223,394	$24,081	$2,574	$124,945	$502,700
New Zealand	31,464	31,593	39,143	11,847	9,921	45,355	137,730
Other British	13	885	760	300	.....	39	1,112
French Oceania	1,208	3,932	3,421	665	137	855	6,286
German Oceania	.....	.....	.....	105	.....	17	122
Philippine Islands	93,545	5,485	6,734	73,763	103,488	125,782	403,312
Total, Oceania	$253,936	441,439	$273,452	$110,761	$116,120	$296,993	$1,051,262
AFRICA:							
British, West	$600	696	$267	$48	$16	$300	$1,231
British, South	201,229	15,354	19,905	7,049	5,773	29,163	263,119
British, East	.....	.....	.....	55	.....	12	67
Canary Islands	.....	.....	.....	91	.....	.....	91
French Africa	2,375	.....	.....	.....	.....	.....	2,375
German	.....	.....	.....	.....	.....	23	23
Liberia	46	186	113	.....	.....	14	173
Portuguese Africa	92,134	.....	.....	108	.....	1,283	93,525
Turkey in Africa—Egypt	.....	432	206	.....	1,447	1,573	3,226
Tripoli	.....	720	452	.....	.....	.....	452
Total, Africa	$296,384	17,388	$20,943	$7,351	$7,236	$32,368	$364,282
Grand Total, 1911-12	$2,315,484	2,545,076	$1,502,890	$2,657,809	$546,833	$4,144,273	$11,167,289
Grand Total, 1910-11	$2,163,416	3,984,332	$2,219,430	$2,085,107	$592,470	$3,886,825	$10,947,248
Grand Total, 1909-10	1,960,825	3,791,084	1,984,739	.....	.....	5,115,331	9,060,895
Grand Total, 1908-09	1,498,445	2,396,435	1,292,673	.....	.....	3,823,956	6,615,074
Grand Total, 1907-08	1,347,775	3,080,253	1,614,290	.....	.....	3,743,040	6,705,105
Grand Total, 1906-07	1,253,369	2,310,420	1,231,898	.....	.....	3,729,643	6,214,910
Grand Total, 1905-06	1,221,159	2,693,690	1,505,082	.....	.....	2,966,144	5,692,385
Grand Total, 1904-05	994,100	2,390,539	1,214,342	.....	.....	2,572,375	4,780,817
Grand Total, 1903-04	880,010	2,310,420	1,231,898	.....	.....	3,729,643	6,214,910
Grand Total, 1902-03	819,985	2,307,401	1,056,491	.....	.....	2,299,875	4,176,351
Grand Total, 1901-02	634,146	2,594,708	1,046,315	.....	.....	1,781,941	3,462,402
Grand Total, 1900-01	565,726	1,459,100	724,015	.....	.....	1,727,527	3,017,268

Tires were not specifically reported before 1910-11.

SUMMARY.

	1910-11. Pounds.	1910-11. Value.	1911-12. Pounds.	1911-12. Value.
IMPORTS OF FOREIGN MERCHANDISE—				
Crude India-Rubber	72,046,260	$76,244,603	110,210,173	$93,013,255
Guayule Gum	19,749,522	10,443,157	14,238,625	6,463,787
Gutta-Percha	1,648,921	390,548	1,204,406	225,797
Gutta Jelutong (Pontianak)	51,420,872	2,872,633	48,795,268	2,255,050
Balata	878,305	624,702	1,517,066	984,012
Scrap	26,948,000	2,334,870	26,293,192	2,095,605
Total unmanufactured imports (*a*)	172,691,880	$92,910,513	202,258,730	$105,037,506
Manufactures of India-Rubber	.....	$875,125	.....	$874,736
Manufactures of Gutta-Percha	.....	61,283	.....	41,098
Elasticon, etc.	.....	115,601	.....	87,328
Total manufactured imports (*b*)	.....	$1,052,009	.....	$1,003,162
RE-EXPORTS OF FOREIGN MERCHANDISE—				
Crude India-Rubber	5,267,588	$5,439,282	5,610,951	$4,890,905
Balata	264,589	230,575	62,529	38,423
Guayule Gum	340,405	175,995	197,948	98,517
Gutta-Percha	62,391	19,235	1,011	945
Scrap	401,231	43,338	302,105	28,196
Gutta Jelutong	.....	.....	118,486	6,079
Total unmanufactured re-exports (*c*)	6,336,204	$5,908,425	6,293,030	$5,063,065
Manufactures of India-Rubber	.....	$29,356	.....	$6,681
Manufactures of Gutta-Percha	.....	8,687	.....	65
Elasticon, etc.	.....	.....	.....	231
Total manufactures re-exported (*d*)	.....	$38,043	.....	$6,977
EXPORTS OF DOMESTIC MANUFACTURES—				
Scrap	7,049,739	$723,664	7,336,924	$780,188
Reclaimed Rubber	4,994,527	781,650	5,397,806	875,501
Manufactures of India-Rubber and Gutta-Percha	.....	10,947,248	.....	11,167,289
Total domestic manufactures exported (*c*)	.....	$12,452,562	.....	$12,822,978
GRAND TOTALS—				
Imports (*a*) and (*b*)	.....	$93,962,522	.....	$106,040,668
Less re-exports (*c*) and (*d*)	.....	5,946,468	.....	5,070,042
Consumption of foreign imports	.....	$88,016,054	.....	$100,970,626
Exports of domestic merchandise (*e*)	.....	$12,452,562	.....	$12,822,978

OBITUARY RECORD.

W. W. WALLIS

SUDDENLY and without a note of warning came the death of Walter W. Wallis, for 28 years the manager of the Goodyear Rubber Co.'s Milwaukee branch. Apparently in his usual good health, he arose at 6 o'clock Sunday morning, February 9, to bid goodby to a guest who had been visiting him for several days and who was obliged to take an early train. When his absence from the house was first noticed, it was thought he had accompanied his friend to the station, but when it became evident that he had not left the house a search was instituted and he was found in the basement, whither presumably he had gone to look after the furnace; but when discovered life had been for some time extinct.

Mr. Wallis was born in Milwaukee, November 18, 1852, and lived there all his life. After graduating from the public school he became connected with the Milwaukee branch, then just established, of the Goodyear Rubber Co. and in 1885 was made its manager, a position he occupied with marked success until the day of his death. He was a man of exceptional energy and conscientiousness; his house enjoyed a fine reputation in the trade, and for the year just closed showed the largest volume of sales, if not the greatest amount of profits, in its career.

Notwithstanding the time and thought and hard work that he devoted to his business, he did not let that engross his entire attention. He was an active member of the Merchants' and Manufacturers' Association of Milwaukee, and was conspicuously active in the philanthropic and religious life of the city. He was for many years a trustee of the Y. M. C. A. and was especially energetic in advancing its prosperity. He was also for many years a trustee of the Park Place Methodist Church and superintendent of its Sunday School. The esteem in which he was held by those who knew him best is shown by a statement made by one of his life-long friends, which appeared in one of the local papers the day after his death, which contained the following tribute:

"I knew Walter W. Wallis for nearly fifty years. We have worked for many of the same causes. I knew him as a friend and a companion, and the shock of his untimely death comes as a benumbing blow.

"He was one of God's true noblemen, a loving husband and father, a loyal friend, a great-hearted, Christian gentleman, whose hand was ever ready to help the fallen, whose every heart throb was given for the betterment of life and living, whose purse was ever open to every good cause, whose time was considered as a gift from God, to be used for the benefit of his family, his friends and the city of his birth."

Mr. Wallis is survived by his wife, four children—Mrs. F. H. Bennett, Baltimore, Mrs. Harold Detienne, Milwaukee; Winifred Wallis, at home, and John L. Wallis, a student at the University of Wisconsin; also by two sisters—Mrs. H. C. Graham, Milwaukee, and Mrs. G. L. Richards, Chicago—and two brothers, John and Irving, St. Paul.

The funeral was held at his home, February 11; the pastor of the church to which he had been so long attached officiated.

WALTER F. JONES.

Walter F. Jones, assistant general manager of the Revere Rubber Co., died at his home in Chelsea, Massachusetts, Tuesday, February 11, after a somewhat prolonged sickness of typhoid fever. Mr. Jones was a successful business man. Born in Chelsea 37 years ago and educated in the public schools. He entered the employ of the Revere Rubber Co. as clerk when 15 years of age. Quick to learn, active and efficient, promotions came rapidly and he was made chief clerk of the business office in Boston, then traveling salesman, afterwards factory manager and later assistant general manager.

The burial services were held at his late residence and were attended by many men prominent in business and finance, including also many of his associates in the Revere Rubber Co. and representatives of the several Masonic bodies with which he was affiliated. The officiating clergyman was the Rev. H. W. Slebbins, who performed the ceremony at the wedding of Mr. and Mrs. Jones about ten years ago. The pall-bearers, all associates of the Revere Rubber Co., were: A. R. Taft, E. H. Scribner, H. Z. Cobb, J. H. Learned, A. A. Learned, G. P. Whitmore, A. Y. Tucker and H. L. Williamson.

FRANCISCO I. MADERO, JR.

Francisco I. Madero, Jr., who recently, under compulsion, resigned the presidency of the Republic of Mexico, was assassinated in the city of Mexico a short time before midnight on February 22. Up to three years ago the late president was known only as a member of one of Mexico's oldest and most influential families—a family which had amassed great wealth through real estate holdings, and particularly through the fact that it owned vast sections of land covered with the *guayule* shrub. Not a

Francisco I. Madero, Jr.

little of the family's wealth came from this source and from the several *guayule* factories owned by the Maderos in different parts of Mexico. When Madero's grandfather, Don Evaristo Madero, died in Los Angeles in the spring of 1911 it was estimated that his wealth equaled $20,000,000—an extraordinary figure for Mexico.

But the fame of Francisco I. Madero, Jr., as a figure in the rubber world has been entirely eclipsed during the last three years by reason of his political activities. While nature endowed him with almost none of the qualities for the leadership of a turbulent people, his revolt against the Diaz domination, which occurred in March of 1910, came at the psychological moment, and many Mexicans flocked to Madero's banner simply because they sympathized with him in his opposition to Diaz. From that time, three years ago, to the time of his death, his life was crowded with moving incidents. In June, 1910, he was thrown into prison by Diaz, but a few months later escaped, recruited troops, and in February, 1911, fought against the administration forces. In the following May Diaz was compelled to resign, and Madero

became provisional president, and a few days later, in June, entered the capital city acclaimed by the populace as "the savior of Mexico." In October, 1911, he was elected president, practically unanimously; but was not fitted for the herculean task before him. He lacked the dominating personality required to rule an unruly people. His administration was rendered ineffective by constant and widespread opposition.

But the grave crimes that are already laid at the door of his successor could not be charged against him. He was singularly lenient with his enemies, abhorred blood-shed, and did not seek revenge. He was, in fact, an idealist, and entirely wanting in the iron qualities needed for the administration of Federal affairs in our neighboring republic. Madero was in his 48th year.

H. L. HOAG.

Harry L. Hoag, manager of the Alling Rubber Co.'s store at Pittsfield, Massachusetts, died February 12 of pneumonia at a private sanitarium in Hartford, Connecticut, after an illness of three weeks. Mr. Hoag was born in Danbury, Connecticut, thirty-five years ago. He was formerly employed in the Hartford store of the Alling company, being transferred to Pittsfield as manager six years ago. He was a member of the Park Club and of the South Congregational Church of Pittsfield.

NEW TRADE PUBLICATIONS.

A TIRE LESSON WITH A MORAL.

In an attractive booklet with above title, the Ajax-Grieb Rubber Co. has dealt with the consequences of inattention on the part of the driver, at the same time giving some valuable advice regarding the means by which the life of a tire may be prolonged. The various forms of injury by chains, fabric rupture, blow-outs, sand-blisters, neglected cuts, rut wearing, under-inflation, faulty alignment and other causes, are successively treated.

"How to attain a greater mileage" is the subject of detailed recommendations. Finally, a scale of the proper inflation indicates the gradations applicable to various sizes.

Two other attractive booklets with the titles, "Figures that Don't Lie," and "A Word to the Wise," discuss various aspects of the tire problem, as solved by the "Ajax." The former contains a table showing cost of "Ajax" in comparison with other guaranteed makes.

In the latter, reasons are adduced in proof of the advantage of the 5,000-mile guarantee, carried by the Ajax tire. Attention is likewise called to the fact that this guarantee is a written one, signed by the president of the company. These booklets show that the Ajax-Grieb Co. is well to the front in the matter of attractive publicity.

CATALOG OF RUBBER GOODS AND BELTING.

Apart from the staple articles of rubber manufacture, there are a large number of rubber mechanical accessories, indispensable to industrial and manufacturing operations. These form a special branch of the rubber industry, the extent of which is shown by the general catalog of W. H. Salisbury & Co., Inc., of Chicago, containing in its 257 pages a vast quantity of matter interesting to the prospective buyer. It comprises two main divisions; one of them (180 pages) subdivided into belting and belting supplies, hose and hose supplies, and engine room and plumbers' supplies. The other division (77 pages) includes: mats, matting and tiling, clothing and sundries, and miscellaneous goods.

One of the most useful features of this catalog is the abundance of its illustrations, brought out with remarkable clearness. To the distributor of any of the lines indicated this booklet will be extremely interesting and useful.

THE GORDON NEWS.

That brevity is consistent with attractiveness is shown by "The Gordon News," the bright house-organ of the Gordon Rubber Co., Canton, O. Within its four pages is grouped a quantity of literary material of interest, naturally leading up to the subject of the "Household Rubber Glove." A portrait of Mr. C. W. Keplinger, the president, gives a personal feature to this little publication, carried further by the list of "The Men Behind the Goods," including its administrative and distributing staff.

THE UNITED STATES TIRE CO.'S MONTHLY.

The publication issued by the United States Tire Co., entitled "U. S. for Us," has changed its form from a small pocket size to a shape more uniform with the popular magazines, being now 7 x 10 inches in size. The January issue is devoted quite largely to the New York Automobile Show, and contains a fine gallery of half-tone prints of the various cars displayed at that time.

A HANDSOME TENNIS BOOKLET.

The United States Rubber Co. has just issued its net price list of tennis, sporting and outing shoes for 1912-13. Hitherto these price lists have been very modest in their appearance, simply illustrating the various shoes with a few lines of description and the prices. But this year the tennis list appears as a 16-page booklet printed in colors on a fine quality of paper, with a very artistic scene of some sporting event occupying the upper third of every page. These scenes are admirably drawn and are reproduced in delicate water-color effects. They show a golf field; a yachting race, with the winner just passing the home buoy; an exciting tennis match; a base-ball game; a gymnasium scene, with young athletes doing some wonderful work on parallel bars; a bathing scene, and a hot basket-ball fight between a couple of college teams. The booklet gives all the information that the former lists contained, but in such an artistic setting that anyone receiving one of these lists is sure to preserve it.

LATEST GOODRICH LITERATURE.

The latest batch of Goodrich literature is fully up to that company's standard. One of its most attractive features is a neat folder showing in four cuts the gathering and manufacture of the cotton which forms the "backbone of the tire," as it is pertinently called. The Goodrich fabric is made only of the finest selected long staple Sea Island cotton, of which upon selection not ten per cent. is approved. Braided Fabric Hose is also illustrated by an attractive card. In another tasty folder the merits of the "Meteor" Golf Ball are told.

Prominent among the more extensive features of this effective group of advertising matter is an illustrated catalogue of the "Goodrich Pneumatic Truck Tires," as well as a circular of the "Goodrich Wireless Motor Truck Tires," it being recorded that 570 motor truck tires of other makes were recently changed in one month to "Goodrich Wireless." A group of testimonials from various classes of tire users, in a neat booklet, serves to hold the smaller items of this attractive collection of Goodrich lore. The booklet is entitled "Kismet," the "reason why" being told by its introduction.

A BANIGAN CATALOG.

The Banigan Rubber Co., of Baltimore, has issued a highly creditable catalog describing and illustrating the great variety of rubber footwear carried by this company. The catalog contains a mass of information, given in compendious form, and shows, by means of large-sized half-tones, what the varieties of footwear described look like. In the back of the book there is a photographic picture of the Banigan company's factory at Woonsocket, Rhode Island.

The Editor's Book Table.

A MANUAL OF SHOEMAKING AND LEATHER AND RUBBER Products. By William H. Dooley, Principal of the Lowell Industrial School. With 41 illustrations. Little, Brown & Co., Boston, Mass. [8vo. 280 pp. Cloth. $1.50 net.]

WHEN the Lynn Commission on Industrial Education desired a text book on shoe manufacture, to be used in the proposed shoe school in that great shoe city, it was found that there was no such text book in existence in the English language, and the principal of the Lowell Industrial School, Mr. William H. Dooley, was invited by the Commission to prepare such a work. He accepted the invitation and devoted a great deal of time in collecting material for a book of shoe making He visited the factories of Europe, as well as those of America; and the result of his labors is a compendious book of 280 large-print pages, with many illustrations, giving in concise, clear and intelligible form all the essential information relating to the manufacture of leather and rubber boots and shoes.

The greater part of the book is devoted, naturally, to leather footwear. He describes hides and their treatment, methods of tanning, how shoe styles are made, and the departments of a shoe factory. He tells the difference between the old-time making of shoes, where each cobbler supplied the footwear for his immediate neighborhood, and the present perfected methods which pour out vast quantities of finished shoes every day from the great factories of New England and the West.

The last chapter in the book, devoted to the history of footwear will be, for the general reader, one of the most interesting; but the chapter that is most important from the standpoint of the rubber industry is that devoted to "Rubber Shoe Manufacture and Terms." Here the author begins with the collecting of the latex in the Brazilian forests and on the plantations, and follows the coagulated rubber from the shipping docks at Pará and in the East to the American factory, where it is duly cleaned, dried, compounded, calendered and cut up into the component parts of boots and shoes. Then he describes the method of constructing the boot and the shoe from these various parts, and follows by describing the processes of varnishing, vulcanizing, packing and shipping. It is an interesting story, and while it will afford no additional light, naturally, to people experienced in the practical work of the factory, it gives to the uninitiated—the student in the industrial school, the beginner in the factory, and especially to the general reader—all the essential information regarding, at least, the rudiments of rubber footwear making, and gives it in a clear, concise and readable form.

WEST INDIAN TALES OF OLD. BY ALGERNON E. ASPINALL, author of "The Pocket Guide to The West Indies" and "The British West Indies—Their History, Resources and Progress." Illustrated. Duckworth & Co., London. 1912. [8vo. 260 pp. Board covers.]

Readers of this publication will doubtless remember earlier reviews of books by Mr. Aspinall. His book on the British West Indies was reviewed at some length in the June, 1912, issue of THE INDIA RUBBER WORLD. That book contained one chapter on the rubber potentialities of the British West Indies, which, though not long, was full of interesting information.

Mr. Aspinall's latest book, "West Indian Tales of Old," contains nothing about rubber, but having to do with a part of the world in which rubber production is a matter of constantly increasing importance, it ought to appeal to people interested in rubber countries. This book contains eleven different stories, largely historical, somewhat legendary, and all good reading. The opening story, "Benbow, the Brave," describes some of the chivalrous deeds of the redoubtable English Admiral, who, a little over two centuries ago, drove the pirates away from the British possessions in the West Indies, and later, single-handed—deserted by the cowardly captains of his fleet—engaged the French, and against great odds gave an exhibition of English pluck and naval prowess, which has been a treasured incident in English history ever since. By way of introduction to the brave Benbow, there is a graphic description of the destruction of Port Royal at Jamaica Bay by an earthquake in 1692.

One story in the book that will appeal to the lovers of the mystic is "A Barbados Mystery," which relates the extraordinary occurrences that took place about 100 years ago in a certain tomb in the church-yard of Christ Church, situated on the south coast of Barbados. The moving events recorded in the story must have occurred, as they were vouched for at the time by all the local dignitaries of State and Church, but no explanation has ever been given of these gruesome phenomena.

Another extremely interesting story is "The Legend of Rose Hall," which tells of the cruel fate that overtook an exceedingly cruel woman, who, nearly a century ago, was mistress of this famous mansion, which still stands (in a dilapidated condition) near Montego Bay on the North Coast of Jamaica.

For tourists intending to embark for a cruise through the West Indies, Mr. Aspinall's book can be most highly recommended. It will greatly increase their interest in the scenes and places that make the West Indies so attractive to visitors.

THE OPERATION, CARE AND REPAIR OF AUTOMOBILES. Edited by Albert L. Clough. Revised Edition. New York, 1912. The Horseless Age Company. [Cloth. 300 pages.]

In the above comprehensive and detailed work Mr. A. L. Clough, of the editorial staff of the "Horseless Age," has grouped together a number of facts and suggestions of material value to those seeking light upon the operation of the automobile, as well as upon the best remedies for the various troubles connected therewith.

While it contains a number of sections dealing with various sub-divisions of the contents, the work has nine main divisions. In the first the subject of "Ignition" is treated in 96 pages, with full descriptions of the jump spark and torch spark ignition systems. While the latter unites electrical simplicity with a notable degree of mechanical complication the contrary is the case with the former, which is electrically more complex but simpler mechanically. Hence it has apparently been very generally adopted.

"Carburation" deals in 27 pages with the properties and treatment of gasoline, including its filtration and storage, as well as with carburetor troubles and their remedies. It finally discusses fuel consumption as a criterion of a car's condition.

Proceeding from the mechanical to the accessory features of the subject, the next point dealt with is "Lubrication," to which 18 pages are devoted. One of the most interesting chapters is that upon how to locate abnormal friction in the moving parts.

Specially interesting to the rubber man who may be also owner of an automobile is the section of 28 pages treating of tires, the scope of which is indicated by the headings of the principal chapters: "Wear due to Faults in Tire," "Some cases of Abnormal Wear," and "Hints on Tire Maintenance." Repairs, demountable rims and other kindred subjects also receive attention.

Other divisions of the work are: "Inspection, Care and Use of Motor Cars" (49 pages); "Garages, Washing and Shipping Cars" (21 pages); "Repair Suggestions" (50 pages), and "Winter Use of Automobiles" (17 pages). A well arranged index facilitates reference.

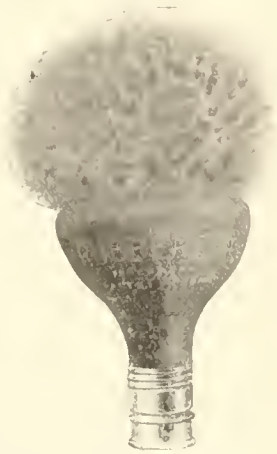
The total of 300 pages therefore covers all branches of the subject, while at every step the reader is aided by one of the 180 illustrations, which, in conjunction with several graphic charts form one of the most valuable features of the work.

Combining as it does a large amount of personal knowledge with valuable journalistic experience, Mr. Clough's work may be regarded as a distinct acquisition to automobile literature.

New Rubber Goods in the Market

A RUBBER-SET WAGON WASHER.

AN inventive genius associated formerly with one of the oldest rubber manufacturers in the country has invented a rubber-set washer for vehicles. It consists of a rubber cup-shaped bulb provided with a coupling at one end so that it may be attached to a hose, while the other end is open and clear, with inturned rubber teeth. A sponge is inserted in this open end, and the water turned on, the pressure of which bends the rubber teeth outward so that they take a tight grip on the sponge.



This washer has various obvious advantages. In the first place, the sponge can retain no grit to scratch the varnish, because the force of the water passing through it necessarily cleans away all grit. It has no metal parts to come in contact with the varnish, and there is no waste of water, as all the water used must pass through the sponge, and be applied at the spot that is being cleaned. Moreover, there is no splashing, as is usually the case where a sponge is used in the hand. The mechanism is simple in construction, the sponge being easy to insert and to remove when the pressure of the water is relaxed. [Rubberset Co., Newark, N. J.]

RUBBER GARMENTS TO REDUCE SUPERFLUOUS FLESH.

THE world can be divided into two classes—the thin who want to get fat, and the fat who want to get thin. For the first class there is little hope; but for the second class there are sundry avenues of escape. One recently opened is a medicated rubber garment, or more properly, a series of such garments of various styles and sizes, intended to cover the male or female anatomy—in whole or in part—invented by a New York woman doctor. The accompanying cuts show some of these garments. The statement is made that if these garments are worn by people with undue flesh—particularly if they walk or take other exercise while wearing them—the superfluous avoirdupois will gradually melt away. The further statement is made that these garments can be worn with perfect safety, and that they are endorsed by leading physicians. [Dr. Jeanne Walter, 45 West 34th street, New York.]

A PNEUMATIC TIRE IN SECTIONS.

One great trouble with the pneumatic tire is the fact that all the air is in one tube and when anything goes wrong with that tube, even a little puncture the size of a tack point, out goes the air and away goes the tube. Now some inventive people in Trenton, New Jersey, have devised a pneumatic tire that is composed of distinct sections—6 to 10 sections making a complete inner tube—and each of these sections will have 30 cells running its length, so that the complete tube is composed of from 180 to 300 small tubes; anyone of which can be punctured and blown-out without affecting the others. It is called "the Roberts Sectional Pneumatic Tube" and it embodies the old proposition of dividing a large space into several smaller spaces like the tubular boiler and water-tight compartments in a ship.

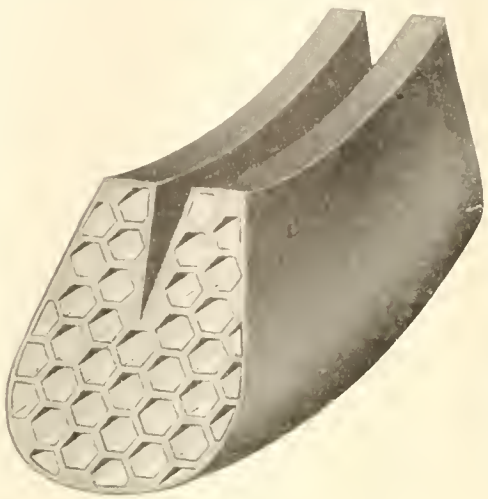


FIG. 1

Each section—molded with one end closed and the other open, as is shown in Fig. 1—is put in a patented machine filled with compressed air, and at the same time the open end is sealed, by a cap of rubber and fabric being vulcanized over it. When taken from this machine it appears as in Fig. 2. The V-shaped cut has spread apart, thus allowing for the expansion of the rubber.

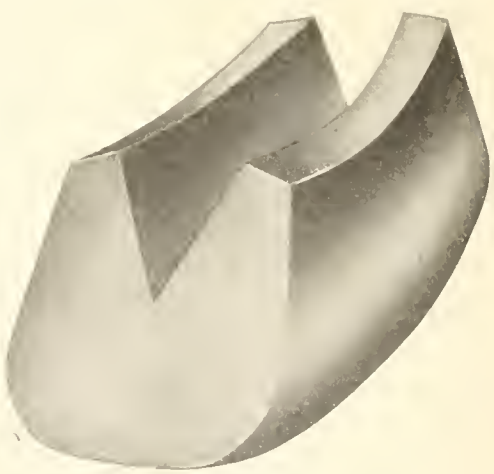


FIG. 2.

The necessary number of these sections are now cemented together, forming a ring the exact size of the inside of the shoe. To put on a wheel take the ring of sections, place in a shoe, then with an ordinary tire-iron or C-clamp draw the points of the V together and push the beading of the shoe under the rim. The pressure of the V is sufficient to hold the shoe on the rim.

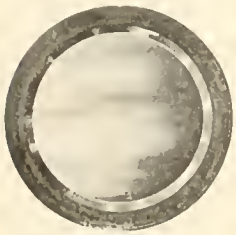
It can be seen at a glance that blowouts are impossible. A nail would not penetrate more than three or four of these cells, and, as these cells are not connected, the air would

escape only from those actually punctured, the rest remaining intact.

The company expects to have these sectional tires on the market in the early spring. Roberts Rubber Manufacturing Co., Trenton, New Jersey.

SHAVING BY PNEUMATIC AID.

Thousands of fortunate people are now able to ride to their morning labors on pneumatic tires. These same people and thousands of others can start the day by shaving (if they so elect) with pneumatic assistance. Some inventive genius in Connecticut (the whole rubber industry is based on the invention of a Connecticut genius) has devised a mirror called the Aero Safety Mirror, with a rubber edge and rubber back. This rubber back, being slightly concave in form, can be pressed against a window-pane—the raised rim being slightly moistened—and will remain there when the hand is removed, because a slight vacuum is created, and the mirror is held by the pressure of the air. In other words it is a suction mirror. This mirror is of use not only to shavers, but to others, as it can be used in any place where there is a smooth surface to press it against. For instance, ladies, after a 60-mile jaunt in an auto can put the mirror up in front of them to see how much is left of their complexions, and how much awry their bonnets are. The rubber back and raised rubber edge also prevent the glass from breaking should it happen to fall. [Aero Sales Co., Hartford, Connecticut.]



The Aero Safety Mirror.

SUCTION PUMP FOR CLEANING PIPES.

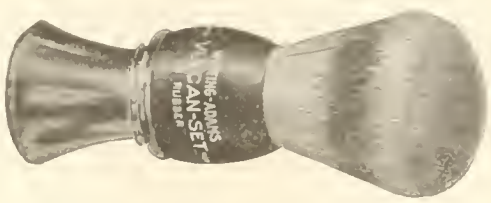
Life contains few more aggravating experiences than the stopping-up of a drainage pipe with the resulting overflow of bath-tub or wash-bowl. The cut shown herewith illustrates a new pump—the Noppel Force and Suction Pump—which is used for removing any obstruction that gets into the plumbing. The particularly effective feature of the pump is a double lip vacuum cup. [George W. Heiland, 99 Beekman street, New York.]

A NEW TIRE VALVE.

This tire valve is made by The Burke Valve Co., Cleveland, Ohio. It differs from the regular valves in many ways. First, the valve stem is made in two parts, so that if it becomes bruised at any time on the end the end stud can be changed for a new one instead of changing the whole valve. This has a lead gasket to insure a tight joint. Second, the plunger has no spring, being a balanced valve; the pressure in the tube equaling that of the pump, so the valve closes automatically. Third, this valve has three ports for air to pass through, so that when pumping up a tire it can be done in very much less time. Those who pump up their tires by hand will be surprised at the ease and rapidity with which the tire is inflated. It has another good point—the reversible valve seat, of rubber, which rests in a metal recess in the valve seat.

"VULCAN-SET IN RUBBER" SHAVING BRUSH.

From its general adoption the safety razor has evidently come to stay. One of the results is that the individual shaving brush has in many cases become an indispensable toilet adjunct for the sterner sex. This widely extended use has encouraged manufacturers to meet the demand for better brushes and this has been effected by the "Vulcan-set in Rubber" shaving brush. The bristles and hair are first imbedded in rubber of best quality in a plastic condition, which is then vulcanized as hard as granite, by which means it becomes impossible for the former to be loosened. The brushes are made by new machinery especially constructed for the purpose, and every bristle is firmly locked in its place, being, moreover, not liable to injury by heat.



This brush has been adopted as the standard by the United States Navy, having been re-ordered in January, 1912, after experience of its use during the voyage round the world of the White Squadron. The makers claim to be the largest brush manufacturers in the world. [John L. Whiting-J. J. Adams Co., Boston, Massachusetts.]

THE "SIOUX CHIEF" BOW AND RUBBER-TIPPED ARROW.

Old as history, archery has still a living interest as an outdoor sport. While its main features differ only in detail from those known in ancient times, these details in themselves constitute appreciable improvements. Archery has at all times been a favorite sport of young people, and it is largely for their benefit that much enterprise has been shown by manufacturers in this line.

In this connection the "Sioux Chief Bow" claims to represent the latest developments. It is a steel bow with a hardwood arrow. The bow and handpiece are of polished nickeled steel 26 inches long, while the arrow is of polished hardwood 15 inches long, with soft rubber tip and weighing only eight ounces.

With the above advantages and its low retail price of 25 cents, it is considered likely to do much to revive the former taste for archery contests. [Markham Air Rifle Co., Plymouth, Michigan.]

NEW RUBBER WATERPROOFING LIQUID FOR LEATHER.

The waterproofing of leather by means of oils as hitherto practiced by tanners, has had the disadvantage that the oils quickly wear off, leaving the leather in a hard and unsatisfactory condition. "Leakanot" is the result of many years of painstaking efforts to obtain rubber in such form that it will penetrate and be absorbed by leather. It wears off very slowly, leaving the leather perfectly soft and pliable, ready for another coating after many weeks of wear.

Another distinctive advantage of "Leakanot" is that it does not discolor tan leather; thus appealing particularly to ladies wearing light colored shoes and to men of particular taste in their footwear.

For retail trade it is put up in large 50-cent containers, sufficient to waterproof several pairs of shoes, thus being calculated to last the individual customer at least one year. [National Rubber Co., St. Louis, Missouri.]

The India-Rubber Trade in Great Britain.

By Our Regular Correspondent.

A SERIOUS fire broke out early in the morning of January 17 at the works of the Leyland and Birmingham Rubber Co., Limited, at Leyland, the resulting loss being somewhere near $40,000, which, however, is covered by insurance. It is a very long time since a British rubber works has experienced such a conflagration, and it has been an arduous time for the directors, all of whom remained at hand for a week. With regard to the business, I am officially advised that comparatively little interruption has occurred, the boilers and engines being untouched. Moreover there was duplicate machinery at hand. A feature of these works is the area of ground covered with low buildings instead of the small space occupied by six or seven story buildings to be found in other important works. The building in which the fire broke out was one of the highest, being of three stories, this being the only part remaining of the original works. It was used mainly for the manufacture of surgical goods, and naturally contained much inflammable material, though no light at all has so far been thrown upon the origin of the fire. The rebuilding of the burnt portion is now being actively proceeded with on the most modern lines; and as this has long been contemplated the fire, though not perhaps to be considered a blessing in disguise, has not proved an absolute catastrophe.

FIRE AT LEYLAND WORKS.

It is announced that Mr. W. H. Veno has retired from the board of this company, and that the directors have elected Mr. G. W. Panter, a large shareholder, in his place. Mr. Veno was one of the new directors elected in the autumn of 1911, at the time of the first adverse balance sheet. A more surprising announcement is that Mr. George Spencer, the managing director, has resigned all connection with the company. Mr. Gray is succeeded as works manager by Mr. G. W. Price, late of the St. Helens Rubber & Cable Co., Ltd. The sales department remains in the hands of Mr. W. Downs, while Mr. M. M. McGregor, lately with the Calico Printers' Association, Ltd., has been appointed commercial manager. Mr. G. H. Cartland, for so long the chairman of the company, remains at his post, while there is no announcement of a new managing director.

CHANGES AT THE GORTON RUBBER CO.

The report of the company for its last financial year was referred to in The India Rubber World for December last, and it does not need much reading between the lines to see that the late managing director must have had an arduous time in his efforts to put the company again on a dividend paying basis after the relapse in 1911. The company reports that it is full of orders and expects a busy year in connection with the cycle tire trade. This is its most important branch, though playing balls, heel pads and various mechanical goods are made at the Gorton works.

It is announced in the papers that the certificate of the British Fire Prevention Committee has been awarded to Cellit non-flaming cinematograph films, this being the only celluloid substitute thus far to receive it. It can hardly be said that the committee has acted precipitately as the discovery of cellit was announced in 1901 at the works of the well-known Bayer Co. in Germany, though it certainly was not brought to perfection until many years afterwards. The main thing about its composition is that it is a cellulose-acetate camphor, instead of a cellulose-nitrate camphor body.

NON-FLAM CELLULOID.

The main drawback, if such a term is applicable where danger to life is concerned, is that cellit cannot at present compete with celluloid in the matter of price, owing to the high price af acetic acid compared with nitric acid. This may affect its sale for general technical use, but if it really is quite satisfactory for film making there is great probability that its use will be made compulsory, higher price or no. It is reported that the important Paris firm of Pathe Frères tried this substance for films two years ago, and found it satisfactory. This is important in view of the reiterated statements that the "non-flam" celluloid substitutes have all proved failures. Cellit is not incombustible, but it only ignites with difficulty, and then smoulders; while celluloid, as is known, shoots into flames under conditions which leave cellit unaffected. No doubt some definite evidence will be given before the Commons Committee which is now investigating the subject of celluloid and its storage.

I have no wish to go into controversial political matters, but may be allowed to state that rubber manufacturers, among many other classes, have lifted up their voices to declaim against the Insurance Act of 1912. Some of those, however, who previously complained are now in a more tractable mood. These are the surgical goods manufacturers who are inundated with orders for bandages, etc. In the past a retail chemist stocked whatever goods pleased his fancy; now, however, those who are on what are called the insurance panels are bound to stock a certain quantity of specified goods, among which elastic bandages are prominent. The demand for these goods is consequently heavy at the moment, and coming as it has on the top of the demands from the Red Cross societies operating in the Balkans, it has caused stocks to be cleared. With regard to one form of bandage—the plain, cured, cut sheet—there are only four or five British makers; though competition from the Continent has to be met in this as well as in the elastic fabric and spread rubber varieties.

IT'S AN ILL WIND, ETC.

The amusing skit "Hoolihan on the case of Caasey" in The India Rubber World for January, based presumably on facts, reveals a state of affairs in a branch of American rubber manufacturing which is without parallel in this country. An approach to it is in the case of government contracts, where a clause empowers the right of inspection of the rubber works as desired by an official of the particular government department concerned. These officials do not pretend to have any expert knowledge of the manufacture, and as a rule the inspections do not take place while the contract is in hand, the samples for analysis being taken from deliveries. Perhaps a nearer approximation to the procedure of the Underwriters' Laboratories is to be found in the case of the engineering firms in Westminster, which act for various Indian colonial and foreign railways. These firms have inspecting engineers in their pay to make periodical visits to the works with which they are contracting. These inspectors are invariably engineers who are more at home in the steel works than in the rubber factory, in the latter case usually contenting themselves with cutting off a sample of the vulcanized rubber and sending it to headquarters for analysis. So far, except in the case of the Cable Makers' Union, which is not really comparable, there is no tendency on the part of British rubber manufacturers to certify that goods intended for general use conform to standards fixed by any association or committee. They prefer to do things their own way without dictation. This, of course, does not apply to specific contracts, where the rubber has to be made to a formula supplied. With regard to formulas I see that the new specifications for underwriters' fire hose call for 40 per cent. "Fine Pará" instead of "Pure Pará." For many years it was customary for the British Admiralty and various railway com-

HOOLIHAN ON CAASEY.

panies to specify that Fine Pará rubber only was to be used. A few years ago, however, the word Pará was deleted, and what is known as the Admiralty 8 A specification now reads, "to be made of fine rubber, with no added ingredients other than sulphur and white oxide of zinc. The sulphur is not to exceed 3 per cent. and the white oxide of zinc 40 per cent. To endure a dry heat test of 320° F., without impairing its quality; the material to be non-porous, of uniform quality and free from defects."

MOISTURE IN RAW RUBBER.

In the paper on Raw Rubber Contracts read by Mr. Stedman at the late Rubber Conference in New York, reference was made to the moisture question, which is understood to have received attention from the National Bureau of Standards at Washington. From the absence of any other information, and from other remarks in the paper, I gather that the condition of affairs in America is the same as in England; that is, there is no guarantee that the rubber when delivered in bulk will have the same moisture content as in the original post sample, on which it was purchased. I don't say that the case is parallel with that of silk, which has long since been put on a satisfactory basis, or with cotton, on which discussions are now taking place, with regard to the moisture in American cotton delivered in Europe. That the present state of affairs is not considered altogether satisfactory is, however, a fact. Quite recently a manufacturer was complaining to me that while the moisture in a sample of rubber sent him was 8 per cent., the bulk delivery, which the sample sent was supposed to represent, showed 14 per cent. moisture. For this discrepancy the seller said he could take no responsibility, and the buyer considered himself rather hardly treated. Doubtless this is not an isolated case and the the matter certainly seems one which is worthy of attention.

LEARNING FROM COMPETITORS.

The Advisory Committee of the English Board of Trade has arranged with the Trade Commissioners in various British Colonies, to collect and send home samples of foreign made articles which are competing with the sale of English goods in the respective markets. The branches first taken up include hardware, cutlery, etc., the samples having been placed in the hands of the Birmingham and Sheffield Chambers of Commerce for the benefit of manufacturers in those districts.

Efforts are being constantly made by the hard-worked United States consular staff in foreign countries, to obtain and forward such samples, but their work requires for its complete utilization, an organization in this country of a nature analogous to that which exists in England.

INCREASED ACCOMMODATION FOR LONDON RUBBER STORAGE.

With a view of meeting the storage requirements, necessitated by the largely increased receipts of rubber at the port of London, the St. Katharine's Docks warehouses, where the article has hitherto been stored, have been replaced for that purpose by the more commodious London Dock Warehouses. As the two docks are near each other, this change has not caused any inconvenience to the trade.

Three large single-story sheds, with ample overhead light, have been placed at the disposal of the trade for the preliminary operations connected with the examination of rubber, gutta-percha and balata. Two of these sheds are more than 250 feet in length. For subsequent storage, a cool vault of between two and three acres has been set aside.

In order to ensure a sufficient degree of moisture for the rubber in the vault, the cases are placed upon scantling, resting on mold. Being under the wool warehouses, the vault presents a minimum variation of temperature.

The first thing done when rubber arrives is to weigh, sort, and sample it; the tare of the package being also taken, and the gross weight ascertained before it is sent to the vaults for storage.

Rubber reaches London in packages of various kinds, often in old tea chests; this form of packing being no doubt the most convenient for estates interested in both tea and rubber. Balata is generally shipped in canvas coverings, and occasionally in barrels. This article was formerly stored at the Crutchedfriars (city) warehouse belonging to the port authorities, but since the recent change, it has been transferred with other rubber to the London Docks.

Satisfaction has been expressed with the new arrangements for the convenience of the London trade, as being calculated to enhance the importance of that market as a point for the distribution of rubber.

The quantity of rubber passing through the London auctions during 1912 was 18,069 tons, as compared with 9,945 tons in 1911; so the need of increased warehouse accommodations was evident.

NEW GERMAN WASTE CONCERN.

With a view to carrying on a similar business to that hitherto conducted by the waste firm of Meyer Cohn, Hanover, a new concern has been formed, under the style of the Verwertungs Gesellschaft für Rohmaterialen m. b. H. (Company for Utilization of Crude Materials, Limited). A number of the members of the management of the old firm have entered the employment of the new company, of which Herr Erich Bonwit has been appointed temporary sole manager.

A GAME PLAYED IN GERMANY.

Here is a photograph of a group of German girls playing push-ball. This evidently is a game somewhat like basket-ball, except that the ball is vastly magnified in size, and the game played on skates, on ice, rather than on a gymnasium floor as is the

Playing Push-ball on Ice Skates.

case with basket-ball. Evidently, this big ball is not as heavy as it looks; being composed of rubber and air, its weight is probably not commensurate with its size. These players must be hardy young persons, as their costume would seem to indicate a sultry day at Atlantic City, rather than an ice-skating rink and the wintry conditions that usually obtain at such a place.

Analysis and Tests of Rubberized Fabrics.

DEALING with this point in a paper read at the recent Congress of Applied Chemistry, M. B. Setlik and M. J. Zopka, of Prague, indicate the steps to be taken (particularly in the case of fabrics for hospital or domestic use, or for clothing purposes) to determine their chemical and physical properties, by the application of simple and expeditious tests. The object of such determination is to ascertain whether the fabrics are suited for the purposes intended.

In analyzing rubberized fabrics, the general object is to define the composition and quantity of the mass used for the purpose of impregnation, so as to determine the quality and quantity of the coating and to define whether it contains rubber, rubber substitute or some other imitation. Another object of such analysis is to be able to imitate a given sample.

Within three years the authors of the paper have examined 500 samples of different qualities from different factories, and have arrived at the conclusion that this class of fabrics can be classified according to qualities, combinations and physical or chemical properties, into several groups of similar quality and value. The fabrics to be tested are subjected to physical, practical and technical tests, and then to chemical tests. Finally, to define the tensile or breaking strength, they are subjected to mechanical tests.

EXAMINATION OF A RUBBERIZED FABRIC.

The fabric is first tested in an empirical way, its strength and resistance being found by scratching it with the fingernail, by creasing it and by crumpling it between the hands. It is then spread out smooth and the condition of the broken places is noticed, also whether the rubberized layer is detached or is in holes. Then a large piece of the fabric is fixed upon a filtering frame, so that it forms a bag which is filled with water. The same course is pursued with the piece crumpled between the hands, both pieces being left two or three days to find their respective waterproof qualities. A good quality of fabric ought to absolutely resist water.

Another comparative test is effected by submitting one piece of the fabric to the action of a 5 per cent. acetic acid solution, and another piece to that of a 5 per cent. ammonia solution; observing at the end of two days what changes have taken place. These tests are meant to represent the action of urine, blood and perspiration. A square decimeter (15.50 square inches) is cut off the rubberized fabric and is weighed by a tangential scale by which means the weight per meter is ascertained. The thickness of the fabric is taken by the average of three different points.

After heating a piece of the fabric for three hours with about 100 cubic centimeters (6.10 cubic inches) of chloroform it is rinsed with chloroform and then with pure alcohol. The fabric is then stretched on polished glass and the coating is scratched with the back of a knife or a spatula. The appearance of the fabric treated with chloroform allows of determining the character of the rubber coating and to what depth it has penetrated the fabric, as well as its adhesion and combination. If the coating forms a solid and compact layer which comes off easily and in large pieces it contains at least 50 per cent. of rubber. If there is little rubber, but if the fabric is well impregnated, it can still render good service.

There are consequently four alternative stages for the coating.

1. To swell up and easily come entirely off.
2. To swell up, but only come off in small pieces.
3. Not to swell up, but come off in small pieces.
4. Neither to swell up nor come off

The composition of the coating is then analyzed in the usual manner, as explained by Dr. C. O. Weber in the "Chemistry of India Rubber," page 256. In the removal of the coating from the fabric the following process is used:

(a) By the use of acetone, the resins, the resinous and mineral oils, the wax and similar combinations are extracted.

(b) The residue is treated by an alcoholic solution of potash which saponines the saponifiable oils, by which means the rubber substitute is extracted.

The balance is rubber, mineral substance, colors, etc., which can be quantitatively and qualitatively determined by the ashes of the fabric.

SWELLING UP OF A RUBBERIZED FABRIC.

The swelling up of a rubberized fabric is more or less rapid, according to whether it is subjected to the action of chloroform, carbon, or sulphide of carbon. The fabric containing resin swells up the quickest under the action of sulphide of carbon. The more mineral substance or rubber substitute there is in a rubberized fabric, the slower and of less extent is the swelling. The layer of coating is not of the same thickness on both sides of the fabric and is not uniform in composition or adhesion. After the coating has been removed the fabric is heated for a moment in alcohol and then washed in alcohol. It is then boiled with water and weighed and is then tested for breaking strength and elasticity with a dynamometer.

As to ashes, it is evident that the less they are in quantity the better the product, while their quality is likewise a matter of importance.

Certain substances, like zinc oxide, magnesium oxide and calcium carbonate, in a certain proportion, are not only not injurious but are beneficial.

A GERMAN APPRECIATION OF THE RUBBER CONFERENCE.

Dr. Dannerth, the Honorary Secretary of the Third International Rubber Conference held in New York last September, recently received a communication from the Royal Testing Station in Berlin, Germany, signed by A. Martens, director of the station, in which the following very pleasant paragraph occurs:

"According to the reports of the members of this Station, you rendered them, on the occasion of their study-trip to America, such kind and valuable assistance that the director wishes to assure you of his personal appreciation of this courtesy."

The Station was represented at the Conference by Dr. Hinrichsen and Ingenieur Memmler. This is one among many demonstrations of the fact that the International Conference was conducive to much friendly feeling on the part of rubber men who attended it from abroad.

USE OF FILLERS VOIDING TIRE GUARANTEES.

The conditions of guarantee adopted at the recent meeting of tire manufacturers included provisions for the manner in which claims under guarantees would be admitted. One of the clauses is to the following effect:

"Any and all guarantees are expressly waived by any purchaser of these tires who uses therein any substitute for air; or who uses them under weights in excess of those for which the various tires are recommended; or who does not keep tires inflated to the pressure recommended by us."

On January 8 the National Association of Automobile Manufacturers passed the following resolution:

"That members of this association will withdraw from their warranty all cars in whose pneumatic tires there has been any substitution for the usual air cushion."

Rubber at the Paris Automobile Salon.

By a Special Correspondent.

THE thirteenth Automobile Salon, recently held in Paris, again brought to the front, the noted French manufacturers of tires; including Michelin & Co., the Etablissements Bergougnan, the Etablissements Hutchinson, the French Dunlop Co., the French B. F. Goodrich Co., the Torrilhon, Continental and Falconnet-Perodeaud concerns, as well as other regular exhibitors on these occasions.

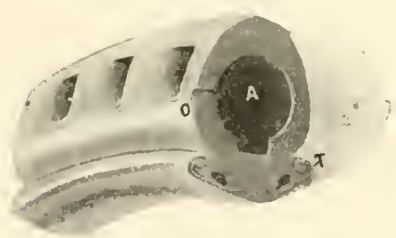
Among the most prominent features of the Salon was the relative absence of the "anti-skid" armored protective covers, which were at one time represented by some 50 exhibitors. These covers, in chrome leather or other materials, seem to have lost favor; their disappearance having been accelerated by the introduction of the Michelin tread. This type of anti-skid was introduced in 1905 and has since gained in favor.

It is composed of a tread of chrome leather about one-sixth of an inch thick, tapered off at the edges, cemented to an undertread of rubber and fabric from one-tenth to one-eighth of an inch in thickness, and wider than the leather tread, likewise having tapered edges. Rivets pass through the two treads, the whole being cemented on the cover by a solution allowing of hot vulcanization. The chrome leather is a special quality, which will resist a temperature of 140 to 150 degs. C. (284 to 302 degs. F.). Tires furnished with this form of anti-skid are very light. Under the rivets there is placed a layer of very soft rubber, which prevents the heads of the rivets from injuring the fabric of the body and likewise increases the elasticity of the tire.

Tire repair establishments have now given up cold vulcanization and have taken up hot vulcanization; using in many cases the R. Bobet hot vulcanizer, which gives results of very regular character. These vulcanizers are all made of the same diameter and are of various lengths, according to the number of tires to be vulcanized at a time; the most usual types being those for holding 6, 9 and 12 tires.

In elastic tires and wheels there are but few new exhibits. The pneumatic and the solid tire have, however, met with a rival of daily growing importance in the "Ducasble Automatic Tire." Until its appearance there was nothing between the pneumatic and the solid tire; the so-called elastic and hollow tires far from realizing all the indispensable conditions of security, suppleness and resistance.

The Ducasble automatic tire is a species of cushioned tire containing a series of cells, communicating with the exterior air by a little channel in the lateral portion of the tire. In addition to the great suppleness thus obtained, heating is prevented by the automatic introduction of fresh air; competition in speed with the pneumatic tire being thus possible. This arrangement of interior cells is the only one by which a tire can be designed, absolutely suited for the vehicle on which it is to be used; insuring the maximum of suppleness, together with the minimum of weight compatible with the intended load. Tires can be made by this system of the qualities of rubber best suited to the contemplated load; being, moreover, adapted for all classes of motor and other vehicles, autobusses, trucks, etc., as well as bicycles.



Overturning and skidding are prevented by a series of hollow grooves in the treads for the back wheels, arranged rectangularly. This system of anti-skid is very durable, on account of the slow wear of the rubber employed. Moreover, the depressions can be remade by hand when they have disappeared through wear.

One of the latest improvements consists of certain modifications introduced in tires for city use and touring, with more rounded lines; perfectly resembling pneumatic tires in their appearance, without being subject to the numerous disadvantages of the latter; such as blow-outs, repairs, rapid wear, higher cost, etc. The numerous advantages of the demountable rim in conjunction with the Ducasble automatic tire render the use of the two together advisable.

POSTAL DELIVERY WAGONS.

The qualities of all descriptions of the Ducasble automatic tire have earned for it a universal reputation; it being used by many corporations and traffic companies. In Paris it has been applied to 3,000 cabs, as well as to the vehicles employed for the delivery of telegrams. The large stores of Paris and the principal cities of France, use it on their automobile delivery wagons; the Ducasble automatic tire being the only one which they have found to combine speed with economy.

THE "DUCASBLE AUTOMATIC" ON JINRIKISHA IN THE EAST.

AN EXHIBIT OF MUD-GUARDS.

Among the new applications of rubber to purposes connected with the automobile, there is to be noted the mud-guard; for which, in my opinion, there is a certain prospect of development.

On November 2 and 3 last, a mud-guard competition took place at Versailles, on which occasion the indisputable efficiency of circular rubber mud-guards was recognized.

With the extraordinary development in the large cities of automobiles and heavy autobusses, pedestrians to a distance of 15 or 18 feet and more are liberally sprinkled with mud. It is, moreover, nothing rare in narrow streets, to see it reach the first floor of stores. Under these circumstances, it is to be anticipated that police regulations will render compulsory the use of mud-guards by all automobilists in large cities.

Rubber manufacturers should not fail to give attention to this movement. Mud-guards cannot be of metal; and rubber must be used in order to obtain a combination of flexibility with efficiency. The researches of inventors have led to the introduction of circular rubber mud-guards, which form exhibits of interest; two models, the "Menu" and the "L'Eclair" calling for special notice.

The "Menu" mud-guard is composed of a hoop of rubber or of rubberized fabric, of a diameter corresponding with the wheel and placed parallel to it, at a distance of an inch or two. The mud-guard is fixed to the rim by means of catches; the rubber hoop being kept in position by a sectioned false rim, which insures the mud-guard preserving its rigidity in the event of its striking against the pavement. This style of mud-guard forms a screen in front of the wheel throughout its whole extent, by which means the splashing of mud is prevented.

The "L'Eclair" mud-guard is formed by a kind of rubberized fabric, fixed on the outside of the tire; this shield being kept in place by four elastic stretchers made of rubber, which pass behind the spokes, and by reason of their elasticity, allow of the displacement of the mud-guard in all directions. The stretchers are covered with a figured fabric in shades which harmonize with the color of the wheels. The metal hoop which holds the rubber hoop, is round in the portion resting on the tire, in order to prevent the rubber from wearing at the point of friction, while it is flat on the exterior side, so as to protect the rubber hoop against collisions with the edge of the pavement. It is placed against the side of the pneumatic tire; the shield being fixed in its groove by means of a rod. Owing to the rubber attachments, this mud-guard is very flexible. It prevents lateral splashing, and is easily fitted and unfitted; while the automobiles to which it is applied retain their ordinary aesthetic appearance, without being made too heavy.

As mud-guards appear on this occasion for the first time at an automobile exposition, I have thought it advisable to deal with them in detail. They will doubtless be used in the large cities in a number of instances, and it is possible that their employment may become compulsory with certain classes of vehicles. Rubber manufacturers are interested in the question, for all the tests hitherto made lead to the conclusion that circular rubber mud-guards solve the problem of preventing lateral splashing.

NEW FRANCO-AMERICAN AUTOMOBILE FACTORY.

Benjamin Briscoe, former president of the United States Motor Co., is reported to have established an automobile factory at Billancourt, France, with a staff of French and American engineers and designers. Interest attaches to the fact that this is the first American automobile plant to be established in France.

In addition to manufacturing in France, the new company will, it is understood, assemble in England parts made in Detroit. Operations at the latter point will probably be under the management of Mr. Briscoe, who is about to return to that city, to supervise the erection of a factory, with a special view to the American trade.

THE JAPANESE RUBBER INDUSTRY DURING 1912.

EARLY in 1912, the Sugii Rubber Works of Tokio, the Tiger Rubber Works of Osaka and the Osaka Rubber Works, were established.

Other works established in 1912 included: Kobe Rubber Works, Kobe; by English experts, for making tires and tubings. Kumano Rubber Works, Osaka; all lines of rubber manufactures. Kusumoto Rubber Works, Honjo, Tokio; fibrous rubber and waterproof silk fabrics. Setton Rubber Co., Ltd., Hyogo; capital, $50,000; for manufacturing tires. Saskane Leather Belt & Rubber Co., Ltd., Osaka; capital, $500,000, one-fourth paid in; the available funds to be used for purchasing the rights and plant of the Sakane Belt Factory, and for establishing the manufacture of rubber tires and hose. Kanto Rubber Waterproof Co., capital, $100,000; to manufacture waterproof goods. Kume Rubber Manufactory, Tokio; to produce all lines of rubber goods.

Various small concerns were established at Tokio, principally for the manufacture of "Tabi" soles.

The Yokohama Electric Wire Works, Ltd., have rebuilt the shops burnt in February, 1912, but the inside mechanical installation is not yet completed. The Osaka branch works have been moved to Hyogo.

A change was made during the year in the management of the Asia Rubber Co., Ltd., Tokio. Mr. Masakuni Yamada becoming general director in place of Mr. Masao Watanabe. The Tiger Rubber Works, Osaka, changed its name to the Hosono Rubber Works, Mr. G. Hosono having become proprietor. It manufactures all descriptions of tires, as well as heels and other rubber goods.

One-half of the plant of the Fujikura Electric Wire & Rubber Co., Ltd., burnt in May, 1911, has been rebuilt; while the Nippon Rubber Co., Ltd., which likewise suffered from fire at the same time, has replaced all its buildings, removing its headquarters to larger premises in Tokio. The plant of the Osaka Rubber Works, established in January, 1912, was subsequently acquired by the Kansai Rubber Works of Osaka..

Sumitomo Electric Wire Works, of Osaka, purchased an extensive site for the erection of their new additional factory buildings.

FIBROUS RUBBER.

This material, for the manufacture of which the Kusumoto Rubber Works, of Tokio, was established, is composed of crude rubber, powdered cork (for decreasing weight) and wool or some fibrous compound. Fibrous rubber resembles any other rubber in appearance, but on being handled its lightness becomes apparent. It is specially advantageous for tires, being light, durable and sustaining friction without heating.

FIRST OFFICIAL VISIT TO A RUBBER FACTORY.

On May 15, 1912, Baron Makimo, Minister of Agriculture and Commerce, paid an official visit to the Meiji Rubber Works, Tokio, accompanied by several experts. This is the first recorded instance of such a visit.

JAPANESE CRUDE RUBBER IMPORTS.

Although it is known that Japanese imports of crude rubber increased during 1912, the exact figures are not yet available. Meanwhile, the following summary will give an idea of the principal sources:

Imported from	Descriptions
Singapore	Borneo; India; Plantation Pará sheet, biscuit and crêpe; Jelutong.
Ceylon	Plantation Pará sheet, biscuit and crêpe.
America	Upriver fine Pará; Islands fine Pará; Bolivian fine; Guayule; Balata sheet.
Africa	Gold Coast lump; Mozambique.
London	Upriver fine Pará; Rubber paste.

IMPORTANCE OF VARIOUS GRADES.

First in the order of importance comes Plantation Pará sheet and biscuit (from Singapore and Ceylon); second, Upriver Fine Pará (from New York and London); third, Borneo (from Singapore); fourth, India (from Singapore); fifth, Islands Fine Pará (from New York).

Few Japanese rubber manufacturers know how many grades there are of crude rubber, the Japanese industry being still in the early stages of its development. Only about four or five grades are familiar to them. Hence their requirements are relatively simple. Electric wire companies mostly use Pará; toy balloon manufacturers only Borneo and Pará biscuit. Other manufacturers use all of the grades named.

THREE INTERESTING CHARTS.

Three interesting charts have been prepared by Mr. Y. Matsuo, director of the Tokio office of De Wette & Co., representing the local movements during 1912 of prices for three standard grades, which may be summarized as follows:

	Lowest	Equaling per lb.	Highest	Equaling per lb.
Upriver Hard Fine Pará	Nov. 7	$1.09½	March 27	$1.30½
Pará sheet (Fair av'ge quality)	Nov. 4	$1.00½	April 15	$1.26½
Borneo No. 1	Nov. 4	$0.52½	March 14	$0.66

THE BALATA INDUSTRY OF SURINAM, DUTCH GUIANA.

By a Resident Correspondent.

DURING the year just ended the balata industry of Surinam, Dutch Guiana, suffered terribly owing to the unprecedented drought that passed over the colony. This long spell of dry weather began in November, 1911, and lasted until the middle of May, 1912. The condition was then serious. There were large numbers of contracted men (bleeders) who were compelled to remain in Paramaribo (the capital) owing to the low state of the rivers and the scarcity of water for drinking and other purposes in the bush. These men had to be fed by their employers, according to the terms of contract, for as long as they were detained in town. This paying out of money weekly by the companies and others engaged in the industry, was the cause of much dissatisfaction and the result was that many laborers were released from their contract (*pro tem*) to enable them to obtain employment on the plantations and other places.

This arrangement was on the part of the employers a wise one, for it released them temporarily from further disbursements to the men. About the end of May the weather began to be favorable for bleeding operations and the bulk of expeditions left Paramaribo for the hinterland. Soon after tapping operations began another difficulty presented itself, the trees began to blossom, and operations were stopped. Experienced balata men resorted to prospecting their grants rather than incur the expense of bringing their workers into town. This was wise, for in September, when the trees were again fit for bleeding, the collectors knew exactly the extent and number of trees they had to handle, and bleeding operations were rushed ahead with a determination to make up for the time lost. The results were that the production for 1912 was not so alarmingly low as was expected. After taking into consideration the many drawbacks and unforeseen circumstances which attended the industry in 1912 the returns can fairly be said to be satisfactory. In reality the bleeders have only been at work for three months out of the nine which makes up the season in a year.

The balata produced in the colony during 1912, according to Government reports, amounted to 1,651,000 pounds; of which 65,116 pounds were produced from private lands; the balance from concessions.

NOTES FROM BRITISH GUIANA.

From Our Regular Correspondent.

BALATA IN 1912—THE PROSPECTS FOR THIS YEAR.

THE year closes better for the balata industry than could have been expected. The exports are very much reduced, of course, as compared with the total for 1911, but they are not so discouraging as was feared would be the case and large shipments are still coming down from various parts of the colony, chiefly from the Siparoni district, for the Consolidated Rubber and Balata Estate, Ltd. The completed returns for 1912 place the balata export at 705,214 lbs., against 1,149,924 lbs. for 1911. Consideration is now being given to the work of 1913. The drought and all its consequences are being forgotten as rapidly as possible. Prospections for the year have been good, provided the reports are reliable, and if management is prudent there ought to be less difficulty with labor. One thing is assured, and it is that the advances—a pernicious feature of the industry—will be on a far less generous scale. Companies have been too seriously hit by the drought to throw money away in advances. Most of the employers have accordingly agreed to a set of fourteen different conditions for 1913, drawn up by the council of the Institute of Mines and Forests, and covering the whole question of advances in its various ramifications—the granting of store orders, the payment of hotel bills and transportation, the giving of bonuses and the treatment of absconders.

It is believed that adherence to these conditions will probably mitigate the labor troubles which have been such a burden on the industry in the past.

THE POSITION OF RUBBER—EXTENSIVE PLANTING.

Although the export of rubber during 1912 was very small, chiefly owing to the drought, the foundations of an industry have been laid. A good deal of work was done in a quiet way during the year, and it is estimated that there are at the present time 3,000 acres under cultivation. At Calabash Creek, Canje, and Davson's, the sugar estate owners have established cultivation on a fairly large area. On the east coast of Demerara experiments on sugar estates have shown that rubber does not thrive on wind-swept areas or on the heavier types of land on the front of the estates, but that better results are obtained when the plantings take place in well-sheltered positions. On the Demerara river plantations—the Diamond and Noitgedacht—tappings have already taken place on 12-year-old trees, and it has been demonstrated that on loamy land, with a regular rainfall and beyond the reach of the wind, satisfactory growth may be expected with certainty. Large areas of land in the Polder district, on the west bank of the Demerara, are exceptionally well adapted, both in respect to soil and the prevailing meteorological conditions for the cultivation of Pará rubber. On the Demerara river, at Plantation Christianburg, the Government has established an experimental station. The experiments have proved that light sands are not favorable to the rapid growth of rubber.

Cultivation proceeds on the west shore of Demerara. Aliki, situated in the rain belt of the Essequibo, and on the right bank of the river, is admirably adapted to the cultivation of rubber. The young trees have made good progress. Satisfactory growth has been made at Liberty Island, at the Onderneeming School Farm, Essequibo. The Golden Fleece, sugar estates on the same coast, have put in a large number of plants which have made fair progress. Near Bartica there are the Hills Estates where good work is being done. In the Pomeroon district suitable land has been found, and the farmers there are keen over the cultivation of rubber. The Northwest District of the colony has the largest cultivation of rubber, the soil there being well adapted to it.

VICISSITUDES OF THE AMSTERDAM BALATA COMPANY—DIFFICULTIES WITH LABOR AND PROSPECTORS.

A semi official defence of the Amsterdam Balata Company, which recently went into liquidation, has been published in the local press, which throws an interesting light upon the manner in which the balata industry in the colony has been exploited. In the course of the statement it is asserted: "The company was formed in Holland in a few days through the energy of the late Col. Link. The Colonel passed as an expert in balata matters and gave assurances to his friends there that the licenses he had to sell were most valuable. He was backed by good credentials, and also had the statement of Mr. Melville that the licenses were most probably valuable. The sale to the company was accompanied by a guarantee that the licenses sold would yield 450,000 lbs. of balata in the first two years, and the vendor companies bound themselves to pay any deficit. No cash was paid for the licenses; the vendors accepting shares for the purchase money. Under such conditions several business men in Holland were persuaded to, and did form a company and easily raised a substantial sum of money as a working capital. The capital was ample to work for two years, even with the worst of bad luck.

"The company, at great expense, sent a prospecting expedition to the Roiwa Grants last year and received a written report from one who was considered trustworthy, that balata existed on the grants and that at least 100 men could be sent in 1912 to work a part of the grants which cover a very large area. These Roiwa Grants are practically on the Brazilian frontier. The journey to them occupies the greater part of three months. The other licenses, nearer Georgetown, purchased by the company, were all thoroughly prospected at great expense and proved to be valueless. The Roiwa Grants were, therefore, the only hope left. Under the contract with the vendors the company was bound to work the grants. The directors were, therefore, left in this position. They knew that they had been deceived about the grants near Georgetown; they had every reason to believe that the Roiwa Grants were valuable; they were bound to work the grants purchased. At the beginning of the year the company had in hand what appeared to be abundant means to equip and pay all expenses of expeditions to the Roiwa Grants to bleed and thoroughly prospect them, and arranged through their representative in the colony, Mr. de Flines, to do so.

"The unfortunate drought which prevailed early in the year compelled not only this company, but all others engaged in the balata industry, to make very large advances so as to enable the men engaged to live until they could leave for the Bush. This unexpected call was very heavy and cost the company at least £2,000. The company, in order to meet the men, made what may be termed generous contracts with them, so as to compensate them for the hardships they had to endure. The great body of men have proved most unsatisfactory. Their unwillingness to work, and the consequent delay have caused considerable loss to the company, a loss that is not under-estimated at another £2,000. The expedition has returned without any balata. The report that there was wood for 100 men has been proved to be false. The company has spent over £30,000 in the colony and has received nothing for it. The vendor companies are without any means to pay the deficit. Owing to this and to the drought, and the unwillingness of the men to work, the capital has been exhausted and there is a deficit at present of about £3,000 to meet which there are many valuable assets to be realized."

GERMINATION OF RUBBER SEEDS.

At a meeting of the Board of Agriculture held recently, Professor Harrison, reporting on the germination result of rubber seeds for 1912-13, said the percentage was not very high. They had about 119,000 young plants, and would have probably a few more, and taking the whole shipment the percentage had been about 70 per cent. It was lowered by the shipment from Ceylon, which was guaranteed to give 75 per cent., but only yielded 55 per cent. The Singapore shipment varied from 65 or 66 per cent. to about 80 per cent. in germination.

COMMISSIONER OF LANDS AND MINES' REPORT—RUBBER AND BALATA STATISTICS.

The annual report of the Commissioner of Lands and Mines (Mr. Fowler), which has just been issued, states that the balata industry suffered from unreliability of the laborers, but that the decrease in production is chiefly attributable to the severe drought. One hundred and sixty-three balata-collecting licenses were issued, of which 47 were in lieu of licenses which had expired and were being extended. The estimated area held under balata-collecting licenses was 83,000 square miles. The registration of balata laborers was conducted by the Institute of Mines and Forests, 7,012 laborers being registered. The commissioner reports that the interest evinced in rubber planting was not as strong as during the previous year. Planting operations were, however, actively pursued by the Bartica Agricultural Estates, Ltd. (an American company), which had 489½ acres under *Hevea Brasiliensis*, on 221½ acres of which sisal was interplanted. With the exception of Plantation Noitgedacht, Canal No. 1 Demerara, none of the cultivated rubber trees had reached a tappable age. On this estate the age of the trees ranges from one year to 15 years, the average girth of the trees tapped being 39 inches (the smallest 20 inches and the largest 43 inches), the average yield of rubber per tree being 2¾ lbs.

THE NEXT RUBBER EXHIBITION—COLONY TO BE REPRESENTED.

At a meeting of the Permanent Exhibitions Committee, just held, it has been decided that the colony shall be represented at the Rubber Exhibition to be held in London in June, 1914.

GOVERNMENT REPORT ON BRITISH GUIANA RUBBER.

Official estimates place the area under Pará rubber in British Guiana at 1,800 acres. There was a keen demand in 1912 for Pará rubber plants, some 45,000 of which were sold by the Department of Science and Agriculture. Private importations of stumps (which are inspected by the Board of Agriculture at port of entry), amounted to over 170,000, while there were also large importations of seeds from the East. On some estates, according to the Colonial Office report, trees planted in 1907-08 and 1908-09 are now being tapped.

A CASTILLOA PLANTATION IN COLOMBIA.

A recent Consular report from Barranquilla contains this information regarding *Castilloa* planting: "About thirty-six miles west of the town of Rio Hocha a company is developing a large plantation of rubber (*Castilloa elastica*), having now 60,000 trees, which were planted twelve years ago. This is the principal plantation of this character in northeast Colombia. The company is experimenting now with the *Hevea brasiliensis* and also with Ceara rubber, and it is intended to further extend this plantation. The rubber trees are doing well."

BAHIA AS A CONSUL VIEWS IT.

Recent Consular reports from Bahia are not particularly optimistic regarding the immediate success of rubber production in that district. The Consul writes: "Although many species of rubber-producing trees thrive well in this district, the difficulties presented by the lack of means of transportation in those sections where the most rubber trees are found, and by the scarcity of competent labor and efficient supervision are almost insurmountable beyond a certain extent; so that no material increase in the production of rubber here is to be looked for in the very near future."

WATERPROOF CLOAKS FOR SOUTH AMERICA.

It is reported that several leading English houses have been shipping waterproof cloaks in considerable quantities to South America. The principal article is the so-called "capote" or "poncho" of waterproof material; large enough to cover both rider and horse.

Some Rubber Planting Notes.

CEYLON RUBBER EXPORTS DOUBLED IN 1912.

ACCORDING to the official reports for last year, the exports of rubber from Colombo amounted to 15,001,075 pounds, as compared with 7,154,658 pounds for 1911; the increase being thus nearly 110 per cent. It is of interest to note (as shown by details in another column) that the exports to the United States represented 4,833,085, as compared with 2,045,499 pounds the previous year; the augmentation being at the rate of 140 per cent.

During the year 1912, the exports from Ceylon to the United Kingdom amounted to 8,176,523 pounds, as against 3,956,812 pounds in 1911. When, however, allowance is made for the quantity of Ceylon rubber which finds its way to this country through the English market, this seemingly increased English consumption would prove to be more apparent than real.

TEN YEARS OF CEYLON RUBBER EXPORTS.

A valuable supplement to the "Weekly Times of Ceylon" recently gave the following interesting data as to the exports of Ceylon rubber for each of the last ten years:

	Pounds.		Pounds.
1903.....	41,798	1908.....	912,125
1904	77,212	1909.....	1,492,580
1905.....	168,547	1910.....	3,586,854
1906.....	327,661	1911.....	7,154,658
1907.....	556,080	1912.....	15,001,075

AFRICAN CEARA RUBBER.

Interesting experiments have lately been carried out by the Imperial Institute, London, upon samples of Ceara rubber from the Sudan, Northern Rhodesia and Portuguese East Africa.

The Sudan type, of light brown sheet of good elasticity and tenacity, was found to contain 82.7 per cent. caoutchouc; 6.4 per cent. resin; 7.8 per cent. protein and 1.4 per cent. ash; being valued at 4*s.* 9*d.* per pound, with fine hard Pará at 4*s.* 8*d.*

A sample from Northern Rhodesia, from three and a half year old trees, showed proportions of 71.7 per cent. caoutchouc, 4.3 per cent. moisture, 6.7 per cent. resin, 14.0 per cent. protein, and 2.7 per cent. ash. The valuation was 4*s.* to 4*s.* 3*d.*, with fine hard Pará at 5*s.* 3*d.* Notwithstanding the high proportion of protein and resin, the rubber was considered of promising quality.

RUBBER CULTIVATION IN KELANTAN.

According to a recent official report the area planted with rubber in the Malay State of Kelantan, was increased during the year 1911 from 5,402 to 11,010 acres. In addition a considerable acreage had been during the year cleared for planting. The previous improvement in the condition of the estates had been well maintained; the opinions of planters who had visited Kelantan being to the effect, that trees three to four years old in that State, when they have had proper care and treatment, are six months in advance of those of the same age in the Federated Malay States. Tapping had already commenced on some estates.

DOMINICA RUBBER.

From the analysis recently made by the Imperial Institute, London, of a sample of Pará rubber prepared from *Hevea Brasiliensis* trees growing in the Botanic Gardens, Dominica, the composition shows the high proportion of 93.9 per cent. caoutchouc, the result being somewhat better than was obtained by an analysis of similar samples in 1908. The opinion is expressed by the Institute that the Pará trees in Dominica will furnish rubber of excellent quality, which will realize good prices in the market.

SENOR ARANA TO GO TO LONDON.

Despatches received about the middle of February from Iquitos, Peru, state that the Upper Court revoked the order of arrest issued by a judge of the Lower Court against Señor Julio Arana, the chief director of the Amazon Co. which owns the rubber concessions of Peru. After an investigation into the atrocities committed in the Putumayo district, Señor Arana announced his intention of proceeding to London.

A NEW MEXICAN RUBBER TREE.

The discovery of a new rubber tree in Mexico has been reported by the West India Committee Circular. It is said to be known by the natives under the name of *Cacaloschili*, and to be one of the many species of the *Plumeria*, from which a high class rubber can be obtained. The rubber from the young branches is superior in quality to that from the stem of the tree, hence tapping is not practised. It is stated that the coagulated sap contains 21.9 per cent. resinous matter, 15 per cent. water and 25.5 per cent. caoutchouc.

Mr. Stuart R. Cope, of London, has called attention to the fact that the late Dr. Olsson Seffer some years ago placed in his hands a memorandum on the subject of a plant called by the Indians *Cacaloxuchitl*, which he recognized as a variety of *Plumeria*. Dr. Seffer, it is added, was the first to study the *Plumerias* and *Jatrophas* of Mexico from a scientific point of view.

GUAYULE PLANTS OPERATING AGAIN.

While the disturbances in the city of Mexico have during the last two or three weeks been of such a nature as to attract the attention of the whole world, 3,000 people being killed, according to the estimates, in the conflict between the different factions, the situation in some other parts of Mexico has materially improved. According to reports received from Torreon about the middle of February, the Guayule industry is assuming a normal condition in that district. Prospects are now favorable for a much larger production of crude rubber during the present year than the factories were able to turn out last year.

The Intercontinental Rubber Co., which operates the largest guayule rubber factory in Mexico, situated at Torreon, has again placed its plant in operation after several weeks of idleness, due to the lack of a sufficient supply of raw material. This shortage has been filled by large shipments of the shrub. The factory is now running with a full force of men, and there promises to be no further interruption to its steady operation. The Cedros ranch embracing 2,000,000 acres, which is owned by the Intercontinental company and which is the chief source of supply of guayule shrub for its factories, is now free from rebels.

MEXICAN PLANTATIONS RATHER QUIET.

It is hardly to be expected that rubber developments in Mexico would, under the present exceedingly disturbed conditions, show very rapid progress. The following paragraph taken from a consular report from Frontera, Mexico, is, therefore, not surprising: "Owing to local conditions little development work has been done on the rubber plantations. As most of the American plantations in this State are operated on the installment plan, they are at present experiencing difficulties in carrying on their operations. During 1911 the exports of rubber through this port to the United States amounted to 357,543 pounds, valued at $369,530. Of the above total 35 to 40 per cent. was wild rubber.

INCREASED PRODUCTION OF MEXICAN RUBBER.

That large proportionate increases are not confined to the East, is shown by the figures of the U. S. receipts of Mexican Rubber for the last two fiscal years:

	Pounds.	Value.
1910-11.....	853,805	$ 822,651
1911-12.....	2,226,541	1,602,046

Mexican rubber has only since 1910-11 been reported separately from guayule.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED JANUARY 7, 1913.

NO. 1,049,335. Vehicle wheel. J. Brittell, Port Henry, N. Y.

1,049,346. Artificial breathing apparatus. J. H. Drager, Lübeck, assignor to Dragerwerk; Heinr. & Bernh. Drager, Lübeck, Germany.

1,049,369. Reinforcement for cushions of pool and billiard tables. F. W. Kelley, Sioux City, Iowa.

1,049,392. Weather strip. J. D. Pierce, assignor to Monarch Metal Weather Strip Co.—both of St. Louis, Mo.

1,049,418. Vehicle wheel. H. E. Stratton, Empire, Ohio.

1,049,442. Quickly detachable tire holding ring. W. N. Booth, Cleveland, Ohio.

1,049,448. Swimming glove. H. P. Case, Stockton, Cal.

1,049,497. Cushion wheel. J. L. La Driere, Albuquerque, New Mexico.

1,049,579. Vehicle wheel. A. H. Harris, Youngstown, Ohio.

1,049,584. Suspenders. J. Holtzmann, Baltimore, Md.

1,049,617. Antiskidding device. W. H. Snyder, Ashbourne, Pa.

1,049,635. Springwheel. S. F. Zenger, Covington, Pa.

1,049,677/8. Cooling device for pneumatic tires. A. B. Craig, Tarkio, Mo.

1,049,727. Splash preventer. L. J. Jones, London, England.

1,049,751. Antiskidding device. H. W. Maurer, Cleveland, Ohio.

1,049,813. Truss. F. Dassori, New York.

1,049,864. Hose supporter. M. B. Jennings, Pawhuska, Okla.

1,049,892. Overshoe retainer. H. J. McGee, Punxsutawney, Pa.

1,049,893. Antiskidding device for tires. I. D. Meals, Harrisburg, Pa.

1,049,899. Metal tire protector. J. Morasky, Forbes, Colo.

1,049,937. Vehicle tire. Alfred Steinhauser, Philadelphia, Pa.

1,049,968. Hose clamp. H. O. Allen, Ellwood City, Pa.

1,050,061. Coupling link for antiskid chains. E. S. Holmes, Jr., Washington, D. C.

Designs.

43,438. Resilient tire. C. H. Semple, Trenton, N. J.

43,439. Resilient tire. C. H. Semple, Trenton, N. J.

Trade Marks.

15,691. The Koy-Lo Co., New York. The word *Koy-Lo*. Hairpins made of rubber, composition, etc.

62,155. Airease Tire Filler Co., Washington, D. C. The word *Airease*. Tire filler compound.

66,447. I. W. Hoyer, Philadelphia, Pa. The word *Flexillion*. A synthetic rubber compound for waterproofing, etc.

ISSUED JANUARY 14, 1913.

1,050,128. Vehicle wheel. A. Haller, Sioux City, Iowa.

1,050,197. Resilient wheel for vehicles. A. Zimprich, Oberndorf-Purgstall, Austria-Hungary.

1,050,297. Wheel tire. D. Ronconi, Eveleth, Minn.

1,050,326. Abdominal and hip supporter and stocking attachment. H. Abramson, Philadelphia, Pa.

1,050,383. Pedal for bicycles, etc. O. Overton, Mobile, Ala.

1,050,384. Pedal for motorcycles, etc. O. Overton, Mobile, Ala.

1,050,442. Elastic cord. F. H. Frissell, assignor to the Russell Mfg. Co.—both of Middletown, Conn.

1,050,481. Resilient wheel. B. Marley, W. P. Thacker and R. P. Barnard, Nokomis, Ill.

1,050,491. Tire valve. M. C. Schweinert, West Hoboken, N. J., and H. P. Kraft, New York, assignors to A. Schrader's Son, Inc., New York.

1,050,492. Water bag fixture. M. C. Schweinert, West Hoboken, N. J., and H. P. Kraft, New York.

1,050,498. Vacuum carpet cleaner. M. Teehan, Philadelphia, Pa.

1,050,506. Vehicle wheel. O. Zarth, Aurora, Ill.

1,050,526. Horseshoe. J. E. Downs and G. D. McNames, Battle Creek, Mich.

1,050,581. Tire. B. Walter, Livermore, Pa.

1,050,603. Conveyor belt. T. A. Bennett, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.

1,050,615. Hose coupling. Leo Coates, Pittsburgh, Pa.

1,050,636. Tire protector. S. W. Funk, Charter Oak, Cal.

1,050,688. Rotary air pump. J. Petermoller, Holm Foundry, assignor to G. & J. Weir, Ltd.—both of Cathcart, Scotland.

1,050,727. Antiskidding tire armor. D. Fasold, Keswick, Iowa.

1,050,767. Air pump. H. A. Fleuss, Thatcham, England, assignor to The Pulsometer Engineering Co., Ltd., Reading, England.

ISSUED JANUARY 21, 1913.

1,050,790. Tire tread. F. M. Rawden, Toronto, Ontario, Canada.

1,050,798. Detachable tread for tires. J. A. Bowden, Los Angeles, Cal.

1,050,803. Syringe. W. T. Buckner, Shelbyville, Ky.

1,050,813. Hose supporter. A. P. S. Deem, Belpre, Ohio.

1,050,853. Spring wheel. J. Sanders, Washington, D. C.

1,050,858. Wheel. H. O. Shockley, Darlington, Wis.

1,050,859. Resilient wheel. H. O. Shockley, Darlington, Wis.

1,050,861. Cushion tire. A. M. Smith, Petersburg, Va.

1,050,886. Vehicle tire. A. B. Wetherell, Pittsburgh, Pa.

1,050,942. Check valve for pneumatic tires. C. A. Haas, St. Louis, Mo.

1,050,950. Resilient wheel. E. E. Julien, Watseka, Ill.

1,050,989. Adjustable nozzle. G. F. Niuffer, Springfield, Ohio.

1,051,004. Toy balloon. W. Pfeiffer, Walla Walla, Wash.

1,051,038. Tread for auto tires. W. H. Weddington, Lankershim, Cal.

1,051,046. Brake pipe for railway cars. E. Witzenmann, Pforzheim, Germany.

1,051,053. Vehicle wheel. C. Altman, Wilber, Neb.

1,051,057. Valve cap. C. R. Bailey, Los Angeles, Cal.

1,051,058. Valve cap. C. R. Bailey, Los Angeles, Cal.

1,051,079. Demountable rim and tire fastener for wheels. C. F. Burkhart, New York, assignor to W. J. Reiman, Buffalo, N. Y.

1,051,083. Holder for garden hose. G. J. Chambers, Denver, Col.

1,051,103. Machine for internally coating tubes. J. R. Harbeck, assignor to Detroit Can Co.—both of Detroit, Mich.

1,051,117. Resilient tire. F. W. Karches, assignor to Fidel Ganahl Lumber Co.—both of St. Louis, Mo.

1,051,132. Elastic wheel. J. Leonard, Parc-St.-Maur, France.

1,051,135. Nozzle. G. Linderborg, Erie, Kan.

1,051,167. Garment supporter. M. A. Simmons, Pittock, Pa.

1,051,174. Hose coupling. D. H. Taylor, Tercio, Col.

1,051,178. Elastic wheel. T. Whitehead, Blackpool, England.

1,051,187. Tire tightener. W. R. Badwell, Tuscaloosa, Ala.

1,051,236. Automobile wheel. A. Johnston, Great Falls, Mont.

Designs.

43,453. Ornamental design for tire. F. B. Carlisle, Malden, Mass.

43,454. Ornamental design for tire. F. B. Carlisle, Malden, Mass.

43,455. Antiskid device for dual tired motor trucks. M. H. Cleaver and W. R. Corbin, Kingston, N. Y., assignors to Never Skid Mfg. Co., Inc., New York.

ISSUED JANUARY 28, 1913.

1,051,396. Hose connector. J. Fentress, Hubbard Woods, Ill.

1,051,457. Vehicle wheel. B. H. Seevers, Akron, Ohio.

1,051,465. Cushion tire. D. J. Thayer, Pittsburgh, Pa.

1,051,472. Antiskidding grip tread. H. D. Weed, Syracuse, N. Y.

1,051,482. Cow milking apparatus. G. A. Brodie, Portland, Ore.

1,051,490. Tool for repairing pneumatic tires, etc. T. C. Dobbins, Los Angeles, Cal.

1,051,500. Corn husking machine. E. S. Jones, Mobile, Ala.

1,051,517. Vehicle wheel. L. L. Rogers, Boston, Mass., assignor to Standard Auto Spring Wheel Co., Phoenix, Ariz.

1,051,573. Life saving suit. J. Gera, Baltimore, Md.

1,051,621. Hose connector. L. R. Nelson, Peoria, Ill.

1,051,628. Spring hub for vehicle wheels. J. C. Pearson, Natchitoches, La.

1,051,694. Demountable rim. E. R. Cox, Ladonia, Tex.

1,051,715. Case for combs. D. L. Edwards, New York.

1,051,716. Collapsible bag. M. H. Eiseman, Chicago, Ill.

1,051,738. Pneumatic tire. G. Kavanagh, St. John's, Newfoundland.

1,051,745. Spring wheel. O. C. Merrick and Frank Jefferson, Seaford, Del.

1,051,767. Cushion heel. F. Rossbach, Frankfort, Germany.

1,051,798. Vehicle tire. W. F. Beasley, Plymouth, N. C.

1,051,805. Hose coupling. J. J. Danverg, Beach, N. D.

1,051,813. Tire protector for automobile and other wheels. F. Kilcher, Birsfelden, Switzerland.

1,051,850. Surgical appliance. T. T. Sandmark, Port Townsend, Wash.

1,051,851. Horseshoe pad. G. Knapp and D. Cruice, assignors to J. M. Ehrlich—both of New York.

Reissues.

13,521. Stamp. W. J. Pannier, Jr., assignor to Pannier Bros. Stamp Co.—both of Pittsburgh, Pa.

Trade Marks.

57,040. Boston Rubber Shoe Co., Malden and Boston, Mass. Picture in a circle of a seal on a cake of ice with word "SEALON." Rubber boots and shoes.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JANUARY 8, 1913.]

20,548 (1911). Mud guards. C. J. and G. Wilson, Preston street, Brighton.

*20,594 (1911). Pressure gauges for tires. W. P. Hammond, 96 Warren street, New York, U. S. A.

20,640 (1911). Inflatable garments, etc. W. D. Williamson, Canbelego, New South Wales.

20,658 (1911). Bicycle tire inflators. L. Briggs, Kenmore Cottages, Quorn, Leicestershire.

20,702 (1911). Impregnated leather tire covers. A. Hardcastle, Highfield, Hawkhurst, Kent.

*20,711 (1911). Feeding bottles. G. R. Shepherd, Winthrop, Mass., U. S. A.

20,730 (1911). Tire covers. J. Bartlett, 67 Grove Hill Road, Denmark Park, London, and A. E. Collett, 4 Thornby avenue, Osterley Park, Middlesex.

20,743 (1911). Syringes. R. Edwards, The Gardens, Beechy Lees, Sevenoaks, Kent.

20,748 (1911). Spring wheel. T. Brown, 139 Wingrove Gardens, and J. Fogan, 223 Wingrove Road—both in Newcastle-on-Tyne.

20,778 (1911). Depressions of golf ball surfaces. A. Johnston and North British Rubber Co., Castle Mills, Edinburgh.

20,855 (1911). Spring wheels. R. Blakoe, 96 Maida Vale, London.

*20,888 (1911). Spring wheel with cushions. T. H. Grigg, 3838 Baring street, Philadelphia, Pa., U. S. A.

20,993 (1911). Elastic substitute for inflated tubes. M. D. Rucker, "Heimath," Foxley Lane, Purley, Surrey.

20,994 (1911). Composite rubber tire. M. D. Rucker, "Heimath," Foxley Lane, Purley, Surrey.

21,044 (1911). Auxiliary rims. A. Turnbull, St. Mungo Works, Bishopbriggs, Glasgow.

*21,060 (1911). Spring wheels. N. Cornfield, 2 W. 14th street, New York, U. S. A.

[Abstracted in The Illustrated Official Journal, January 15, 1913.]

21,118 (1911). Tapping rubber trees. T. McKenna, 31 Basinghall street, London.

21,120 (1911). Spring wheels. C. P. Rundle, 149 Grove Lane, Denmark Hill, London.

21,148 (1911). Mud guards. J. Menu, 41 Rue Saint Ferdinand, Paris.

*21,304 (1911). India rubber compositions. E. von Vargyas, 5527 Second avenue, Pittsburgh, Pa., U. S. A.

21,424 (1911). Cow milkers. E. Schultz, Stanley street, West Melbourne, Victoria, Australia.

21,440 (1911). Tire attachments to rims. G. Webb, Priory street, Monmouth.

21,519 (1911). Isoprene and its homologues. J. Y. Johnson, 47 Lincoln's Inn Fields, London.

21,566 (1911). Rubber reclaiming. F. W. Golby, 36 Chancery Lane, London.

21,567 (1911). Rubber reclaiming. F. W. Golby, 36 Chancery Lane, London.

21,583 (1911). Sectional spring wheels. J. E. Graham, 14 Albert Palace Mansions, Battersea Park, and G. Wallace, 48 Old Compton street W. —both in London.

21,607 (1911). Block tires. L. Gaucherand, 76 Rue Molière, Lyons, France.

21,627 (1911). Bottle fastenings. H. Williams, 35 Lark Hill, Farnworth, Bolton.

[Abstracted in The Illustrated Official Journal, January 22, 1913.]

21,691 (1911). Detachable rim attachments. A. C. Palmer, St. Margarets, Park avenue, and J. Craig, 82 Amptbill Road—both in Bedford.

21,748 (1911). Detachable rim attachments. W. T. Smith, Harlington Road, Bolton.

21,749 (1911). Improvements in golf balls. W. T. Smith, Harlington Road, Bolton, Lancashire.

21,779 (1911). Siphon bottles. J. Dittrich, 15 Ampton street, London.

*21,787 (1911). Cushions for tires. H. B. Montgomery, 902 North 2d street, Harrisburg, Pa., U. S. A.

21,874 (1911). Tire valves. J. S. Clarke and G. Spencer, Moulton & Co., 77 Cannon street, London.

21,909 (1911). Improvements in tread bands. C. Kioque, 24 Rue Duret, Paris.

21,916 (1911). Improvements in stamp-inking pads. E. Steiger, 3 Meierweg, Zurich, Switzerland.

21,917 (1911). Improvements in tire covers. W. W. Wiggins, "Wbareiti," Albert avenue, Chatswood, near Sydney, Australia.

[Abstracted in The Illustrated Official Journal, January 29, 1913.]

*22,027 (1911). Spring wheels. J. S. Gammon, 209 Park street, Detroit, Mich., U. S. A.

22,074 (1911). Protective band for tires. G. A. V. Longuemare, 34 Rue de la Hene, Sainte-Adresse, Havre, France.

22,177 (1911). Block tires. J. H. Betteley, 24 Old Square, Lincoln's Inn, London.

22,301 (1911). Removing and replacing tires. E. Bebn, 37 Schutzenstrasse, Karlsruhe, Germany.

22,319 (1911). Washing hose pipes. M. Kummer, 2 Faschinggasse, Volkermarkt (Karnten), Germany.

*22,339 (1911). Improvements in tread bands. A. W. Savage, Duarte and Savage Tire Co., Monrovia—both in California, U. S. A.

22,247 (1911). Disk wheels. S. Geezynski, 57 Schönhauser Allee, Berlin.

22,396 (1911). Apparatus for closing punctures. F. T. Porter, 18 Larkhall Rise, Clapham, London.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

444,963 (April 10, 1912). T. D. Kelly. Flexible composition for replacing rubber.

445,230 (June 20). A. D. Laurent. Improvements in automobile and other tires.

445,260 (June 21). H. K. Heide. Air chamber composed of separate cells for automobile and other tires.

445,265 (June 21). J. & J. Schoenfeld Freres. Rubber dancing toy, working by compressed air.

445,371 (June 25). W. D. McNaull. Pneumatic automobile tires.

445,395 (June 25). J. Lend. Improvements in pneumatic tires.

445,477 (May 14). Van Driessche & Mahen. Improvements in elastic tires.

445,485 (June 5). H. T. Mawley. Tire filling substance and its manufacture.

445,664 (July 2). D. Maggiosa. Improvements in solid tires.

445,704 (July 2). Michelin & Co. Appliance for fitting pneumatic tires.

445,722 (July 3). E. Fullner. Rubber covered rollers for paper machines.

445,727 (July 3). J. Guerrero. Improvements in elastic tires.

445,917 (July 9). A. O. Remy. Rods for pneumatic tires.

445,929 (July 10). Gordon & Barchete. Pneumatic tires.

445,951 (July 10). Gesellschaft für Teerverwertung. Manufacture of substance similar to rubber.

446,014 (July 12). A. Toudet. Unperforable tire protector.

446,043 (July 13). L. J. Tetlow. Protective tire cover.

446,075 (July 16). H. M. Ambler. Improvements in tires.

446,244 (September 26, 1911). G. Reynaud. Process of rubber manufacture.

446,291 (July 26, 1912). J. F. P. Peignet. Antiskid rivet.

446,354 (July 23). McAuslin. Insertion of vertical elastic pieces in footwear, to facilitate putting on and taking off.

446,433 (June 22). A. Abts. Mud guards for automobiles and other vehicles.

446,469 (July 24). A. Libert & Dewarzegurs. Pneumatic tires.

446,501 (October 3, 1911). B. Abeil & fils. Antiskid for tires.

446,506 (July 22, 1912). V. A. Roux. Protective anti-puncture armor for tires of automobiles, bicycles, etc.

[Note.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

256,174 (April 20, 1912). Process for cleaning rubber. H. P. C. G. Debauge, Paris.

256,173 (May 1, 1912). Durable combination of leather with vulcanized rubber. Alfred E. Petersen, Carlsruhe, Germany.

256,216 (February 3, 1912). Coagulation of latex. Wilhelm Pabl, Dortmund.

256,413 (November 1, 1911). Rubber substitute of technical value. Farbenfabriken, vorm. Fried. Bayer & Co., Leverkusen and Elberfeld.

256,369 (May 1, 1912). Cooling of pneumatic tires. A. B. Craig, Tarkio, Missouri, U. S. A.

256,370 (February 9, 1912). Covers with removable treads, for pneumatic tires. Walter Woblert, Fährstrasse 15, Hamburg.

256,684 (December 30, 1911). Tapping tool resembling an axe. Jacob da Costa Gadelha, Nova Vista, Brazil.

256,487 (August 30, 1911). Process for production of tires with a filling of froth. Fritz Pfleumer, Marienstrasse 48, Dresden.

256,753 (February 14, 1911). Production of certain objects through the coagulation of viscose in open molds. Dr. Otto Eberhard, Heidenau, near Pirna, Germany.

256,904 (November 28, 1911). Process for the preservation and improvement of rubber latex. Dr. Georg Eichelbaum, Augsburgerstrasse 82, Berlin.

256,696 (April 21, 1912). Motor truck wheel with solid rubber tire. H. Büssing, Brunswick, Germany.

SEVEN INCH PNEUMATICS.

Just what the limit in size of pneumatic tires is going to be it might be difficult at present accurately to prophesy, but that the tendency is towards larger tires for heavy vehicles there is no doubt. Some recent tests have been made with 7-inch tires on cars weighing, with load, 2½ tons, and the tests have proved very satisfactory. The larger tires have several advantages. In the first place, there is a bigger expanse of rubber to grip the roadway, which reduces the tendency to skid; in the second place there is, of course, more resiliency in a 7-inch tire than in one half that size, as a 7-inch tire means a 7-inch air cushion around the rim. With a larger tire it is possible to have a lower air pressure which decreases the liability of blow-outs. As against these advantages is the greater initial cost of the larger tire, which calls for a greater quantity of rubber and other materials —but the advantages seem to outweigh the disadvantages.

Report of the Crude Rubber Market.

SINCE from date covered by last report (January 25) at 4*s.* 5 *d.* the London market for fine Pará has gradually dropped during February, reaching on February 25, at time of writing, 4*s.* 0 1/2*d.* The various stages of the decline were reached as follows: 4*s.* 4*d.* January 30, 4*s.* 2 1/4*d.* February 5; 4*s.* 2*d.* February 17; 4*s.* 1 1/4*d.* February 18. From 4*s.* 4 1/4*d.*, or 1*d.* below Para fine, plantation pale crepe, first latex, followed practically the same course during the month; reaching on February 25, at time of writing, 4*s.* 0 1/2*d.*

The two principal standards are therefore now quoted on the same level. While hovering for about a week just above the four-shilling mark, the price has been kept from going beneath that line, notwithstanding the large quantities offered at the two February auctions. The falling off during the month has been in fine Para, 4 *d.* per pound, and in plantation, 3 3/4*d.*, the two grades both standing on February 25 at 4*s.* 0 1/2*d.*

The London auction of January 28 included 970 tons, of which practically the whole was sold at a reduction of 2*d.* to 3*d* per pound below the previous fortnightly sale. Satisfaction was expressed at the ready manner in which the trade operated on the lower basis thus established. At the sale of February 11 there were about 1,000 tons offered, which realized prices about 1*d.* to 1 1/2*d.* per pound below the rates of January 28. Cable advices regarding the sale of February 25 report the quantity offered as 900 to 1,000 tons; prices averaging about 2*d.* per pound below those of a fortnight earlier.

New York prices followed the movement of those reported from London, local demand being restricted to the meeting of actual requirements. From about the middle of the month, the tone of the market was affected by the labor troubles at Akron and Trenton, reported in other columns. Large tire manufacturers have been holding off, and a similar policy has affected consumption in all markets. Liberal arrivals have, moreover, tended to depress prices. Still, according to latest reports, the rubber market has suffered less than might have been anticipated from the strikes.

The Antwerp sales of January 23 included 545 tons, of which 344 were Congo and 205 Plantation. Of the former, 274 tons were sold at an advance of about 5/8 of a penny. For the latter, which was all sold, the prices obtained showed a falling off to the extent of 3/4 of a penny.

At the Hâvre sale of January 21, only 18 tons were sold out of the 70 tons offered. Prices were relatively satisfactory to holders; an average advance of 1.65 per cent. being established. For the sale of February 26, about 115 tons were declared.

The Amsterdam sale of February 14 included 62 tons *Hevea*, 15 tons *Ficus* and 6 tons of various descriptions. It resulted to the satisfaction of holders, the whole offering being practically sold at unchanged prices. For February 21 there was scheduled a sale at Rotterdam of 35 tons, mostly Congo.

NEW YORK QUOTATIONS.

FOLLOWING are the quotations at New York for Pará grades, one year ago, one month ago, February 28—the current dates:

PARA.	Mar. 1, 1912.	Feb. 1, 1913.	Feb. 28, 1913.
Islands, fine, new	107@108	98@99	91 @ 92
Islands, fine, old	108@109	.....	.....
Upriver, fine, new	109@110	104@105	96 @ 97
Upriver, fine, old	112@113	.....	.....
Islands, coarse, new	62@63	51@52	46 1/2@47
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	92@93	79@80	71 @ 72
Upriver, coarse, old	94@95	.....	.....
Cameta	65@66	51@52	48 @ 49
Caucho (Peruvian) ball	93@94	78@79	71 1/2@72 1/2
Caucho (Peruvian) sheet	.....	.....	.....
PLANTATION CEYLONS.			
Fine smoked sheet	130@131	109@110	101 @ 102
Fine pale crepe	129@130	104@105	97 @ 98
Fine sheets and biscuits	125@126	103@104	96 @ 97
CENTRALS			
Esmeralda, sausage	91@92	77@78	71 @ 72
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	90@91	76@77	69 @ 70
Panama	.....	.....	.....
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	89@90	75@76	.....
Mexican, slab	.....	.....	.....
Mangabeira, sheet	68@69	.....	.....
Guayule	60@61	60@	.....
Balata, sheet	89@90	85@86	82 @ 83
Balata, block	55@56	55@56	52 @ 53
AFRICAN.			
Lopori, ball, prime	109@110	.....	.....
Lopori, strip, prime	.....	.....	.....
Aruwimi	105@106	.....	.....
Upper Congo, ball, red	110@111	.....	97 @ 98
Ikelemba	.....	.....	.....
Sierra Leone, 1st quality	98@99	95@96	.....
Massai, red	101@102	96@97	88 @ 89
Soudan, Niggers	.....	92@93	.....
Cameroon, ball	70@71	75@76	68 @ 69
Benguela	71@72	73@74	65 @ 66
Madagascar, pinky	.....	.....	.....
Accra, flake	27@28	25@26	25 @ 26
EAST INDIAN.			
Assam	.....	.....	85 @ 86
Pontianak	53 3/4@	7@7 1/8	8 @ 8 1/2
Borneo	.....	.....	.....

COMPARATIVE RUBBER STATISTICS.

	Comparative Rates of Fine Pará		Total Exports from Pará	Total Imports into the United States.			
	Liverpool.	New York.	Pará Weights.	Pará Grades. Excluding Caucho.	Cent. E. I. Af., & Caucho.	Plant. Ceylon.	Guayule.
	s. d.						
1894	3 9 to 3 1	$0.64 1/2 to $0.73	18,246 tons	9,453 tons	5,190 tons	.....	.....
1895	3 0 1/2 to 3 4 1/4	.70 to .81 1/2	20,698 "	9,888 "	6,294 "	.....	.....
1896	3 0 1/2 to 3 8 1/4	.71 to .85	21,530 "	9,221 "	5,112 "	.....	.....
1897	3 5 to 3 9	.79 1/2 to .89	22,630 "	10,491 "	7,180 "	.....	.....
1898	3 7 to 4 5	.82 to 1.06	21,890 "	9,739 "	8,881 "	.....	.....
1899	3 10 to 4 7 1/4	.91 to 1.10	25,115 "	12,498 "	10,597 "	.....	.....
1900	3 8 to 4 9	.83 to 1.11 1/2	26,727 "	11,985 "	8,483 "	.....	.....
1901	3 4 to 3 11 1/2	.76 to .95	30,296 "	13,142 "	10,066 "	.....	.....
1902	3 10 to 3 9 1/2	.66 to .92	28,668 "	12,901 "	8,941 "	.....	.....
1903	3 6 1/2 to 4 8	.78 to 1.13	31,079 "	13,934 "	10,826 "	.....	.....
1904	3 10 1/2 to 5 6	.89 to 1.32	29,984 "	14,367 "	13,256 "	.....	.....
1905	4 1 1/2 to 5 8 3/4	1.13 to 1.35	33,913 "	13,881 "	14,754 "	.....	.....
1906	4 11 1/2 to 5 5 1/2	1.16 to 1.28	35,251 "	15,128 "	14,808 "	.....	.....
1907	4 11 1/2 to 5 3	.69 to 1.24	37,321 "	15,118 "	14,315 "	.....	2,992 tons
1908	3 9 1/2 to 5 5	.65 to 1.30	38,848 "	17,316 "	12,161 "	.....	3,850 "
1909	4 10 to 9 2	1.13 to 2.15	39,287 "	17,591 "	11,808 "	1,730 tons	8,674 "
1910	4 10 to 12 4 1/2	1.16 to 2.90	37,954 "	14,896 "	14,409 "	3,611 "	10,656 "
1911	3 5 1/2 to 7 1	.90 to 1.67	35,936 "	15,892 "	12,640 "	6,556 "	8,091 "
1912	3 11 to 5 -	.93 to 1.22	43,467 "	19,241 "	15,807 "	15,003 "	6,105 "

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "The money market has continued easy during February with a good demand for paper, and during the early part of the month rates ruled at 4½@4¾ per cent. for the best rubber names, and 5@5½ per cent for those not so well known, but after the middle of the month rates ruled rather firmer at 5@5¾ per cent for the various grades, and some as high as 6 per cent."

NEW YORK PRICES FOR JANUARY (NEW RUBBER)

	1913	1912	191
Upriver, fine	$1.07@1.09	$1.03@1.11	$1.15@ .30
Upriver, coarse	.78@ .84	.90@ .93	.90@ .98
Islands, fine	.97@1.01	.97@1.07	1.00@1.15
Islands, coarse	.53@ .58	.62@ .64	.66@ .69
Cameta	.52@ .60	.63@ .66	.64@ .72

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA, 1912.

[IN SHILLINGS AND PENCE PER POUND.]

July 5, 1912	4 9	November 1	4 4
July 12	4 10	November 8	4 5
July 19	4 10	November 15	4 5½
July 26	4 11¾	November 22	4 5 4
August 2	4 11	November 29	4 5½
August 9	5/0½	December 6	4 7
August 16	5/0½	December 13	4 7
August 23	5/2	December 20	4 6
August 30	5/1¾	December 27	4 7½
September 6	4 11½	January 3, 1913	4 7¼
September 13	4 9½	January 10	4 6½
September 20	4 8	January 17	4 6½
September 27	4 7	January 24	4 5¼
October 4	4 7	January 31	4 4
October 11	4/7	February 7	4 2¾
October 18	4 6½	February 14	4 3
October 25	4/6	February 21	4/0½

IMPORTS FROM PARA AT NEW YORK.

[*The figures last quoted are in Pounds.*]

JANUARY 24.—By the steamer *Christophe*, from Manáos and Pará:

	Fine.	Medium.	Coarse.	Caucho.	Total
Arnold & Zeiss	401,500	50,000	220,500	73,300	745,300
New York Commercial Co.	96,400	24,700	91,700	130,400	343,200
Henderson & Korn	68,200	12,500	95,600	4,700	181,000
Meyer & Brown	40,800	7,400	17,000	62,300	127,500
Robinson & Co.	90,600	16,800	20,200	200	127,800
General Rubber Co.	63,000	.....	57,600	800	121,400
H. A. Astlett	9,300	2,300	23,400	.....	34,700
Ed. Maurer	800	300	14,000	6,500	21,600
L. Johnson & Co.	10,800	.....	.....	.....	10,800
G. Amsinck & Co.	.....	.....	.....	10,500	10,500
De Lagotellerie & Co.	7,200	300	.....	.....	7,500
Total	588,000	115,300	39,000	87,700	1,530,400

JANUARY 27.—By the steamer *Jacary*, from Iquitos:

H. A. Astlett	1,600	.....	1,000	9,000	11,600
W. R. Grace & Co.	3,000	.....	2,000	1,000	6,000
Total	4,600	.....	3,000	10,000	17,600

FEBRUARY 4. By the steamer *Francis* from Manáos and Pará:

Arnold & Zeiss	199,500	17,000	317,700	26,100	560,100
New York Commercial Co.	182,200	39,500	87,200	9,000	317,900
General Rubber Co.	106,500	2,700	44,200	5,600	179,300
Henderson & Korn	80,400	5,300	29,700	700	116,000
Meyer & Brown	24,200	5,900	49,600	29,000	108,700
Robinson & Co.	36,000	10,400	8,000	.....	54,400
De Lagotellerie & Co.	12,900	1,400	20,400	.....	34,700
E. L. Maurer	.....	.....	23,700	.....	23,700
H. A. Astlett	17,200	300	5,500	.....	23,000
Total	658,700	102,500	586,000	70,600	1,417,800

FEBRUARY 15. By the steamer *Dunstan*, from Manáos and Pará:

Arnold & Zeiss	147,000	15,000	130,300	44,300	336,600
New York Commercial Co.	187,500	44,600	49,000	8,700	289,800
Ed. Maurer	54,800	.....	40,900	124,800	220,500
Meyer & Brown	75,900	19,600	79,000	6,300	180,800
Henderson & Korn	15,700	.....	.....	80,100	95,800
De Lagotellerie & Co.	45,800	2,500	15,200	.....	63,500
General Rubber Co.	31,900	.....	19,400	.....	51,300
Robinson & Co.	24,000	6,200	10,100	.....	40,300
G. Amsinck & Co.	22,500	700	10,600	5,600	39,400
Hagemeyer & Brunn	8,200	1,800	4,000	600	14,600
H. A. Astlett	1,000	1,800	7,900	1,100	11,800
Total	614,300	92,200	366,400	271,500	1,344,400

PARA RUBBER VIA EUROPE.

		Pounds.
JANUARY 24.—By the *Vaderland*=Antwerp:		
Meyer & Brown (Fine)		9,000
JANUARY 27.—By the *Campania*=Liverpool:		
Arnold & Zeiss (Fine)	50,000	
Robinson & Co. (Fine)	9,000	
A. W. Brunn (Fine)	7,000	66,000
JANUARY 27.—By the *Pennsylvania*=Hamburg:		
Ed. Maurer (Fine)		8,000
FEBRUARY 3.—By the *Carmania*=Liverpool:		
Arnold & Zeiss (Fine)	50,000	
N. Y. Commercial Co. (Fine)	11,000	
Robinson & Co. (Fine)	8,000	
Rubber Trading Co. (Fine)	7,000	76,000
FEBRUARY 5.—By the *Kroonland*=Antwerp:		
A. W. Brunn (Fine)		7,000
FEBRUARY 17.—By the *Kaiserin Auguste Victoria*=Hamburg:		
N. Y. Commercial Co. (Fine)	11,500	
N. Y. Commercial Co. (Coarse)	11,000	
Rubber Trading Co. (Fine)	7,000	29,500
FEBRUARY 17.—By the *Cevic*=Liverpool:		
Arnold & Zeiss (Fine)	34,000	
J. H. Rossbach & Bros. (Fine)	34,000	68,000
FEBRUARY 17.—By the *Campania*=Liverpool:		
Arnold & Zeiss (Fine)	89,000	
Arnold & Zeiss (Caucho)	45,000	134,000

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

		Pounds.
JANUARY 24.—By the *Momus*=New Orleans:		
Eggers & Heinlein	4,500	
Robinson & Co.	3,500	
Wessels, Kulenkampff & Co.	3,500	
Various Others	9,000	20,500
JANUARY 24.—By the *Tennyson*=Bahia:		
Adolph Hirsch & Co.		35,000
JANUARY 25. By the *Mary Castle*=Vera Cruz:		
Harburger & Stack	5,500	
In transit	7,000	12,500
JANUARY 27.—By the *Pennsylvania*=Hamburg:		
Ed. Maurer	*25,000	
Wallace L. Gough Co.	4,500	
Ed. Maurer	15,500	45,000
JANUARY 27. By the *Carmania*=Liverpool:		
Adolph Hirsch & Co.	22,500	
Robert Bacenhop	4,500	27,000
JANUARY 27. By the *Mesaba*=London:		
Adolph Hirsch & Co.		25,000
JANUARY 28.—By the *Advance*=Colon:		
G. Amsinck & Co.	7,000	
Dumarest Bros. & Co.	4,500	
George A. Alden & Co.	3,000	
Pottberg Ebeling Co.	3,000	
H. W. Peabody Co.	3,000	
Wessels, Kulenkampff & Co.	2,500	
Roldau & Van Sickle	1,500	
J. J. Julia & Co.	1,500	
J. Sambrada & Co.	1,000	27,000
JANUARY 29. By the *Prinz Sigismund*=Colon:		
G. Amsinck & Co.	9,000	
Isaac Brandon & Bros.	2,500	
Heilbron Wolff & Co.	2,000	
Roldau & Van Sickle	1,500	
Mecke & Co.	1,000	16,000
JANUARY 30.—By the *Trent*=Colombia:		
J. Sambrada & Co.	10,000	
A. M. Capen's Sons	7,000	
W. R. Grace & Co.	5,500	
Mecke & Co.	5,000	
G. Amsinck & Co.	4,500	32,000
JANUARY 31.—By the *Guantanamo*=Tampico:		
Continental-Mexican Rubber Co.	*155,000	
Arnold & Zeiss	*35,000	
Charles T. Wilson	*15,000	
For Europe	*110,000	*315,000
FEBRUARY 3.—By the *Carmania*=Liverpool:		
Adolph Hirsch & Co.		11,000
FEBRUARY 3.—By the *Panama*=Colon:		
G. Amsinck & Co.	24,000	
J. Sambrada & Co.	11,500	
Jose C. Munoz	4,000	
American Trading Co.	3,000	
Mecke & Co.	2,500	
Louis T. Herrara	1,500	
United Fruit Co.	1,500	
Wessels, Kulenkampff & Co.	1,000	49,000
FEBRUARY 3.—By the *Esperanza*=Frontera:		
Harburger & Stack	7,000	
Meyer & Brown	4,500	
E. Steiger & Co.	3,000	
Graham, Hinkley & Co.	2,000	
New York Commercial Co.	1,500	
Herman Kluge	1,500	
For Europe	5,000	24,500
FEBRUARY 4.—By the *Rochambeau*=Havre:		
In transit		34,000
FEBRUARY 4.—By the *Mondamin*=Honduras:		
A. Rosenthal & Sons	2,500	
A. Helde	2,500	
Manhattan Rubber Mfg. Co.	1,000	
W. L. Walleigh	1,000	
For Europe	11,000	18,000
FEBRUARY 5.—By the *Prinz Joachim*=Colon:		
J. Sambrada & Co.	4,500	
Isaac Brandon & Bros.	2,500	
G. Amsinck & Co.	2,000	
R. Del Castillo & Co.	1,000	10,000
FEBRUARY 7.—By the *Almirante*=Colombia:		
R. Del Castillo & Co.	3,500	
Schulz & Ruckgaber	3,500	
G. Amsinck & Co.	1,000	
A. Helde	1,000	9,000
FEBRUARY 8. By the *Portugueza*=Bahia:		
Adolph Hirsch & Co.		30,000
FEBRUARY 8.—By the *Momus*=New Orleans:		
Manhattan Rubber Mfg. Co.	9,000	
Various Others	11,000	20,000
FEBRUARY 8. By the *Santiago*=Tampico:		
Continental-Mexican Rubber Co.	*60,000	
New York Commercial Co.	*34,000	
Arnold & Zeiss	*22,500	
For Antwerp	*34,000	*150,500
FEBRUARY 10.—By the *Mexico*=Colon:		
G. Amsinck & Co.	5,000	
Piza, Nephews & Co.	4,000	
Wessels, Kulenkampff & Co.	3,000	
Gillespie Bros. & Co.	2,000	
J. J. Julia & Co.	1,000	
Mecke & Co.	1,000	
H. Marquardt & Co.	1,000	17,000

February 11.—By the *Albingia*=Colombia:

Maitland, Coppell & Co.	7,000	
Kunhardt & Co.	1,500	
G. Amsinck & Co.	1,000	9,500

February 11.—By the *Cegurança*=Tampico:

Continental-Mexican Rubber Co.	*90,000	
For Hamburg	*34,000	*124,000

February 15.—By the *Monterey*=Vera Cruz:

Charles T. Wilson	7,000	
W. Loaiza & Co.	3,500	
Harburger & Stack	3,000	
Herman Kluge	2,500	
Laguna Import Co.	2,500	
George A. Alden & Co.	1,000	19,500

February 15.—By the *Colon*=Colon:

G. Amsinck & Co.	3,500	
Isaac Brandon & Bros.	2,500	
Pablo Calvet & Co.	2,000	
H. Marquardt & Co.	2,000	10,000

February 17.—By the *Cevic*=Liverpool:

Henderson & Korn		4,500

February 17.—By the *Altai*=Colombia:

Maitland, Coppell & Co.	3,500	
De Lima Cortissoz & Co.	2,500	
Caballero & Blanco	1,500	
G. Amsinck & Co.	1,000	8,500

February 17.—By the *Frutera*=Honduras:

A. Rosenthal & Sons	4,500	
Manhattan Rubber Co.	3,500	
G. Amsinck & Co.	2,500	10,500

February 19.—By the *Prinz August Wilhelm*=Colon:

Pottberg Ebeling Co.	12,000	
G. Amsinck & Co.	7,000	
Heilbron Wolff & Co.	2,000	
Andean Trading Co.	1,500	
A. Rosenthal & Sons	1,500	
Roldau & Van Sickle	1,000	
Gillespie Bros. & Co.	1,000	26,000

AFRICAN.

Pounds

January 27.—By the *Lapland*=Antwerp:

Meyer & Brown		11,500

January 27.—By the *Pennsylvania*=Hamburg:

Ed. Maurer	85,000	
George A. Alden & Co.	45,000	
Arnold & Zeiss	34,000	
Wallace L. Gough Co.	25,000	
Robert Badenhop	13,500	
Meyer & Brown	11,000	
Rubber Trading Co.	3,500	217,000

January 27.—By the *Cymric*=Liverpool:

Henderson & Korn	34,000	
General Rubber Co.	5,000	
Rubber Trading Co.	7,000	46,000

January 28.—By the *St. Laurent*=Havre:

Meyer & Brown		45,000

January 28.—By the *Minneapolis*=London:

Robert Badenhop		11,500

January 30.—By the *President Lincoln*=Hamburg:

Ed. Maurer	50,000	
Arnold & Zeiss	22,500	
George A. Alden & Co.	11,000	
Rubber Trading Co.	8,000	
Robert Badenhop	7,000	98,500

February 3.—By the *Carmania*=Liverpool:

George A. Alden & Co.	13,500	
James T. Johnstone	13,500	
Wallace L. Gough Co.	3,500	
Meyer & Brown	2,500	33,000

February 3.—By the *Amerika*=Hamburg:

Ed. Maurer	56,000	
Raw Products Co.	11,500	
Robert Badenhop	5,500	73,000

February 4.—By the *Rochambeau*=Havre:

Ed. Maurer	56,000	
Meyer & Brown	34,000	90,000

February 4.—By the *Minnehaha*=London:

Rubber Trading Co.	11,000	
Charles T. Wilson	7,000	18,000

February 5.—By the *Kroonland*=Antwerp:

Meyer & Brown	45,000	
Rubber Trading Co.	7,000	
Wallace L. Gough Co.	4,500	56,500

February 13.—By the *Minnewaska*=London:

Arnold & Zeiss	20,000	
Meyer & Brown	7,000	
L. Blitz	2,500	29,500

February 14.—By the *Zeeland*=Antwerp:

Arnold & Zeiss	34,000	
Wallace L. Gough Co.	30,000	
J. H. Rossbach & Bros.	11,500	
Meyer & Brown	11,000	
Rubber Trading Co.	9,000	
Robert Badenhop	7,000	
Robinson & Co.	7,000	
William H. Stiles	4,500	
N. Y. Commercial Co.	4,500	118,500

February 14.—By the *Philadelphia*=London:

Charles T. Wilson		13,500

February 17.—By the *Kaiserin Auguste Victoria*=Hamburg:

Wallace L. Gough Co.	11,500	
Meyer & Brown	9,000	
Robert Badenhop	4,500	25,000

February 17.—By the *Cevic*=Liverpool:

General Rubber Co.	13,500	
Meyer & Brown	7,000	
James T. Johnstone	3,500	
George A. Alden & Co.	4,500	28,500

February 17.—By the *Patricia*=Hamburg:

Ed. Maurer	55,000	
Meyer & Brown	15,000	
Arnold & Zeiss	40,000	
George A. Alden & Co.	25,000	
Wallace L. Gough Co.	15,000	
Rubber Trading Co.	13,500	
Charles T. Wilson	3,500	
Robert Badenhop	5,500	172,500

February 17.—By the *Campania*=Liverpool:

Arnold & Zeiss	9,000	
Ed. Maurer	5,500	14,500

February 20.—By the *Finland*=Antwerp:

Arnold & Zeiss	56,000	
Rubber Trading Co.	7,000	63,000

EAST INDIAN.

[*Denotes Plantation Rubber.]

Pounds.

January 24.—By the *Vaderland*=Antwerp:

Meyer & Brown		*80,000

January 25.—By the *Majestic*=London:

New York Commercial Co.	*50,000	
Robinson & Co.	*22,500	
Ed. Maurer	*13,500	
Charles T. Wilson	*10,000	
Meyer & Brown	*4,500	
Robert Badenhop	*3,500	
In transit	*45,000	*149,000

January 27.—By the *Mesaba*=London:

General Rubber Co.	*175,000	
New York Commercial Co.	*50,000	
James T. Johnstone	*45,000	
Ed. Maurer	*35,000	
Meyer & Brown	*15,000	
Wallace L. Gough Co.	*15,500	
Henderson & Korn	*11,000	
Raw Products Co.	*11,500	
Rubber Trading Co.	*11,000	
General Rubber Co.	11,500	
Rubber Trading Co.	9,000	
H. W. Balk	*9,000	398,500

January 27.—By the *City of Colombo*:

Meyer & Brown	*125,000	
New York Commercial Co.	*85,000	
Ed. Maurer	*11,000	
L. Littlejohn & Co.	*7,000	*228,000

January 27.—By the *Lapland*=Antwerp:

Meyer & Brown		*50,000

January 27.—By the *Pennsylvania*=Hamburg:

Meyer & Brown	*9,000	
Rubber Trading Co.	*3,500	*12,500

January 28.—By the *Minneapolis*=London:

New York Commercial Co.	*125,000	
James T. Johnstone	*70,000	
Ed. Maurer	*45,000	
Meyer & Brown	*15,000	
Arnold & Zeiss	*13,500	
William H. Stiles	*9,000	
Charles T. Wilson	*9,000	
A. W. Brunn	*7,000	
Rubber Trading Co.	*5,000	
Raw Products Co.	*4,500	*303,000

January 29.—By the *Ryndam*=Rotterdam:

Raw Products Co.	*11,000	
Rubber Trading Co.	*5,500	*16,500

January 30.—By the *New York*=London:

Arnold & Zeiss	*135,000	
Henderson & Korn	*22,500	
Ed. Maurer	*22,500	
Meyer & Brown	*22,500	
New York Commercial Co.	*7,000	
William H. Stiles	*7,000	
Charles T. Wilson	*4,500	
Robert Badenhop	*4,500	*225,500

January 30.—By the *President Lincoln*=Hamburg:

Meyer & Brown		*8,000

February 3.—By the *Pagenturm*=Colombo:

Meyer & Brown	*125,000	
New York Commercial Co.	*95,000	
Ed. Maurer	*15,000	
William H. Stiles	*8,000	
L. Littlejohn & Co.	*22,500	*265,500

February 4.—By the *Minnehaha*=London:

General Rubber Co.	*155,000	
James T. Johnstone	*60,000	
New York Commercial Co.	*55,000	
Ed. Maurer	*34,000	
Henderson & Korn	*25,000	
Meyer & Brown	*22,500	
Robert Badenhop	*8,000	
Wallace L. Gough Co.	*7,000	
Arnold & Zeiss	*5,500	
George A. Alden & Co.	11,500	383,500

February 5.—By the *Kroonland*=Antwerp:

Meyer & Brown		*100,000

February 6.—By the *Potsdam*=Rotterdam:

Rubber Trading Co.		*13,500

February 7.—By the *Oceanic*=London:

Ed. Maurer	*20,000	
Meyer & Brown	*11,500	
L. Littlejohn & Co.	*22,500	
Henderson & Korn	*20,000	
Charles T. Wilson	*7,000	*81,000

February 8.—By the *London Hall*=Singapore:

Ed. Maurer	*89,000	
L. Littlejohn & Co.	*34,000	
James T. Johnstone	*22,500	
Wallace L. Gough Co.	*13,500	
New York Commercial Co.	*4,500	
Ed. Maurer	13,500	
L. Littlejohn & Co.	11,000	188,000

February 10.—By the *Indrakuala*=Singapore:

Ed. Maurer	*45,000	
L. Littlejohn & Co.	*35,000	
Wallace L. Gough Co.	*23,000	
New York Commercial Co.	*11,500	
L. Littlejohn & Co.	25,000	139,500

February 13.—By the *Axenfels*=Colombo:

Meyer & Brown	*80,000	
New York Commercial Co.	*65,000	*145,000

February 13.—By the *Minnewaska*=London:

General Rubber Co.	*175,000	
Meyer & Brown	*50,000	
N. Y. Commercial Co.	*22,500	
James T. Johnstone	*25,000	
Ed. Maurer	*22,500	
Robinson & Co.	*20,000	
L. Littlejohn & Co.	*34,000	
Henderson & Korn	*25,000	
Charles T. Wilson	*13,500	
Robert Badenhop	*8,000	
Raw Products Co.	*6,500	
General Rubber Co.	22,500	
Robinson & Co.	11,000	435,500

February 14.—By the *Philadelphia*=London:

Arnold & Zeiss	*70,000	
New York Commercial Co.	*56,000	
Henderson & Korn	*22,500	
Ed. Maurer	*13,500	
William H. Stiles	*11,000	
In transit	*67,000	*240,000

February 14.—By the *Zeeland*=Antwerp:

Arnold & Zeiss	*34,000	
Meyer & Brown	*150,000	
Rubber Trading Co.	*9,000	
William H. Stiles	*5,000	*198,000

February 17.—By the *Patricia*=Hamburg:

Meyer & Brown	*9,000	
Wallace L. Gough Co.	*5,000	*14,000

February 18.—By the *Minnetonka*=London:

New York Commercial Co.	*150,000	
Ed. Maurer	*80,000	
Meyer & Brown	*45,000	
James T. Johnstone	*34,000	
H. W. Balk	*34,000	
Henderson & Korn	*22,500	
Rubber Trading Co.	*20,000	
Charles T. Wilson	*11,000	
Raw Products Co.	*15,000	
Robert Badenhop	*7,000	
A. W. Brunn	*4,500	*423,000

February 19.—By the *Erroll*=Singapore:

Ed Maurer	*35,000	
L. Littlejohn & Co.	*20,000	
Wallace L. Gough Co.	*15,000	
Raw Products Co.	*11,500	
Malaysian Rubber Co.	*11,000	
N. Y. Commercial Co.	*7,000	
William H. Stiles	*7,000	
Wallace L. Gough Co.	11,000	117,500

February 20.—By the *Finland*=Antwerp:

Meyer & Brown		*65,000

February 21.—By the *Majestic*=London:

Robinson & Co.	*11,500	
Henderson & Korn	*11,500	
Charles T. Wilson	*11,000	
Ed. Maurer	*11,500	
Robert Badenhop	*4,500	*50,000

GUTTA JELUTONG.

	Pounds.	
February 8.—By the *London Hall* Singapore:		
L. Littlejohn & Co.	300,000	
Wallace L. Gough Co.	200,000	
Haebler & Co.	150,000	650,000
February 10.—By the *Indrakuala*—Singapore:		
L. Littlejohn & Co.	350,000	
Haebler & Co.	175,000	
Wallace L. Gough Co.	55,000	580,000
February 10.—By the *Erridl*—Singapore.		
Haebler & Co.	350,000	
L. Littlejohn & Co.	300,000	650,000

GUTTA PERCHA.

	Pounds.
January 27.—By the *Pennsylvania*—Hamburg:	
Robert Soltau & Co.	9,000
February 10.—By the *Indrakuala*—Singapore:	
L. Littlejohn & Co.	22,500
February 17.—By the *Patricia*—Hamburg:	
Robert Soltau & Co.	7,000

BALATA.

	Pounds.	
January 25.—By the *Nonome*—Demerara:		
Ed. Maurer	29,000	
Yglesias, Lobo & Co.	11,500	
S. Bahaman Co.	11,000	
George A. Alden & Co.	9,000	
J. P. Watson	7,000	67,500
January 27.—By the *Grenada*—Trinidad:		
Yglesias, Lobo & Co.	22,500	
American Trading Co.	15,000	
Ed. Maurer	11,500	49,000
February 10.—By the *Maraval*—Trinidad:		
Yglesias, Lobo & Co.	11,000	
American Trading Co.	4,500	
G. Amsinck & Co.	3,500	19,500
February 13.—By the *Coppename*—Demerara:		
G. Amsinck & Co.	33,500	
Yglesias, Lobo & Co.	5,500	
Ed. Maurer	2,000	
A. S. Lascelas & Co.	2,000	43,000
February 15.—By the *Colon*—Colon:		
M. A. De Leon	7,000	
Wessels, Kulenkampff & Co.	12,500	19,500
February 21.—By the *Maracas*—Trinidad:		
G. Amsinck & Co.	11,000	
American Trading Co.	7,000	
Yglesias, Lobo & Co.	7,000	25,000

BOSTON ARRIVALS.

	Pounds.	
January 10.—By the *Bohemian*—Liverpool.		
Arnold & Zeiss (Africans)		56,000
January 14.—By the *Canadian*—London:		
Wallace L. Gough Co. (Africans)		13,500
January 16.—By the *[illegible]*—Liverpool:		
Arnold & Zeiss (Africans)		11,200
January 18.—By the *Burmese Prince*—Singapore:		
State Rubber Co. (Ceylon)	101,000	
L. Littlejohn & Co. (Jelutong)	860,000	
George A. Alden & Co. (Jelutong)	150,000	
State Rubber Co. (Jelutong)	115,000	1,226,000
January [illegible].—By the [illegible]—Singapore:		
L. Littlejohn & Co. (Gutta Percha)	33,[illegible]	
Arnold & Zeiss (Gutta Percha)	[illegible]	
L. Littlejohn & Co. (Jelutong)	[illegible]	
Wallace L. Gough Co. (Jelutong)	[illegible]	
State Rubber Co. (Jelutong)	[illegible]	[illegible]
January 28.—By the *Canadian*—Liverpool:		
Arnold & Zeiss (Africans)		[illegible]

CUSTOM HOUSE STATISTICS.

Port of New York, January, 1913.

Imports:	Pounds.	Value.
India-rubber	12,[illegible]	$[illegible]
Balata	[illegible]	115,[illegible]
Guayule	501,7[illegible]9	235,[illegible]4
Gutta-percha	8,835	6,1[illegible]7
Gutta-jelutong (Pontianak)	4,554,895	216,115
Total	[illegible]	$[illegible],035,804
Exports:		
India-rubber	17,611	$13,9[illegible]
Balata	7,[illegible]8	5,061
Guayule	6,746	5,53[illegible]
Gutta-percha	[illegible]	[illegible]
Reclaimed rubber	[illegible]8,871	3,773
Gutta-jelutong (Pontianak)	....	....
Rubber scrap, imported	1,827,[illegible]	$161,01[illegible]
Rubber scrap, exported	[illegible]	45,117

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR JANUARY, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.	Fine.	Medium.	Coarse.	Caucho.	Total.	GRAND TOTAL.
Zarges, Ohliger & Co.	124,019	15,015	95,292	21,405	[illegible]55,731	290,682	45,048	14,036	185,667	535,433	791,164
Adelbert H. Alden, Ltd.	114,651	33,785	47,897	62,755	259,088	....	....	....	....	....	259,088
General Rubber Co. of Brazil	99,411	12,009	47,415	1,516	160,351	47,090	36,581	11,701	79,041	174,413	334,764
Ahlers & Co.	93,183	16,246	19,138	24,718	153,285	89,082	11,472	26,238	101,745	228,537	381,822
De Lagotellerie & Co.	10,560	....	....	....	10,560	129,250	26,300	38,495	18,684	212,729	223,289
Mesquita & C.	....	....	....	....	....	1,514	289	1,181	2,046	5,030	5,030
W. Peters & Co.	26,083	44	5,976	50,501	82,604	1,920	160	2,960	150	5,190	87,794
Sundries	11	....	27	5,245	5,283	8,435	640	3,591	470	13,136	18,419
	467,918	77,099	215,745	166,140	926,902	567,973	120,490	98,202	387,803	1,174,468	2,101,370
Iquitos direct	4,900	27	1,504	735	7,166	90,336	5,518	38,891	94,033	228,778	235,944
Total, January, 1913	472,818	77,126	217,249	166,875	934,068	658,309	126,008	137,093	481,836	1,403,246	2,337,314

EXPORTS OF INDIA-RUBBER FROM PARA, MANAOS AND IQUITOS FOR JANUARY, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.	Fine.	Medium.	Coarse.	Caucho.	Total.	GRAND TOTAL.
Zarges, Berringer & Co.	136,819	24,570	238,966	49,975	450,330	314,459	30,102	26,358	160,203	531,122	981,452
Ad. H. Alden, Ltd.	107,271	17,989	66,003	11,297	202,560	70,766	7,223	22,201	20,823	121,013	323,573
General Rubber Co. of Brazil	28,793	5,113	33,193	20,027	87,126	75,063	17,092	7,881	10,495	110,531	197,657
J. Marques	93,363	17,632	117,851	38,269	267,115	44,561	1,428	971	15,635	62,595	329,710
R. O. Ahlers & Co.	5,149	....	6,879	26,121	38,149	20,860	296	2,783	2,210	26,149	64,298
Suarez Hermanos & Co., Ltd.	....	....	....	....	....	77,268	6,598	10,383	39,762	134,011	134,011
De Lagotellerie & Co.	20,740	1,970	17,820	....	40,530	....	....	....	....	....	40,530
Pires Teixeira & Co.	14,960	2,890	22,110	280	40,240	18,190	510	1,320	....	20,020	60,260
Sundry exporters	11,050	510	27,120	2,800	41,480	....	....	4,200	3,360	7,560	49,040
From Itacoatiara direct	....	....	....	....	....	16,330	1,650	9,840	9,900	37,720	37,720
	418,145	70,674	529,942	148,769	1,167,530	637,497	64,899	85,937	262,388	1,050,721	2,218,251
From Manáos direct	467,918	77,099	215,745	166,140	926,902	567,973	120,490	98,202	387,803	1,174,468	2,101,370
From Iquitos direct	4,900	27	1,504	735	7,166	90,336	5,518	38,891	94,033	228,778	235,944
Total, January, 1913	890,963	147,800	747,191	315,644	2,101,598	1,295,806	190,907	223,030	744,224	2,453,967	4,555,565

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR OCTOBER, 1912 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.	Fine.	Medium.	Coarse.	Caucho.	Total.	GRAND TOTAL.
Zarges, Ohliger & Co.	2,081,987	332,932	654,507	414,891	3,484,317	2,325,094	268,995	215,715	736,720	3,746,524	7,230,841
Adelbert H. Alden, Ltd.	1,347,568	428,422	425,772	405,243	2,607,005	464,075	145,647	150,908	272,210	1,032,840	3,639,845
General Rubber Co. of Brazil	1,102,142	270,304	391,964	156,109	1,920,519	492,411	120,307	86,454	459,098	1,158,270	3,078,789
Ahlers & Co.	507,631	95,907	154,425	103,545	861,508	797,664	100,746	243,230	252,873	1,394,513	2,256,021
De Lagotellerie & Co.	5,600	640	900	150	7,290	447,032	89,464	130,511	96,903	763,910	771,200
W. Peters & Co.	3,040	300	....	52,229	55,569	8,695	2,799	27,858	12,676	52,028	107,597
J. G. Araujo	....	....	7,200	7,200	14,400	4,157	3,782	74,049	274	82,262	96,662
Semper & Co.	....	....	....	....	....	44,179	4,303	9,969	130	58,581	58,581
Sundries	46,324	....	....	3,471	49,795	35,479	5,356	27,854	14,402	83,091	132,886
	5,094,292	1,128,505	1,634,768	1,142,838	9,000,403	4,618,786	741,399	966,548	2,045,286	8,372,019	17,372,422
Iquitos direct	61,435	1,103	14,407	62,333	139,278	1,079,763	92,684	348,241	1,154,688	2,675,376	2,814,654
Total, kilos	5,155,727	1,129,608	1,649,175	1,205,171	9,139,681	5,698,549	834,083	1,314,789	3,199,974	11,047,395	20,187,076

SUMMARY OF DIRECT EXPORTS FROM MANAOS AND IQUITOS.

Year.	Tons.	Year.	Tons.	Year.	Tons.	Year.	Tons.
1881	307	1889	3,255	1897	7,523	1905	17,352
1882	430	1890	3,693	1898	7,173	1906	16,840
1883	655	1891	3,991	1899	7,853	1907	19,924
1884	1,013	1892	3,812	1900	8,937	1908	20,540
1885	1,462	1893	4,745	1901	16,826	1909	19,412
1886	1,574	1894	3,953	1902	15,162	1910	19,548
1887	1,688	1895	5,433	1903	18,277	1911	18,689
1888	2,141	1896	6,827	1904	17,415	1912	20,188

INDIA RUBBER WORLD
Caoutchouc — Gutta-Percha

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Rubber Scrap Prices.

Late New York Quotations.—Prices paid by consumers for carload lots, per pound—are practically unchanged.

	Feb. 28, '13.
Old rubber boots and shoes—domestic	10⅛@10¼
Old rubber boots and shoes—foreign	9½@ 9⅝
Pneumatic bicycle tires	6¼@ 6⅜
Automobile tires	10¼@10⅜
Solid rubber wagon and carriage tires	9¼@ 9½
White trimmed rubber	11 @11½
Heavy black rubber	4¾@ 5
Air brake hose	6 @ 6½
Garden hose	1⅛@ 1½
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾

Antwerp.

Rubber Statistics For January.

Details.	1913.	1912.	1911.	1910.	1909.
Stocks, Dec. 1.....*kilos*	511,060	674,738	588,212	541,512	595,735
Arrivals in January—					
Congo sorts	321,607	226,248	403,421	202,547	186,189
Other sorts	12,645	6,195	82,214	5,656	66,159
Plantation sorts	138,305	88,990	64,321	53,664	31,607
Aggregating	983,617	996,171	1,138,168	803,379	879,690
Sales in January.....	519,865	410,115	492,749	321,217	281,913
Stocks, January 31.....	463,752	586,056	645,419	482,162	597,777
Arrivals since Jan. 1—					
Congo sorts	321,607	226,248	403,421	202,547	186,189
Other sorts	12,645	6,195	82,214	5,656	66,159
Plantation sorts	138,305	88,990	64,321	53,664	31,607
Aggregating	472,557	321,433	549,956	261,867	283,955
Sales since January 1..	519,865	410,115	492,749	321,217	281,913

Rubber Arrivals from the Congo.

January 28, 1913.—By the steamer *Elizabethville:*

Bunge & Co	(Société Générale Africaine) *kilos*	12,000	
do	(Comptoir Commercial Congolais)	14,600	
do	(Forminière)	1,460	
Societe Coloniale Anversoise	(Haut Congo)	21,500	
do	(Cie. du Kasai)	64,400	
do	(Comminiere)	470	
L. & W. Van de Velde	(Comfina)	20,800	
do	(Velde)	490	
do	(Uelé)	4,100	
do		4,150	
Willaert Freres		1,500	
Divers		5,000	150,470

Plantation Rubber From the Far East.

Exports of Ceylon Grown Rubber.

[From January 1 to December 31, 1912, and for ten years. Compiled by the Ceylon Chamber of Commerce.]

	1911.	1912.
To Great Britain.....*pounds*	3,956,812	8,176,523
To United States.....	2,045,499	4,833,085
To Belgium	896,613	1,315,298
To Australia	68,727	250,326
To Germany	67,315	210,021
To Austria	10,975	85,782
To Japan	57,513	81,456
To Canada	25,445	22,078
To France	117	11,568
To Italy	9,302	7,744
To Russia	.....	4,173
To Holland	12,893	2,282
To India	196	700
To Norway and Sweden.....	.....	39
To Straits Settlements	3,216	.....
To Africa	35	.....
Total	7,154,658	15,001,075

Totals for 10 Years.

Total, 1912.....	15,001,075	Total, 1907.....	556,080
Total, 1911.....	7,154,658	Total, 1906.....	327,661
Total, 1910.....	3,586,854	Total, 1905.....	168,547
Total, 1909.....	1,492,580	Total, 1904.....	77,212
Total, 1908.....	912,125	Total, 1903.....	41,798

Total Exports from Malaya.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore, Dec. 31.	Penang, Nov. 30.	Port Swettenham, Nov. 15.	Total.
Great Britain..*pounds*	10,609,362	8,396,275	14,784,869	33,790,506
Continent	352,345	20,263	2,002,600	2,375,208
Japan	499,885	.....	.....	499,885
Australia	89,139	.....	.....	89,139
Ceylon	2,217	238,293	759,815	1,000,325
United States	3,077,946	933	2,081	3,080,960
Total, 1912.....	14,630,894	8,655,764	17,549,365	40,836,023
Total, 1911.....	6,589,425	4,547,062	10,221,779	21,358,266
Total, 1910.....	3,764,877	2,234,569	7,224,781	13,224,227
Total, 1909.....	2,412,617	1,976,843	2,138,262	6,527,722

Amsterdam.

Joosten & Janssen report [February 14]:

Good demand prevailed at today's sale; the whole offering being sold except some lots held above market value. Next sale will be held March 12.

Rotterdam.

Havelaar & De Vries report [February 8]:

The next sale will take place on February 21 and will include 27 tons Congo, 6 tons *Hevea*, and 6 tons of miscellaneous descriptions.

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THE WASHING OF BRAZILIAN RUBBER.

THE standardizing of Brazilian crude rubber sorts is something that has often been discussed. No special progress has been made, however, and the trade designations have remained loosely descriptive or wholly arbitrary. There has never even been formulated a clear descriptive paragraph that would adequately describe Up River Fine.

That it is a pity to pay freight on water, bark, chips, sand and other worthless contents of crude rubber pelles, slabs and balls, no one doubts, *but*—and this is a very large but—how is the washing of all of the 42,000 tons of Brazilian rubber going to be viewed by the parties most interested—the rubber manufacturers? They are equipped with washing and drying plants that cost hundreds of thousands of dollars. They are accustomed to judge the rubber by certain physical characteristics. They know its value for various lines of goods by these characteristics. If the rubber all comes to them in crepe form it means not only the scrapping of much valuable machinery, but involves the testing of every grade in the laboratory, in compounding, vulcanization, and in actual use. It is by no means certain that Fine Pará rubber, for example, washed in Manáos, will arrive in New York possessed of the same degree of nerve that it shows when it comes in biscuit form. The generally accepted explanation of the superior nerve of Pará biscuits is that the constant pressure of the stretched and superimposed films, together with the water held in the mass, are responsible for this superiority. With some of the softer sorts like Mangabeira, washing, particularly clean washing, tends to soften the rubber so that it deteriorates.

All of these points were put before the Minister of Agriculture at Rio de Janeiro recently by the editor of THE INDIA RUBBER WORLD, who was given an audience for that special purpose. His Excellency, however, gave his assurance that nothing would be done hastily and that sample lots of all kinds would be shipped for examination before any grade was definitely changed.

A point in favor of the bid for the plant in Manáos is the comparative cheapness of the price charged—about six cents a pound. This is for washing, sheeting and packing in boxes. The present price for cutting and boxing is over 20 cents a pound. In this connection it might be well to cite the various grades of crude rubber that now come from Brazil. Of the Amazon sorts nearly all of the grades named are still further sub-divided into Fine, Medium and Coarse.

The various grades are as follows: Bolivian, Peru, Acre, Matto Grosso, Amazonas sorts (Javary, Purus, Jurua, Madeira, etc.); Tapajos, Xingu, Islands, Cameta, Weak fine *Hevea* (Rio Negro, Peruvian, Bolivian, Purus, Pará).

Bolivian, Peruvian, Matto Grosso, Acre, Amazonas and Pará caucho.

Ceara sheet and crepe, Jequié sheet, Jequié washed, Jequié scrap, Piauhy rubber, Mangabeira slabs, Mangabeira crepe.

A TROPICAL AGRICULTURAL UNIVERSITY IN THE WEST INDIES.

IN that exceedingly interesting paper on "The Present and Future of the Native *Hevea* Rubber Industry," by Dr. Jacques Huber, which appeared in the March number of THE INDIA RUBBER WORLD, he made this statement: "It would seem strange that in the Amazon region, the very home of the *Hevea Brasiliensis*, its cultivation has not made more progress, in spite of the many efforts in that direction. The cause is not only in the general conditions of the country and in the scarcity of labor, but perhaps principally in a factor which unfortunately has too often been overlooked—that of management. In Amazonia there

are practically no plantations on a large scale, and trained plantation managers are seldom to be found there."

The lack of trained experts which Dr. Huber mentions as the chief obstacle in the way of successful rubber plantations in South America is also noticeable everywhere in the rubber field where plantations have been started. To be sure, in the Far East, now that plantation enterprises have been under way for a number of years, there is quite a body of men who have secured a practical training through their experience on the plantations, and there are in various parts of the tropical world experimental stations where a few men, under government auspices, are trying to solve some of the many problems to which tropical agriculture has given rise; but nowhere in the world is there a tropical agricultural college where men may be trained quickly, and without waste of time and effort, in the science of tropical agriculture—whether relating to the production of rubber, sugar, cacao, or tropical fruits; and the pressing need of such an institution has long been felt by intelligent observers. It has been dwelt upon in the agricultural and tropical papers; it has come up for discussion in the conferences of those who are interested in tropical products, and it was particularly emphasized in the West Indian Agricultural Conference held in Trinidad last year.

A new impetus has been given to the subject by an article which appeared in a recent issue of "The London Times," calling attention in an emphatic manner to the need of a tropical agricultural university if the British colonial possessions in the tropics are to reach their proper development. It called attention to the extreme wastefulness of the haphazard methods that at present obtain in agriculture in these colonies, being in fact practically the same methods in vogue half a century ago. The fact was dwelt upon that nature had been looked to to do practically all the work, on the hypothesis that nature produced enough and to spare, and required little assistance from man. But the conditions have changed materially in fifty years, and in order to meet competition from the other parts of the tropical world, and in order to enable the British colonies to attain to anything like their proper development, the time has come for supplying those colonies with a body of men specially trained to meet their requirements.

This editorial in "The Times" has encouraged the advocates of a tropical agricultural college to new efforts, and it certainly is to be hoped that these efforts may soon materialize. Such a college should, as a matter of fact, not only train men for the pursuit of agriculture in the tropical belt, and train them so broadly that after leaving its doors they would be at home in any tropical country—whether the West Indies, South America, Africa, or the Far East—but it should go beyond such training and engage in research work of a character that would be of benefit to the tropics generally. It should not only train men in a thorough understanding of tropical climates and soils and in the sciences of entomology, mycology, botany and chemistry, but it should take up the great number of problems coming under these various classifications that have not yet been solved, but must be solved, if tropical agriculture is to reach its best estate. Such an institution, giving both practical training and engaging in advanced research work would in reality be a university rather than a college.

In regard to the best location for such an institution, "The Times" expresses the belief that the West Indies are best adapted for this purpose, as they are within the tropical belt and yet readily accessible to students from England, and admirably situated as a starting point from which the graduates could go out —either to South America, to Africa, or to the East.

"The Times" does not designate any particular island, but to anyone who has traveled extensively through the West Indies, Trinidad will immediately suggest itself as an ideal location for such an institution. It certainly presents true tropical conditions, being only ten degrees from the equator, and while it is one of the West Indies, it is so close to the South American shore as to be to all intents and purposes a part of that continent. The great Orinoco River draining thousands of miles of tropical country, including forests of rubber, empties almost at its door. Those who gathered there for instruction would pursue their studies under ideal tropical conditions. The foundation for such a university has already been laid in the Imperial Department of Agriculture for the West Indies, which under the executive management of Commissioner Watts has done so much to train men in tropical agricultural knowledge, and has been of such assistance in supplying experts to both government and private enterprises.

Moreover, it is readily accessible, not only to the English, but to Canadians and to the United States;

and it would naturally draw its student supply, not only from the mother country, but from the surrounding islands, from South America and from North America. And herein lies an important feature—the establishment of an institute conveniently at hand, where young men from the United States could be thoroughly equipped for successful agricultural operations, either in foreign lands, or in the American tropical possessions—Porto Rico, the Philippines and the Hawaiian Islands. It is this feature of it that makes this discussion of special interest to Americans. In the Philippines and the Hawaiian Islands we have extremely valuable possessions, but the young man who goes to either one of these islands to seek his fortune goes absolutely unequipped, and has to acquire the knowledge necessary for success through the slow processes of observation and experience. If he could take a three or four years' course in a well equipped tropical agricultural college it would be a wonderful saving of time and energy.

English colonists have been talking about this agricultural institute for many years, but now they are talking about it with greatly increased earnestness. It is to be hoped that it will soon materialize and that its materialization will take place at some spot like Trinidad where it will naturally attract American patronage and support.

While such an institution—a thoroughly equipped tropical agricultural university—would greatly help all the industries of the tropics—the production of sugar, cacao, fruits and the other products of the equatorial belt, it would, undoubtedly, be of the greatest benefit to the industry of rubber planting, which has such tremendous possibilities in a vast territory—some of it belonging to the United States—where as yet hardly a start has been made.

THE ANNUAL LEGISLATIVE RAID ON THE AUTO.

IT is hardly to be expected that any State legislature would close its session without "taking a fall" out of the auto. But the New York legislature during the month of March certainly established the record. Its members introduced twenty different bills placing various prohibitions and penalties on the use of the auto. The very volume of this proposed legislation was its undoing, because it provoked such a storm of protest from the automobile owners of the State—and there are 100,000 of them—and brought so many hundred representatives of various organizations to Albany to voice their objections by personal presence, that the greater part of these laws were buried—temporarily at least—in committee.

But one of the most pernicious of them, affecting the manufacturer and dealer and ultimately the consumer, was rushed through both houses, and that is a law providing for the dating of automobile tires, and reading as follows: "No person or corporation shall manufacture, sell, offer or expose for sale in this State a tire for use on a motor vehicle unless the date when such tire was manufactured shall be impressed or branded upon the material of which such tire is constructed, or otherwise indicated by label securely attached thereto."

This act was introduced a year ago, and after some discussion and amendment disappeared from view. But the Hon. Christy Sullivan, a statesman representing the lower East Side of New York City, penetrated into the legislative mausoleum and brought forth this presumably defunct issue. It was galvanized into life—by what vivifying influences it cannot be stated—and as said above, it was rushed through the Assembly and the Senate, and at present writing lies on the Governor's desk for his action.

The effect of this act would be to reward dishonesty and penalize honesty; for the dealer who had not yet entered upon the ethical life would simply put new tags on old tires and pocket the profits, while the honest dealer would, naturally, want to avoid any tires dated more than two or three months back; and in consequence the manufacturer would be exceedingly careful not to get much of a supply of tires ahead. During the dull months, when he naturally would be making up a stock for the brisker months to come, he would close down and wait till the market revived. The result of this would be, of course, to make the manufacture of tires materially more expensive, and to advance the price proportionately to the consumer.

It is a totally unnecessary piece of legislation, because the guarantee given by practically all important tire makers, covering their best-grade tires, is adequate protection to the consumer that he will get the tire service he is paying for. In addition to this guarantee, it is, of course, a truism to state that every reputable tire maker is quite as anxious to have his product prove satisfactory as the purchaser of that product is. If a maker's tires go wrong the consumer suffers simply to the extent of the one or possibly four tires that he has purchased, but the maker suffers to the extent that his reputation, on which his continued prosperity is based, is seriously damaged. No tire maker of any standing wants his name on tires of an unsatisfactory character.

If this act is signed and becomes a law, the next step logically for our wise legislators to take is to convene in special session, and to pass an act making it compulsory to date the air that is pumped into the tire.

DYNAMITE IN RUBBER PLANTING.

TEN years ago the discussion of the use of dynamite in the development of rubber plantations would have interested only an extremely small number of people in the United States. The consideration of any subject pertaining to rubber planting would have made but a limited appeal to Americans, for the simple and logical reason that aside from a few holders of shares in Mexican ventures, there was no one in this country who felt anything more than an academic interest in the subject of rubber plantations, or anything that pertained thereto.

But all that has now changed. When one American company is developing the largest rubber plantation in the world—investing millions in the enterprise—and when other large manufacturing concerns are sending their agents through the whole rubber belt to make a thorough study of the planting problem, it can no longer be said that Americans have no personal interest in rubber plantations, and the conditions affecting them.

There are, undoubtedly, many readers of this journal, therefore, within our own home borders, who will read with more than a merely general interest, the paper on the use of dynamite on rubber plantations, which Mr. Hamel Smith, editor of "Tropical Life," contributed to the International Rubber Conference, recently held in New York, and which is reproduced in this number.

Our Western farmers who are as alert agriculturists as can be found anywhere, have long used dynamite and other explosives to conquer the soil. Its swift and thorough efficiency strongly commends it to their distinctly modern temperament; and now the Eastern planters are awakening to the fact that a pound of dynamite is worth a dozen men with the hoe. As Mr. Smith points out, it lays hold of the sub-soil, which neither hoe nor plow can touch, and opens it up to the beneficent influences of air and light, letting the water beneath it up and the roots above it down. It is particularly effective in preparing the holes for the actual planting of the trees, as it not only digs the holes but softens and mellows the surrounding earth, so that the new roots can push out into hospitable soil; and its utility as a destroyer of pests—both animal and vegetable—is obvious. It is a safe conjecture that explosives will grow in popularity with the evolution of the rubber plantation.

AMERICAN MANUFACTURERS INVADE BRAZIL.

THIS issue of The India Rubber World contains some exceedingly important news regarding the industrial development in the great continent to the south. It is news, moreover, of special interest to American manufacturers, as it relates to the invasion by one of them of the great South American domain. Last year the Government of Brazil enacted certain legislation to induce capital at home and abroad to embark upon manufacturing operations in that country. Among those who responded to this appeal, and responded successfully, was the Goodyear Tire & Rubber Co. This company contemplates the immediate erection of large rubber refining and washing plants at Pará and Manaos and, even more important, of an extensive and completely equipped factory for the manufacture of rubber goods in Rio de Janeiro. These interesting enterprises are described in detail in two articles appearing in this issue, one devoted to the manufacturing plant, the other to the refining and washing plants.

RUBBERS AS LEGAL TENDER.

ENTHUSIASTS as to the ultimate destiny of rubber are prepared to believe that it can be and will be utilized in multitudinous ways not yet dreamed of, but probably very few of the enthusiasts ever expected that it would take its place with the precious metals as a medium of exchange. This, however, has come to pass, as will be noted by the following paragraph, taken from a paper published in a highly respectable community in New Jersey:

"The young people of the Epworth League of the Methodist Church of this place are going to hold a 'rubber social' in the church Thursday evening, March 27. Admission will be a parcel of old rubbers."

Here is a fine illustration of the doctrine of efficiency, now so loudly heralded, which is as applicable to matter as to energy. To make the useless put on usefulness appeals to the well-balanced, economic mind, and this special instance also shows exceptional financial perspicacity on the part of the leaders of this particular Epworth league; for undoubtedly this New Jersey village, like all other reputable villages, is full of homes where actual cash is scarce, but where old rubbers—too good to throw away and too bad to wear—have been accumulating for years. What more delightful than to tie up an assortment of these old rubbers—some of them having been stored in the garret since the Civil War—and present them at the box office, in exchange for an evening of elevating entertainment? At last rubber has come into its own, and takes its place side by side with gold and silver as a standard of value and a recognized instrument of exchange.

RUBBER MANUFACTURING IN THE "NEW YORK ZONE."

By G. Wilfred Pearce, C.E.

THE year 1912 chronicles the highest volume of trade ever attained in the zone of New York as to sales of manufactures of rubber to the marine, mechanical and electrical engineering interests, and to the building trades. The zone of Greater New York is a radius of twenty miles from the City Hall. The area is 2,345 square miles and the population is almost seven and one-half millions. This zone is growing faster than the nation; New York City alone yearly adds to its population the equivalent of the population of Paterson, New Jersey. Since the opening of the year 1910, the increase in the population of the zone of Greater New York has been as many persons as are accounted for in the last census of Boston. To provide for the wants of the vast population of the zone of Greater New York the manufactures of rubber, calls for the employment of as many rubber trade workers as were employed in the whole domestic rubber industry in 1850.

Accurate statistics of the volume of rubber goods consumption in this zone are not procurable. There is no good reason why manufacturers or jobbers should make known the volume of their sales, and there are cogent reasons why they should not set forth the volume of sales in a community, in which hundreds of promoters are looking for arguments for the flotation of schemes based upon the manufacturing interest. But fairly good estimates of the annual consumption of mechanical trades requirements in manufactures of rubber, are obtainable from the principal designing and constructional engineers. Judging from what the principal local scientific engineers set forth as estimates as to the consumption of all kinds of rubber manufactures bought by final consumers for use within 25 miles of the City Hall, and under specifications which cover the twelve months of 1912, the sum is not under $3,000,000. This sum does not include an estimate of the purchases by thousands of janitors and tens of thousands of householders, concerning which statistics are not collectable.

Thirty-four millions of our population reside at places that are reached by watercraft documented at New York and adjacent ports. These vessels consume largely both staple and special manufactures of rubber, and in addition to this trade, the local marine engineering outfitters are doing a yearly increasing trade with many of the almost 12,000 foreign steamships that come to this port in a year.

So much is printed by the daily press as to the alleged decay of our mercantile marine, and the necessity for Federal aid to nurse our ocean carrying trade, that the general public takes it for truth, whereas our coastwise, river and lake shipping interest is enormous in tonnage, and, for the most part is paying good profits to the owners. In the past twelve-month, our water transportation lines carried two and one-half times as much freight as was carried within the same period by all our steam railroads. Many of our great lines of coastwise, river and lake steam vessels are owned by railroads, and in all that relates to the use of the best grades of mechanical and other rubber wares, these steamship lines are as well circumstanced as the railroad interest is at such plants as the Pennsylvania system's shops at Altoona, Pa., and the plant of the Vanderbilt lines at West Albany. It would be difficult to find anywhere among the storerooms of the greater steamship lines of Europe, a stock comparable in variety and quantity with those maintained at the Great Lakes ports for the one hundred big steamships operated by the United States Steel Corporation. What is shipped from New York City and vicinity in rubber goods to the Great Lakes ship yards, marine engineering works and vessels, aggregates about $750,000 a year, as is estimated by an officer of a local corporation engaged in the manufacture and jobbing of marine engineering supplies. But this amount is not included in the estimate herein given for the annual sales of such wares within the zone of Greater New York.

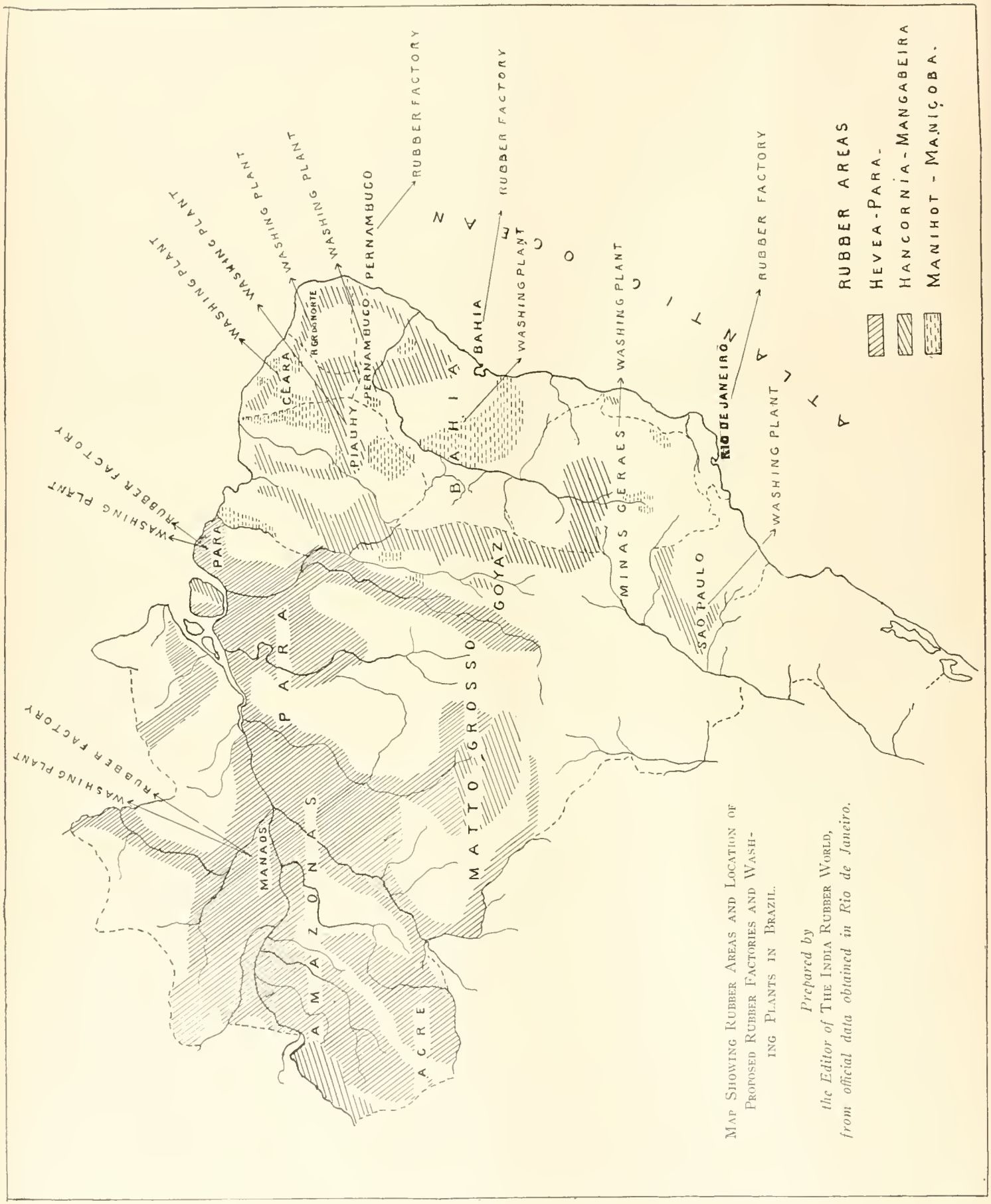
A factor of importance in 1912's local rubber goods trade is the large number of mercantile buildings and apartment houses that were completed, and most of which are so high that the fire engines cannot force water to the upper stories. That fact has developed in Manhattan and parts of Brooklyn, and in parts of adjacent cities, the installment of fire pumps, hose and other fittings for fighting fire by employees of the owners and tenants of the tall structures. So well provided are scores of the new tall mercantile structures, completed on Manhattan Island, with fire-fighting apparatus, and with driven wells beneath the buildings, that upward of 2,500 concerns in the textile industries moved during last year from the downtown wholesale drygoods district to new quarters above Union Square.

For fire hose and hose for vacuum cleansing apparatus, the expenditures by owners of new buildings completed within the zone of Greater New York during 1912, aggregated almost a third more than the sum estimated for the previous twelvemonth by conservative mechanical engineers. In the twelvemonth, ending with last December there were completed within New York, and in cities within a few miles thereof, 2,687 high-class apartment houses. Few of these cost less than $500,000; many cost upward of $750,000 each. None of these houses is without private fire-fighting equipments. In the larger and most costly of these houses, steam, electric, hydraulic and compressed air power are used, and the resident engineer has under him from six to twenty assistants to care for water, steam heating, refrigerating, power and lighting apparatus. A year's requirements of engineering rubber products for these apartment houses comes to a big sum. Just how much it comes to the sellers do not care to tell. But it is certainly a factor of importance to the trade.

Cheap and good coal from Southern mines, laid down at the port of New York and vicinity at extraordinary low water freight rates, has enormously stimulated manufacturing within this zone, so that it now ranks first in the world in number of employees and value of production. Cheap coal has brought about a number of very large power-producing and selling corporations that sell power much cheaper than any but a very large manufacturing plant can produce it for. One such power-producing plant in this city employs 187 mechanical draughtsmen in designing electrical apparatus and planning electric power installations for users of power.

To take advantage of this low-priced and steady power, many buildings have been especially built hereabouts within a few years, in which manufacturers can rent room and power at low rates. All this results in making this zone a continuously increasing market for a very large sale of rubber wares used in constructural engineering work, and in many lines of manufacture in which rubber goods play a considerable part.

A short time ago it seemed as if the local jobber in rubber goods was being pushed to the wall by manufacturers who employed all arts to reach the consuming interest. Today, the jobbing trade is in good case, and a number of manufacturers have abandoned the solicitation of consumers, and are selling through the engineering trades supply concerns. The jobbers are serving the retailers and final consumers with promptness, and are doing sound educative work in introducing new and improved rubber wares in many lines. By means of the telephone and fast motor wagons these jobbers are filling orders, local and within 20 miles out of town, on very short notice, so that it is no longer necessary for the retail and consuming trades to carry large stocks. Several jobbers within the zone of New York, having accounts with power plants that work day and night, now provide for filling emergency orders at night, by having employes at warehouses all night, who fill orders and rush them off at once by their emergency motor wagons.



Map Showing Rubber Areas and Location of Proposed Rubber Factories and Washing Plants in Brazil.

Prepared by the Editor of The India Rubber World, *from official data obtained in Rio de Janeiro.*

Brazil's New Rubber Activity.

AN AMERICAN COMPANY MAKES TENDERS FOR TWO LARGE REFINING PLANTS.

THE Brazilian legal enactments now in force affecting rubber, consist of the Act of January 5, 1912, in conjunction with the decree of April 17, 1912, explaining and defining the provisions of the former measure. While the fundamental act only acquired legal validity through its being passed by the Brazilian legislature towards the end of December, 1911, its provisions had already been submitted to, and approved by the Rubber Congress held at Rio de Janeiro the previous summer, Being a government proposal, it had been drafted by the Minister of Agriculture, Dr. Pedro de Toledo, who presided over the Rubber Congress and was assured beforehand of a cordial reception on the part of the rubber industry, both wild and cultivated.

During its passage through the Brazilian Legislature it had been subjected to trifling detailed changes, but its terms are

DR. PEDRO DE TOLEDO.

more or less familiar to the readers of THE INDIA RUBBER WORLD by the extracts in the numbers of October 1, 1911 (page 7); March 1, 1912 (page 266), and June 1, 1912 (page 427).

A thoroughly representative character marked the Rio Congress of 1911, on which occasion a commission of five delegates spent a week in discussing the government proposals, which it subsequently endorsed in the main, and which formed the basis of the two measures of 1912.

That the Brazilian rubber industry was in an unsatisfactory condition was patent to all connected with it. It was costing too much to produce rubber in Brazil, while prices were going down under the influence of the actual and prospective Asiatic yields. Moreover, the latter in their heavy profits had a margin to fall back upon, not existing in the case of Brazilian rubber.

In submitting these proposals to the Rubber Congress Dr. de Toledo urged that they were brought forward in the interests of Northern Brazil generally. In line with the general policy of lowering the cost of producing rubber, was the reduction of the two principal items of expense:—food and transport. These objects have been prospectively attained by the provisions for leasing national lands and for the construction of new railroads.

CONDITIONS OF THE INDUSTRY.

In his presidential address, Dr. de Toledo urged the importance of the rubber industry as a means of support to a considerable section of the population of all the northern states of Brazil. This fact, he added, called for the intervention of the national government, with a view to preventing the occurrence within a few years of a lamentable crisis.

The chief part of the Brazilian rubber production is composed, he explained, of the "Seringueira" (*Hevea* and *Caucho*); growing spontaneously in the valley of the Amazon. In addition to these are the *Maniçoba*, chiefly found on the right bank of the river Parnahyba, and the *Mangabeira*, met with in the states of Goyaz, Minas Geraes and Matto Grasso. The production of the valley of the Amazon would, he said, be sufficient to meet the world's consumption, if that region were worked in an economical and practical manner. This would only be possible with a relatively dense population and with the needed transport facilities.

Most of the *Hevea* rubber is now produced on the banks of more or less navigable rivers, and seldom comes from farther than six miles, on either side of the streams. In the northeastern states of Brazil, there is a considerable quantity of *Maniçoba*, though for some reasons its working has not been satisfactory. At the same time, he added, there is no reason why the *Maniçobas* of the northeast should not be rationally exploited and their product as far as possible increased.

PRODUCTION OF BRAZILIAN RUBBER.

The following figures show the production of Brazilian rubber during the five years, 1906-1910, in spite of the existing disadvantageous conditions:

	Tons	Value equalled
1906	34,960	$70,946,000
1907	36,490	72,501,429
1908	38,206	62,785,631
1909	39,027	100,646,651
1910	40,000	125,657,286

DECREES OF JANUARY 5 AND APRIL 17, 1912.

Closely following upon the passing of the government measure by the Brazilian parliament, before the end of the season of 1911, it received the presidential approval by a decree of January 5, 1912. A subsequent decree of April 17, 1912, elaborated its provisions; both statutes now forming part of the Brazilian Federal Code.

The original measure contained 15 articles, while the supplementary decree, which omitted certain formal sections and transposed others, only contained 13.

The former, however, only occupies 6 pages of printed text, while the latter covers about 30 pages, being much more detailed in its provisions. It will therefore be necessary to consider the two measures together.

Of the fifteen articles in the first decree, four were merely formal, while five were indirectly for the advantage of the rubber industry, leaving six articles intended to directly benefit that branch of national commerce.

Those of indirect advantage were the regulations providing for the erection of three hospitals, the construction of new railroads, free admission of products intended to promote river navigation, establishment of coal depots, and measures tending to reduce the cost of provisions. These measures were dealt with in detail by THE INDIA RUBBER WORLD June 1, 1912, page 427.

Six articles were intended to directly benefit the rubber industry. They were:

Exemption from import duties of appliances for rubber production.

Premiums for new plantations.

Establishment of experimental stations.

Prizes for the establishment of rubber refining plants and rubber goods factories.

Holding of triennial expositions.

Reduction in export duties on rubber.

EXEMPTIONS FROM IMPORT DUTIES OF MATERIALS AND APPLIANCES FOR RUBBER CULTIVATION AND MANUFACTURE.

By the earlier decree free admission was granted to all utensils and materials for the culture of *Hevea, Caucho, Maniçoba* and *Mangabeira* trees, as well as for the collection and preparation of rubber extracted from them. The later decree restricts this free admission to a long list of articles, and includes regulations as to the certificates required of the status of the applicants for such free entry.

In the April decree the provisions of free entry are amplified as follows: "Materials and machinery which shall be discovered or invented during the time this regulation is in force, which have special application to the rubber industry, shall enjoy the same exemption from import duties."

The materials specified for free entry are classified into 4 groups; the fourth one being subdivided into 8 sections. The entire list includes about 400 articles. Its divisions are:

Group 1—Implements and Utensils for the Rubber Gatherer.

Group 2—Implements and materials for Cultivation.

Group 3—Materials and Utensils intended for the culture of trees and treatment of rubber, including building materials.

Group 4—Chemical substances: 1, Coagulants; 2, Dissolvents; 3, Deodorizers and Disinfectants; 4, Coloring materials; 5, Hydrocarburets, heavy bodies and oils; 6, Resin, resinous gums and lacs; 7, Vulcanizing agents; 8, Fibers and Cloth; 9, Insulating materials, and 10, divers materials.

PREMIUMS FOR PLANTING AND REPLANTING.

The scale of premiums to be granted for the planting or replanting of (1) *Hevea*, (2) *Caucho* or *Maniçoba*, and (3) *Mangabeira*, was given in detail in The India Rubber World of June 1, 1912, page 427. For the three broad divisions as indicated, new plantations in groups of 12 hectares (about 30 acres) were to receive awards respectively of: (1) 2,500 milreis ($833); (2) 1,500 milreis ($500) and (3) 900 milreis ($300). Replanting for groups of 25 hectares (about 62½ acres), would entitle the planters respectively to 2,000, 1,000 and 720 milreis ($667, $333 and $240). Under certain circumstances the premiums for *Hevea* rubber may be increased five per cent.

Planters have to submit to the Minister of Agriculture plans of the property it is proposed to cultivate; with details of the nature of the soil and the production for the previous three years, where the property is already under development. The smallest number of trees for new cultures will be 250 per hectare (100 per acre) for *Hevea* and *Caucho*, and 400 per hectare (160 per acre) for *Maniçoba* and *Mangabeira*. In replanting, the distance between the trees should, when possible, be for the former group 20 to 21 feet and for the latter 16½ feet. The premiums will be paid during the year preceding the first crop of rubber, but none will be paid where the trees have been inefficiently treated.

ESTABLISHMENT OF EXPERIMENTAL STATIONS.

The government will establish experimental stations for the study of all the factors in the culture of the rubber produced in the respective regions. For *Hevea* these stations will be at convenient points in the Territory of Acre and the States of Matto Grosso, Amazonas Pará, Maranhão, Piauhy and Bahia; while those for *Maniçoba* jointly with *Mangabeira* will be in the States of Piauhy, Ceara, Pernambuco, Bahia, Minas Geraes, São Paulo, Goyaz, Parana and Matto Grosso. Planters will be furnished with precise data as to methods and processes for rubber production. The total area of each station will be from 80 to 100 hectares (200 to 250 acres); while each each one will include laboratories and museums. Annual bulletins will be issued of the work accomplished.

The position of director is to be held by a specialist in any one of the technical sections, while the technical positions may be filled by native or foreign professors of recognized ability.

WASHING AND REFINING OF RUBBER.

While it is hoped by means of the various facilities accorded in respect to rubber cultivation to place Brazilian rubber in a better position to compete in the world's markets, the proposals likewise include provisions for encouraging the washing and refining of crude rubber and for the manufacture of rubber goods. Although both subjects are treated in article 4 of the Act of January 5, 1912, and in article 23 of the decree of April 17, 1912, it will probably be simpler to consider them separately.

The premiums offered in respect to rubber refining are:

(1) 400,000 milreis ($133,000) to the first plant established in each of the cities of Belem (Pará) and Manaos, for refining *Hevea* rubber, which reduces the different qualities to a uniform and superior export type.

(2) 100,000 milreis ($33,000) to the first refining plant for *Maniçoba* and *Mangabeira* rubber in each of the States of Piauhy, Ceará, Rio Grande do Norte, Pernambuco, Bahia, Minas Geraes and São Paulo.

In order to have a right to the benefits of this article, the factory must have capital actually employed equal to four times the value of the premium.

Under article 23 of the later decree, there is an exemption from import duties and fees for all materials, machines, utensils and tools necessary for the construction and complete installation of the factory, as well as for all chemical substances, fabrics and various materials, combustibles and lubricants necessary for the operation and maintenance of the factory during a term of 25 years.

Article 24 provides for the formalities of application to the Minister of Agriculture by any one intending to claim these premiums.

The details asked for as to the proposed manufacture illustrate its prospective scope: "A descriptive memorandum in which the capacity of production of the factory is declared, the principal articles intended to be manufactured, the lowest price for which it is proposed to wash and refine rubber, which should be reduced, for each quality, to one superior type for exportation; in general giving the government all the information that will help it to form a correct opinion as to the nature and importance of the projected establishment."

PREMIUMS FOR MANUFACTURE OF RUBBER GOODS.

While the general provisions of the two decrees regarding the washing and refining of rubber equally apply to the manufacture of rubber goods (included in the same article), there are various points specially referring to the latter.

A premium up to 500,000 milreis ($166,000) is given to the first factory of rubber articles which shall be established in Manãos, Belem (Pará), Recife (Pernambuco), Bahia and Rio de Janeiro.

The provision for exemption from import duties on materials and supplies, as shown in the section applying to rubber washing, is evidently also intended to apply to the manufacture of rubber goods. Among provisions apparently referring specially to the latter is the right of appropriating lands required for the development of the factory, and the following clause defining the preference to be received from the government in its purchases: "A preference shown by the government in the purchase of the products used in the service of the army and navy, and the federal public departments, which shall be manufactured by the factories, when they can compete in quality with similar foreign articles—the contract for furnishing of same, arranging every three years with each factory, for those of their products which

were classified in the first place in the triennial expositions at Rio."

Any organization contemplating the erection of one or more of these factories will have to submit to the Minister of Agriculture an application with a general and detailed plan of the factories, an estimate of expenses of first establishment and a descriptive memorandum of the nature and importance of the projected establishment. The company would have to agree in the contract made with the Minister of Agriculture to the clause of reversion at the end of the combined term.

The provision that the capital invested must equal four times the value of the premium evidently applies to both rubber washing and manufacturing factories.

REDUCTION OF EXPORT DUTY ON RUBBER.

Article 12 of the January Act contains the following authority for the Federal Government to make arrangements with certain States and the Territory of Acre for the reduction of export duty upon wild rubber and the exemption of cultivated rubber from that burden:

"The executive power is authorized to enter into an agreement with the States of Pará, Amazonas and Matto Grosso, for the purpose of obtaining an annual reduction of 10 per cent. until the maximum limit of 50 per cent. of the actual value of the export duties placed by the States upon the *seringa* rubber produced in their territories, and the exemption from any export duty, for the space of 25 years, to begin from the date of this law, upon rubber of the same quality and derivation which may be gathered from cultivated plantations.

"At the time the agreement is effected, the executive power shall issue a decree making such reduction which the States may make in the export duty collected on the rubber of the Federal Territory of Acre and conceding an equal exemption upon cultivated rubber."

Export duties being a State prerogative, it was necessary to authorize special negotiations between the Federal Government and the authorities of the several States interested, with a view to the proposed reduction and abolition of export duties.

HOW TO ATTRACT RUBBER GATHERERS.

In discussing the rubber question in the "Boletim" of the Rio Ministry of Agriculture, Dr. Affonso Costa, of that department, has commended the remedial measures lately adopted. He added that the large numbers of rubber gatherers in the immense valleys of the Amazon are nomads and adventurers, who never settle down nor become attached to the soil. To attach them to their work it should be remunerative. The government of the republic will, he remarks, help by establishing centers for the production of alimentary substances throughout the Amazon valley.

PROPOSALS FOR ERECTION OF RUBBER WASHING PLANTS.

Following up the decrees of January 5 and April 17, 1912, which promulgated and explained the measure passed by the Brazilian legislature in the previous December, an announcement was issued by the Federal Government on August 29 last that tenders would be received on December 30 from all persons who may propose to establish any of the factories for the manufacture of rubber goods and for refining rubber, which were referred to in the act already quoted.

The act, it will be recalled, provided for three premiums: $133,000 for the first refining plant for *Hevea* rubber to be established in Pará and Manaos and $33,300 for the first refining plant for *Maniçoba* and *Mangabeira* rubber in certain other States, while a premium equaling $166,000 was allotted to the first factory for the manufacture of rubber goods at certain points.

In the "Diario Official" of February 9 the four following proposals (which had been opened January 31), were reproduced:

1. Goodyear Tire and Rubber Co. of South America; refining plants at Manáos and Pará.

2. G. Chauffour (representing French interests); refining plant at Pará.

3. Luiz Cantanhede de Carvalho Almeida and Arthur Haas; washing and refining plant for *Maniçoba* and *Mangabeira* rubber, on the bank of the river S. Francisco, near the city of Pirapóra, in the State of Minas Geraes.

4. J. D. Leite de Castro; refining plant for *Maniçoba* and *Mangabeira* rubbers in the State of Minas Geraes.

Special interest attaches to the first of these proposals, it being the only American one, and having been submitted by Mr. J. C. McFadgean, a director of the company who visited Rio for that purpose. He had brought with him credentials, establishing his technical and financial capacity, and had further deposited in the National Treasury government bonds to the value of more than $3,000.

MANAOS AND PARA PLANTS.

The Goodyear proposal closely followed the lines of the government instructions as to details of the proposed works and their prospects of success. It included the erection of two plants at Manáos and Pará, to cost, respectively, $584,503 and $834,937, with an estimated production of 40 and 100 tons per day. The prospective economy of the larger plant is thus demonstrated, and is shown in detail by the subjoined tables A and B, while table C illustrates the proposed mechanical equipment of the two plants.

MANAOS.

Building No. 1 (two floors), 237 x 119 feet, with two wings:
First floor to contain scales, cutting machines, tanks, washing and purifying machines.
Second floor to contain cutting and weighing rooms and five compressors, packing room and analytical laboratory.

Building No. 2 (one floor), 100 x 60 feet, to contain two tubular boilers furnishing steam to building No. 1, as well as small repair shop.

A workmen's village to be provided.

PARA.

Building No. 1 (two floors), 237 x 237 feet, with 4 wings:
First floor to contain scales, cutting machines, tanks, washing and purifying machines.
Second floor to contain cutting and weighing rooms and ten compressors, packing room and analytical laboratory.

Building No. 2 (one floor), 100 x 60 feet, to contain two tubular boilers furnishing steam to building No. 1, as well as small repair shop.

A workmen's village to be provided.

GENERAL FEATURES OF CONSTRUCTION.

The application of the Goodyear company states that the buildings will be constructed of iron combined with cement or brick and cement masonry. Windows and doors are to be of iron. The first floor is to be cemented and the second floor executed in cement with a covering of tiles. Electric light would be used internally and externally. Drains would be provided, as well as a supply of water for drinking purposes and industrial uses.

GENERAL NATURE OF OPERATIONS.

According to the terms of the application, the operations of the company would include the receipt of rubber to be weighed on arrival and after treatment. Each customer's rubber would be treated separately, official inspection being allowed of the refined product, which would be packed in cases of the standard capacity of 220 pounds. The charges would be 3 cents per pound of crude rubber entering the works, with a further charge of three-quarters of a cent per pound of dry rubber after treatment.

PROSPECTS OF THE REFINING INDUSTRY.

In the explanatory portion of the application, the need of full and continuous occupation is urged, as necessary for the profitable operation of the works. To attain this result the whole or a great part of the rubber produced in Brazil would have to pass through the refining works.

The principal value of the plants would be in the establishment of standards, in accordance with which the products would be stamped and classified. Such arrangements, it is urged, would constitute a guarantee, alike for producer and dealer, and would go far to meet the complaints of irregularity brought against Brazilian rubber in foreign markets. The *crux* of the situation is met by the suggestion that the prosperity of the refining plants would be secured by the rubber-producing States imposing higher export duties on rubber lacking in purity than on rubber washed and cleaned. Without such regulations, it is added, refining plants could not make their way, especially in view of the taxes they would have to pay.

Such are the principal features of the proposal of the Goodyear company, which has undertaken, in the event of same being accepted, to begin construction of the plants within six months from the date of contract and to have them in operation within eighteen months.

(A)—ESTIMATE FOR MANAOS PLANT.

The cost of all the buildings and installations (daily production 40 tons) will be as follows:

	Brazilian.	American.
Building No. 1, with 2,610 square meters (about 28,083 square feet) in two floors.	696,000$000	$232,000
Building No. 2, with 554 square meters (about 5,961 square feet) in one floor..	83,100$000	27,700
Worker's village	180,000$000	60,000
Machines and installation of power and steam plant	80,000$000	26,666
Refining machinery and installation properly so called	520,000$000	173,333
Repair shop and case factory	35,000$000	11,666
Contingencies 10 per cent	159,410$000	53,138
Total	1,753,510$000	$584,503

(B)—ESTIMATE FOR BELEM (PARA) PLANT.

The cost of all the buildings and installations (daily production 100 tons) will be as follows:

	Brazilian.	American.
Building No. 1, with 5,220 square meters (about 56,160 square feet) in two floors.	1,044,000$000	$348,000
Building No. 2, with 554 square meters (about 5,961 square feet) in one floor..	83,100$000	27,700
Workmen's village	250,000$000	83,333
Machines and installation of power and steam plant	90,000$000	30,000
Refining machinery and installation properly so called	775,000$000	258,333
Repair shop and case factory	35,000$000	11,666
Contingencies 10 per cent	227,710$000	75,905
Total	2,504,810$000	$834,937

(C)—PROPOSED INSTALLATIONS OF MACHINERY.

	Manáos. (Production 40 tons daily)	Pará. (Production 100 tons daily)
Building No. 1 (first floor).		
Scales	2	2
Machines for cutting bails of rubber	4	10
Tanks for softening rubber	4	10
Washing machines	4	10
Purifying machines	12	30
Second floor.		
Compressors	5	10

BRAZILIAN COMMENTS ON THE GOODYEAR COMPANY'S PROPOSAL.

It is natural, of course, that more or less local opposition should be expected against the entrance of a big American company into the rubber industry of Brazil. Obviously some such opposition is felt, as can be seen from sundry comments in Brazilian papers. Commenting on the proposal of the Goodyear company, for the establishment of rubber refining plants, a correspondent of the "Jornal do Commercio of Rio" specially opposes the suggestion for the rubber producing States to place higher export duties on rubber which had not been cleaned. Such an arrangement, it is urged, would give the Goodyear company a monopoly. Objection is also made to the words "of South America" being used in the title.

In dealing editorially with the subject, the journal questions the assertion that the Manáos plant with the equipment shown could treat 40 tons a day, or the Pará plant 100 tons, placing the output at a much smaller quantity.

A comparison is drawn between the figures of the French proposal and that of the Goodyear company, by which it is shown that the latter claims to be able to turn out 100 tons a day with two boilers, while the former only indicates 27 tons as the prospective daily output with six boilers. It is also questioned at what point a complete washing of the rubber may be considered as having been effected.

By the repeated mention of the three other competing proposals it would seem that these utterances of the journal in question are not unprejudiced, and that they represent the anti-reform sentiments which exist in various forms in Brazil.

AWARDS MADE FOR WASHING PLANTS.

Late advices, received just as this publication goes to press, state that the government awards for washing and refining plants had been made as follows:

For the Manáos plant, to the Goodyear Tire and Rubber Co. of South America.

For the Pará plant, to Gabriel Chouffour, of Paris.

For the Minas Geraes plant, to L. Cantanhede and Arthur Haas.

MR. HAZLETT BACK FROM SOUTH AMERICA.

Those who attended the International Rubber Exposition, held in the Grand Central Palace last fall, will remember the fine South American views and interesting lectures given by Mr. Dillwynn M. Hazlett, who has made a study of the South American situation—particularly in reference to its rubber industry. He sailed again for that country in December to acquaint himself with the scope of the exposition to be held later in Rio de Janeiro, and has recently returned. He delivered some illustrated travel lectures on the returning steamer, which were so much appreciated by his fellow passengers that they presented him with a silver desk clock combined with a perpetual calendar.

Mr. Hazlett is most optimistic in regard to the opening in South American markets for goods made in the United States. He expects to return to that country in June, and will represent a number of important American manufacturers at the International Exposition to be held in Rio next September. Where manufacturers do not feel like going to the expense of shipping heavy exhibits they can tell their story very effectively to those who attend that exposition through Mr. Hazlett's system of moving pictures, accompanied by explanatory remarks. Everybody enjoys a moving-picture show, and it really affords an effective and inexpensive way of telling one's story to an audience in a foreign country.

A Big American Rubber Factory for Rio de Janeiro.

THE BRAZILIAN GOVERNMENT ACCEPTS THE TENDER OF THE GOODYEAR TIRE AND RUBBER CO.

THE great awakening that has taken place in the rubber interests of Brazil during the last two years has been exceedingly significant in itself, but it has of late become more interesting because of the important part that an American manufacturing company promises to play in it.

The leading men of Brazil began two years ago to discuss seriously the steps that it would be necessary to take if Brazil was to keep its old commanding position in the rubber producing world. This discussion finally resulted in the act of the Brazilian Congress of January 5, 1912, which was further elaborated by the decree of April 17, 1912. This act and this decree have been described in considerable detail in the pages of THE INDIA RUBBER WORLD—especially in the issues of March and June of last year. It was the purpose of this legislation to encourage—by the offer of generous inducements—domestic and foreign capital to embark in the various forms of the rubber industry already established in Brazil, and also to enter upon new phases not hitherto attempted in that country, but which in the opinion of the legislators could be inaugurated with great benefit to the state.

Among the inducements for the entrance of new capital into the rubber field were certain large prizes offered for the first important washing and refining plants opened at sundry Brazilian points. Among those who have entered this competition and tendered bids to erect such refining plants is the Goodyear Tire & Rubber Co. of South America, a child of the Goodyear Tire & Rubber Co., of Akron, Ohio. The inducements offered by the Brazilian Government for the building of refining plants and the tender made by the Goodyear company, to erect two such plants—one at Pará and one at Manaos—are given in detail in another article which will be found on page 345 of this issue. But the Goodyear company was not content to enter the Brazilian field with a plant for washing and refining, but also made a tender under that paragraph of the decree of April 17, which offered a premium amounting to about $166,000 to the company that should first erect a plant in Brazil, in one of several points mentioned, for the manufacture of rubber goods, under the detailed specifications cited in that decree.

The bid of the Goodyear Tire and Rubber Co., which will be found quite fully described a little farther on, covered the erection of a factory at Rio de Janeiro, and a cable recently received from the American Consul at Pará states that this offer has been accepted by the committee appointed by the government to pass upon the bids submitted; and unless some untoward event arises to change the present plans, it is highly probable that within a year's time, a large rubber manufacturing plant—the first one on the South American Continent—will be in operation in the chief city of Brazil, owned and operated by an American manufacturer.

This entrance into the foreign field by the Goodyear Tire and Rubber Co. was not the result of any sudden impulse; its directors evidently have had such an ambition for some time. Two years ago or more they had practically completed arrangements with President Diaz of Mexico for the erection of a rubber goods factory in that Republic, under conditions that would have been exceedingly favorable to the company. But the revolutionary disturbances that came soon after, accompanied by the flight of Diaz and the ascendency of the unfortunate Madero, brought all these plans to naught. The company then sent Mr. J. C. MacFadgean to South America to look over the situation there. He made a careful investigation, first of Buenos Aires and then of Rio de Janeiro, the latter place appearing to him to offer the best advantages as a site for such a factory. He returned to Akron and made his report and then went back to Rio with Mr. Litchfield, the factory superintendent, and together they went still more thoroughly over the ground. They were satisfied that it was an exceedingly promising field, and they located a site where there was abundance of water. Then in order properly to prosecute the enterprise the Goodyear Tire and Rubber Co. of South America was incorporated under the laws of the State of Maine, in Augusta, Maine, on October 14, 1912. The certificate of incorporation states that "The purposes of said incorporation are to engage in, carry on and license others to carry on the business of manufacturing articles from rubber and other materials; to lease, purchase, or otherwise acquire, and to hold lands for the cultivation, collection and refining of crude rubber; and to do all things incidental thereto." Further amplification of the purposes of the company, as given in the certificate, permits it to engage in practically any sort of undertaking (except banking and insurance) anywhere in the world where not contrary to the laws of the community in which the enterprise is to be undertaken. Specifically it is the intention of the company to manufacture tires, mechanical rubber goods, insulated wire and druggists' sundries. With this charter and armed with credentials not only from the State of Ohio, but from the authorities of Washington, Mr. MacFadgean returned to Rio de Janeiro and got into communication with the government. Hearing what was under way a number of Rio de Janeiro people went to England and interested capitalists there in the same enterprise. However, either they were not sufficiently familiar with the conditions or did not put their proposals in proper shape, for they were not successful. The bids were submitted to the Defesa da Borracha, a commission of which Raymundo P. da Silva is the head, and after several adjournments the bids were opened and read at a public hearing and published in the "Diario Official." Then a committee of five, consisting of four prominent professional men in Rio, and J. Simeo de Costa, whose knowledge of rubber is recognized, was appointed to pass upon them, and the bid made by the Goodyear company was the one accepted.

The Goodyear people plan to have their factory in operation inside of a year. They intend to take the foremen of the departments from Akron, and they purpose also to send a number of young Brazilians to the great Ohio rubber centre to learn the rubber business. One interesting feature of the enterprise will be the erection of several hundred cottages for the employees. In addition to giving them suitable shelter, the company proposes to furnish them with a substantial and wholesome mid-day meal. The specifications of the tender made by the Goodyear company and accepted by the Brazilian Government are as follows.

THE PROPOSED GOODYEAR MANUFACTURING PLANT AT RIO.

The Rio "Diario Official" of February 13, following up the proposals of the Goodyear Tire & Rubber Co., published February 9 (reproduced on page 346 of this number) for washing and refining plants at Manáos and Pará, published the text of that company's estimate for a manufacturing plant at Rio. While in various points it is based on the same fundamental principles as the washing plants, it is of a much more extensive character, as may be seen by a comparison of the various estimates, that for the manufacturing plant being subjoined.

Briefly summarizing its main features, it will cover a space exceeding 150,000 square feet and will have 10 buildings, each with three floors, in which will be conducted the operations connected with practically all branches of the rubber manufacturing

industry. As the company owns lands of the area of about 800,000 square feet, it will have ample room for further extension.

It is contemplated to distribute the prospective large product of the company, not only in Brazil but throughout South America and the East. The last named form of distribution is evidently based on using the Panama Canal. In view of expected requirements the Goodyear Tire & Rubber Co. of South America, proposes to employ a capital of $3,000,000 in the enterprise, which capital would be increased as necessary. The supply of water for drinking purposes, as well as for industrial uses, is said to be abundant.

Importance is attached to the contemplated attraction to Rio de Janeiro of an influential group of experts in all branches of rubber manufacture. Among the articles it is proposed to manufacture besides those named in the estimate are: Combinations of rubber and asbestos; waterproof fabrics, and industrial preparations of rubber.

In the application, stress is laid upon the necessity of maintaining the principles of fiscal protection, without which no premiums and no amount of government support would be efficacious. Such are in brief the main features of the proposal of the Goodyear company for the erection of a rubber goods factory at Rio, with which it is hoped to gain the premium equal to about $166,000 as provided by the law.

ESTIMATE OF THE COST OF A RUBBER MANUFACTURING PLANT AT RIO, AS SHOWN IN THE PROPOSAL OF THE GOODYEAR TIRE AND RUBBER CO. OF SOUTH AMERICA.

	Brazilian.	American.
Acquisition of ground	400:000$000	$133,300
Construction of ten buildings covering an area of 14,253 square meters (152,507 sq. ft.) in three floors	2,069:020$000	689,673
Workingmen's village	550:000$000	183,300
Electric plant for 750 h. p.	180:000$000	60,000
Machinery and installation for washing and refining	60:000$000	20,000
Section of maceration and calenders: Machinery and installation	180:000$000	60,000
Section of pneumatic tires, etc.: Machinery and installation	90:000$000	30,000
Vulcanizing section: Machinery and installation	155:000$000	51,666
Section of electric wires and cables: Machinery and installation	360:000$000	120,000
Section of hose and rubber tubing: Machinery and installation	90:000$000	30,000
Section of shoes and accessories: Machinery and installation	80:000$000	26,666
Section for belting, etc.: Machinery and installation	70:000$000	23,333
Section for toys and stationery articles: Machinery and installation	40:000$000	13,333
Sections for air goods, etc	20:000$000	6,666
Section for surgical and pharmaceutical goods: Machinery and installation	25:000$000	8,333
Small sections: Machinery and installation	35:000$000	11,666
Repair shops	60:000$000	20,000
Electric lighting, water and fire service	250:000$000	83,333
Tramways, railways and switches	80:000$000	26,666
	4,794:020$000	$1,597,935
Contingencies 10 per cent.	479:402$000	159,869
Totals	5,273:422$000	$1,757,804

One interesting phase of the particular paragraph of the Brazilian act which has to do with the encouragement of the building of a rubber factory is the list of manufacturing ingredients that are to be admitted free. This list was made up from "Crude Rubber and Compounding Ingredients" written by the editor of The India Rubber World; but unfortunately the list was compiled by some one evidently not familiar with rubber compounding, and consequently contains some irrelevant items and omits some of material importance. For instance, whiting and litharge are omitted—the two most important compounding ingredients, while certain other articles are mentioned which are not to be found in any market. Kamptulicon appears on the list, which in reality is nothing more or less than linoleum. Okonite is also on the list, which would appear to enable the Okonite Co. to send in their insulated wire free.

The advantage of a rubber goods factory in Brazil, over all competitors outside, in securing the South American trade, is very obvious, as, in the first place, crude rubber exported from Brazil pays a duty of 20 per cent., and in the second place, manufactured rubber goods imported into Brazil, and the neighboring countries, pay exceptionally heavy duties, and it is reported that a law will be passed by the Brazilian Legislature to advance the import duties where necessary so as to give the Goodyear company a practical monopoly. And it is said to be the intention of the Goodyear company to seek not only Brazilian trade, but the entire trade of South America, including Argentine, Paraguay, Uruguay, Chile, Peru and the other republics.

The present consumption of rubber goods in South America is not so very large, although it affords a very substantial market on which to begin operations; but the possible South American market which can be secured by an enterprising manufacturer making just the goods that the market demands, is an extensive one. The total imports of manufactured rubber goods into South America for the year 1912 from the United States amounted to $600,000, divided about as follows: Packing and belting, $188,000; footwear, $81,000; auto tires, $46,000; other tires, $50,000; all other rubber goods, $235,000.

The last complete statistics of the imports of manufactured rubber goods into South American republics from all sources cover the year 1909, when the imports from America amounted to only one-tenth of the entire rubber goods imports. Presumably about the same relation exists today, which would indicate that the entire consumption in South America of imported rubber goods is something like $16,000,000 a year. It would appear on the surface as if the new factory at Rio de Janeiro ought to get a very large part of this trade, and under the advantages of crude rubber and other ingredients free from duty as against competitors, all of whom have to pay Brazil's export duty on the crude rubber, and high import duties on the manufactured article, it ought to be able to market its products at a price that would greatly and rapidly increase the demand for its goods.

The proposal of the Goodyear company includes an agreement to commence manufacturing within the term of 12 months from the signing of contract, as well as a clause for reversion to the government in 90 years.

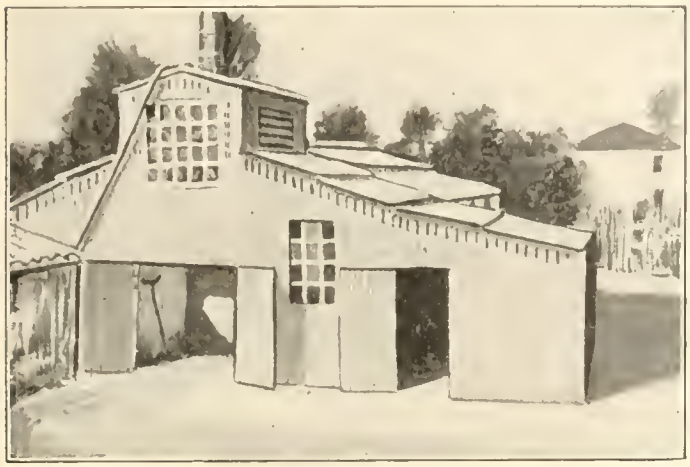
Late advices, received just as this publication is going to press, state that the Brazilian Government, in addition to granting the Goodyear Tire and Rubber Co. of South America an award for a rubber factory at Rio, has given an award for a rubber factory at Pernambuco to the Companhia Norte Brazil; which would seem to indicate that while the Rio factory will enjoy advantages as against outside competitors that will be practically prohibitive, it is not to have an absolute monopoly of rubber manufacture in South America. Possibly there is to be a division of the field, each factory confining itself to certain lines of manufacture. Advices received up to the present time give no information regarding this point.

INVESTIGATION INTO TAPPING METHODS.

The Agricultural Department of the Federated Malay States is carrying out some interesting experiments in regard to tapping methods, with a view to ascertaining the effect upon yield of the number of cuts per tree. Figures will be shortly available.

Rubber Washing in Bahia.

IN September, of the year 1910, the Jequié Rubber Syndicate, Limited, erected a custom washing plant at 59 Avenida Luis Tarquinho, Bahia. This was the first plant designed for general rubber washing to be established in Brazil. The buildings were erected and the machinery set by Mr. George A. MacNab, a



First Rubber Washing Plant in Brazil—Jequie Rubber Syndicate, Limited, Bahia.

competent rubber machinery expert, for some time in the employ of David Bridge & Co., of Manchester, England. The washing machinery consisted of 2 Dessau washers producing irregularly shaped chunks weighing from ¼ to ½ pound each—the product being called "Rock" rubber—and 3 roller washing and creping machines, built by David Bridge & Co. The capacity of the plant was 1½ tons per day. The charge per cleaning the rubber was from 300 to 400 reis per kilo (from 4½ to 6 cents per pound), according to the dirtiness of the rubber.

According to the law passed in April, 1912, a premium of 100:000$. (about $30,000) was to be paid for the first factory

Washing Plant of the Lafayette Rubber Estates, Limited, Machado Portella, Bahia.

established in Bahia for the washing of Manicoba and Mangabeira rubber. The Jequié Rubber Syndicate, Ltd., applied for this premium, but it was claimed that they had not complied with certain provisions of the act, and they were never able to collect it.

There is still another washing factory in Bahia, a small one owned by S. Hess & Co., which is now in operation. Still a third one is now being erected by the Villa Nova Estates and Trading Co., of London and Bahia, and associated with the Companhia Nacional de Artefactos da Borracha. Local directors are Sr. José Gama da Costa Santos and Theodore Oedekoven, Esq. The plant consists of a 70 h. p. engine and a Cochran Vertical Tubular boiler; one Werner & Pfleiderer Universal Roller Washer for producing "Rock" rubber; four David Bridge & Co.'s Roller Washers for sheet and crepe rubber; pumps, tanks and water heating apparatus; and also a separate cement-lined well set in the floor to collect the impurities, in order to obtain accurate data as to the quantity and character from each washing.

The plant is to have the capacity of 2,000 kilos (4,400 pounds) per day, and like the Jequié Rubber Syndicate's plant, is being erected by Mr. Geo. A. MacNab.

There are also several washing plants connected with the larger plantations; for instance, that of the Lafayette Rubber Estates, Limited, located at Machado Portella. Illustrations of the exterior and interior of this plant are here shown.

Interior View of the Washing Plant—Lafayette Rubber Estates, Limited, Machado Portella, Bahia.

It is interesting to note that the washing of the rubber in such tropical places as Bahia has developed difficulties that do not appear in the temperate zone, and many batches have been injured rather than helped by the washing. Some of the "Rock," for example, softens and breaks down before it reaches Europe or America. The Manihot is the easiest to wash, and the Mangabeira the most difficult. The latter, if badly coagulated, seems to decompose more easily after washing than before. Some of the Maniçoba also is so dirty that it costs 600 reis per kilo, or about 9 cents per pound, to wash. Air drying is accomplished in all the plants in Bahia by hanging the rubber on poles, in dark, well-ventilated lofts. Ten to twelve days are required to complete the drying process; when the rubber is ready to be boxed and shipped.

RUBBER IN THE HAWAIIAN ISLANDS.

The report of the manager, W. A. Anderson, at the annual meeting of the Nahiku Rubber Co. and the Hawaiian-American Rubber Co., gives assurance that the rubber industry will become established on a profitable footing in Hawaii. A total yield of 10,000 pounds is expected this year.

Farming By Dynamite.

By Harold Hamel Smith, Editor of "Tropical Life."

[A PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912.]

WHILE I have long suspected the possibilities of explosives in connection with agriculture, especially in the tropics, it has been only during the last twelve months that I have been able to satisfactorily demonstrate how very useful dynamite, and the other "ites" can prove, when used with discretion and by trained natives or Europeans. By their use both time and money can be saved, and better work done, both as regards the soil and the crops.

As regards the handling of these high explosives by natives, I would consider that any race or tribe which is intelligent enough to be trained to tap rubber trees, or extract pulqué from the maguey plant, as is done under the direction of white supervisors,

HAROLD HAMEL SMITH.

could be trained to handle these explosives, drill the holes, and pack in the cartridges under the same class of white directors, as with the rubber tapping.

I did intend to devote my paper to "Rubber Seed Oil," a subject to which I have given a considerable amount of attention of late, but have chosen the question of "Farming by Dynamite" instead, as it is more widespread and international in character, and is of special interest to an Anglo-American Tropical Congress. On account of the now widespread use of explosives on cultivations, I would first state that if I do not include the names of the leading centers which have lately been using or experimenting with them for breaking up soils (some of the farmers in the western states of America have, I understand, regularly blasted their ground for twenty or thirty years past, and obtained bumper crops thereby), nor mention the names of all the leading journals that have been good enough to open their columns to discuss the matter, it is not for want of appreciation on my part, of the important share that they have taken in helping us to become "at home" with the use and handling of explosives, but for lack of space and time at my disposal and yours. I must, on the contrary, be far more brief than pleases me, for this is a subject which, the more it is discussed, the more one can realize what can be done with dynamite, and hence the more one would like to say on its use.

Dynamite or other explosives—and for the sake of brevity let me say "right here," that every time I use the word dynamite, I mean to infer "or other explosive if more suitable"—can be used with advantage in agricultural industries for the following reasons:

1. To break up hard or virgin soil to facilitate ploughing; and especially to break up the under-crust, when present, which no plough could penetrate, at any rate no plough used by the average farmer or planter.

2. To blast out for removal, boulders, or rocks, and especially tree stumps, whereby not only is the risk of root disease removed, but, what is of great importance, the ground is left in a state to be easily and properly ploughed; which otherwise would be impossible in a satisfactory manner, if the stumps or rocks are left *in situ*.

3. For clearing the soil of pests, destroying ants' nests, or rabbit warrens, etc., etc., as well as for regenerating and aerating hard or worn-out soils generally—as the sugar-lands on some of the West Indian estates which are not ploughed, but only hoed; i. e., the surface only scratched over, but the hard pan sub-soil is left year after year, and so becomes water-logged and airless; hence dangerous.

4. For throwing up the soil for drains, especially deep gullies, and facilitating its removal by ploughs or hand.

5. For making holes for tree planting, and at the same time loosening the soil, which is a great advantage; also for fence-post holes, or for setting uprights for buildings, etc., in position.

6. For well-boring, or well-torpedoing—i. e., for increasing the flow from an artesian well by exploding a charge at the bottom of a well, to widen the aperture, and break up the ground, to let further supplies of water (or oil, if an oil-well) come through.

As time goes on, many other uses on the estates will no doubt be found, but as I do not pretend to have an exhaustive knowledge on the subject, I think I have said enough. Of course, I do not pretend to touch on the use of explosives for mining, since I speak only from the agriculturist's point of view; nor even of their utility for removing large masses of rock or soil for making estate roads, as the latter, although not uncommon, is too big and dangerous a task for the average planter, and should not be carried out without consulting an expert, one of whom nowadays is to be found at all large centers, especially in the neighborhood of mines.

"It must not be thought that dynamite obviates the necessity of top ploughing," very truly points out the "Queensland Agricultural Journal." "Far from it. The plough must be used just as much as ever. The only difference is, that the dynamite expends its disintegrating force in the sub-soil, which is never touched by the plough, so that one is not merely planting the crops in the same soil year after year," but can, by its use, enable the crops to draw up their nutriment from below. Where clay sub-soils form a water seal, the use of explosives, if correctly applied, breaks up the clay strata and so allows the accumulated and stagnant water to pass through (at the same time the explosion kills myriads of harmful lives), and dissolving the plant foods in the lower, and hitherto inaccessible strata, liberates it in such form that it can be drawn up by capillary attraction, and pass through with the now non-stagnant water to be assimilated by the crops. May I remind you here—as I reminded the readers of my book on "Coco-nuts"—of the need of regular, adequate supplies of water at all times, if you want good crops. Water is necessary, and therefore should constantly be at the disposal of the crops (provided, of course, if not in over supply), to convey

the plant's food in soluble form up to the crown. The quantity of such food assimilated or digested by the plant is roughly proportional to the amount of water which it absorbs—provided, of course, that the food is there to be absorbed; but the food alone is no use; without the water it cannot pass up the trees or plants and nourish them.

"Farming by dynamite," wrote the (London) "World's Work" last April, has gripped the United States and is spreading through Canada and Mexico like a prairie fire. "The farmers who have tried it, swear by it, and are upheld by the leading authorities in agricultural science." I can confirm this from the tropics. Since I first drew attention to the use of high explosives in tropical and sub-tropical agriculture, by reviewing a book (The Book of High Explosives, published by the Nobel Explosives Co., Ltd., of Glasgow), I have received innumerable applications for copies of the book and further information on the subject, right up to the time of writing these notes, which I stopped doing to order a copy to be sent to a cacao planter in Una, State of Bahia, Brazil. The "Queensland Agricultural Journal," already quoted, evidently found the same thing, for the editor writes: "Since the publication of our articles on the value of dynamite as an aid in clearing land, and to subsequent agricultural operations, judging by the numerous letters we have received from farmers and fruit growers seeking further information on the subject, much interest—we might almost say enthusiasm—has been aroused in many parts of the state in connection with the use of dynamite on the land;" while the "Times of Ceylon" quotes the following instance of its use for rubber planting by a Kelani Valley (Ceylon) rubber planter, using only ordinary dynamite cartridges: "First of all he used a quarter of a cartridge, then a half, and then a full one, and kept data of the area of ground disturbed when the quantities of dynamite had been fired. The plough only breaks up the top surface, so that the water mingles and dissolves the plant nutriment to a depth only of a few inches. The sub-soil, however, remains intact, and the roots of the crops have to feed upon what they can obtain from the land broken up by the plough. But breaking the land up by dynamite disturbs it to a depth of several feet, letting in the water which dissolves the essential nutriment, while the roots are able to descend to a greater depth and thus secure their fill of food. Again, the roots are allowed to grow downwards and not laterally; thus they do not encroach on the feeding areas of the adjacent trees, which is the case when there is only a top shallow layer of porous soil.

"The planter in question, we understand, has applied the new method to five acres of land and planted rubber trees therein. It is, of course, too early yet to judge the results in the growth of the plants. If the results are as good as anticipated it is very likely that the method will be widely adopted in Ceylon. The Red Cross dynamite was mentioned in the article which we quoted, but these not being procurable, ordinary dynamite cartridges were used in this case.

"Now that a local planter has started the method here," continued the paper, in its comments on the experiment, "it will not be out of place to quote one section of a recent article on the subject, which is of especial interest to planters: 'Possibly what at first sight appears to be the strangest application of dynamite is for the purpose of planting trees, yet its success in this connection is peculiarly remarkable. When a hole is made with a spade the surrounding soil is left in its hard condition. The result is that the roots find it difficult to start. They are cramped in the tight quarters of the hole and cannot pierce the surrounding hard wall of earth. Under these circumstances growth is appreciably retarded for a considerable time. With dynamite a large clean hole is blasted out and, in addition, the soil on all sides is loosened for five or six feet. When the tree is planted the young and tender roots force their way without effort through the crevices, sucking up nourishment, and commence to grow from the moment they are set, without any retardation whatever.' Those qualified to speak upon the subject are of opinion that this will bring trees forward at least a year sooner than those planted under the old conditions."

"A new profession has arisen of expert dynamite farmers," says "The Wealth of India," when commenting on the article in "The World's Work"; "dynamite is used for planting trees. The spade-made hole leaves the surrounding soil in a hard condition, and the roots find it hard to start. With dynamite a large, clean hole is blasted out, and the soil on all sides is loosened for five or six feet, thus enabling the trees so planted to grow twice as quickly as those set in the usual spade holes."

"We heartily commend the subject of 'Farming by Dynamite' to our readers"—writes the editor of "Grenier's Rubber News," at Kuala Lumpur, right at the heart of the plantation rubber industry in the Far East. "The consensus of opinion, at least among planters of the Federated Malay States, is that clean-clearing, which means the removal of all stumps and timber, is of paramount importance, and we feel sure that a perusal of the methods discussed" (in an article they published) "will convince planters that at last there is material available to accomplish the work expeditiously and economically."

"In South Africa," reports the "Home and Colonial Mail"—well known throughout India and the East—"experiments in ploughing by dynamite are becoming quite popular. It is claimed that operations can be carried out without injuring crops, and demonstrations are now taking place all over the Union with the object of fostering agriculture. The cost per acre is said to work out at between £2 10s. and £5 according to the nature of the soil and trees. Dynamite can be used for ditching, for constructing irrigation furrows, and other farming purposes."

All the leading papers in the rubber producing world, as well as those devoted to planting interests elsewhere, recommend attention to the use of dynamite for estate work. Its use especially appeals to me for out-of-the-way sections, and especially in Latin America, where the transport, even of the lightest make of ploughs, is difficult and costly, often impossible. In centers where the *tsetse* or other pest discourages the use of draught animals, the use of explosives should rapidly increase. Possibly the shocks, if not the actual explosions, might diminish the pests, especially if steps were taken to attract them to the spot by bait, in the shape of food to which they are partial. In locust infested soils, the numbers of these pests, at all stages, even when in flight, could be greatly reduced by organized explosions to greet them with a *feu de joie* whether in the soil as grubs or flying over it. But there is no need to extend the list. You whom I am addressing are far more able than myself to think them out. I would, however, say in conclusion, that planters of cocoanuts, fibres, Ceará rubber, and other crops which can be grown to advantage, when scientifically cultivated, in almost semi-arid districts, will find the use of explosives a great aid as the following letter, written from Kalkudah, in the Eastern Province of Ceylon, to the editor of the "Times of Ceylon" (see their issue of June 20, 1912) tends to prove:

"I read with great interest the articles *re* 'Farming with Dynamite' in the 'Times of Ceylon.' I believe this method will gain popularity in the Eastern Province, as there is a slab of coral from the coast here to one-and-a-half miles inland, or further, and this runs from 2 to 9 ft. below the surface, in some places measuring 18 to 24 in. in thickness. It is not porous, but in some parts is soft and limy. There is water immediately below this slab, but the coco-nut roots cannot get to the water, and the trees are therefore greatly affected by the drought, and large sums of money have to be expended in watering plants. One notices patches of coco-nuts, old enough to give large crops, looking sickly, with not even a blossom on them. This is mainly due to the existence of this slab, which had not been broken through before planting out. Dynamite blasting will do more for these than tons of manure. A hole drilled in between every four plants through this slab and blasted with dynamite

will crack up this slab, and enable the roots to find their way to the water, which is just underneath it.

"Again one finds that, after rain, the water remains in some places for weeks on the surface, affecting all the trees or plants in that area. This, too, would not occur if the slab were broken up, as the water would find its way through the cracks. In some places here, where this slab was broken through before planting out, the plants require very little watering, and the bearing trees are healthy and full of crop even during the severest drought. The method used in these places is to cut down to the slab and break it with pick-axes at a prohibitive cost. If holes could be drilled and dynamite used, the breaking up of the slab will be much greater and the cost less than half. Perhaps the cost of holing with dynamite and planting will be slightly higher, but there will be a great saving in watering, and the chances given to plants to strike root and bring them earlier into bearing will amply repay this. Even in bearing fields where this slab occurs it would be well to have it broken up a little and allow the roots to find their own water.

"It would be interesting to hear of results of a few experiments and also have the views of some of the veteran planters of the Eastern Province on the subject."

In conclusion, I hope to see further reports on the matter, not only over coco-nuts, but in connection with rubber-planting and tropical agriculture generally. Meanwhile there is no doubt that explosives have not only come to stay as a necessary auxiliary to modern agricultural science, but their use will extend on all sides until they occupy a prominent position therein.

A Brief History of Fire Hose Specifications in the United States.

By E. A. Barrier, Factory Mutuals Laboratory.

A PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912.

THIS paper is not presented as a brief in defence of the present Underwriter Hose Specifications, but is intended to relate the more important events which have led to their development.

The statement, still occasionally heard, that fire hose is installed principally for fire insurance inspectors to look at, was evidently the standard used by a large number of manufacturers previous to 1890. The quality of hose, especially that for private equipments in those days was truly remarkable. It was a matter of common occurrence for length after length to burst at pressures well under 100 pounds and if the rubber lining stayed soft and pliable for two years, the purchaser could consider himself lucky. Frequently the backing would fail, allowing the lining to separate from the fabric and occasionally the lining would be ripped out by the water and be washed along with the stream, plugging the nozzle. It is true that in many cases the price of the hose was so low that a good grade could not have been expected, but this does not alter the fact that the situation was a serious one and badly in need of improvement.

Steps in this direction were first undertaken by Mr. John R. Freeman, then connected with the Inspection Department of the Factory Mutual Fire Insurance Companies, and now one of the foremost hydraulic engineers in the country, although still connected with the Mutual Companies in the capacity of president of several of the individual companies. Mr. Freeman had previously, in 1888, conducted a series of experiments on the hydraulics of fire streams, in which he found that the character of the waterway in the hose had a marked effect upon the friction loss or drop in pressure. Thus, with a badly corrugated mill hose, the drop in pressure per 100 feet with 240 gallons flowing per minute in 2½-inch hose, was found to be 25½ pounds, while with the smooth hose, the drop in pressure was only 14 pounds. In other words, if 200 feet of hose were being used in a line, it would require a pressure of about 73 pounds at the hydrant to give a good fire stream with good hose, while with poor hose it would require a pressure of 95 pounds.

In view of the importance of this matter, the question was taken up with a number of the largest hose manufacturers. In the numerous conferences which followed, the discussion spread from friction loss to include cotton fabric, rubber lining, bursting strength, elongation, etc. Practically all agreed that the fire hose situation, especially with respect to private equipment hose, needed improvement, and most of the manufacturers were in favor of specifications. Finally, after a large number of tests had been made and many lots of hose examined in the field, the first set of Underwriter Hose Specifications were agreed upon and published in July, 1896.

It should be mentioned that in these first specifications, it was originally suggested that all reference to the kind of rubber in the lining be omitted, but many of the manufacturers objected, stating that if the kind of rubber was not specified, some unscrupulous manufacturers would take advantage of those who were honest by using an inferior rubber. Accordingly a clause specifying the kind of rubber was inserted, and it was the concensus of opinion that 40 per cent. of pure Pará should be required. This unfortunate wording, which later gave rise to the question as to what was meant by pure Pará, has been the cause of more discussion than any other clause in these specifications. There is ample written evidence, however, to show that at the time the original specifications were written, and for several years after, everyone interested in hose specifications understood that pure Pará meant fine Pará.

The whole idea in this matter of specifications was to obtain a list of manufacturers whose product could be depended upon, and which could be recommended to mills insured in the Factory Mutual Companies. This idea had been and was being developed in many other lines of fire protection appliances at the same time. The plan of procedure used then, and which has not been changed in any important particular, was as follows: Any manufacturer desiring to have his hose placed upon the approved list, had only to make known his desire and send in samples of commercial hose for test. If the samples were found to conform with the specifications, his name was placed upon the approved list without charge for the tests.

In these early days, the words "Factory Inspection" were not used, but it was understood that representatives of the Mutual Companies would be welcome to visit the factories of the hose manufacturers at all times. Although no systematic plan of inspection was carried out, many such visits were made to the factories, and without objection on the part of the manufacturers.

From the time the first specifications were published in 1896, no change was made until 1900, and at that time the changes were of no great importance. In the meantime, the National Fire Protection Association had been formed and the Underwriters' Laboratories established. At this point it may be stated that although the National Fire Protection Association is a national association of those interested in the prevention of fire, in reality, through a large preponderance of members affiliated with stock insurance companies, it is controlled largely by the stock companies.

In 1889 the National Fire Protection Association adopted a set of specifications for hose which were very similar to the Factory Mutual Specifications of 1896, but enough different to cause some confusion among the manufacturers. It became evident at once that where these two organizations covered the

greater part of the field, it was desirable that their specifications should be uniform. With this idea in view, a number of conferences were arranged, and finally a "National Standard" satisfactory to both parties was adopted in May, 1902. Only two important changes from the original specifications were made. One item regarding stretch of the rubber lining to five times its original length, which had appeared in the N. F. P. A. Specifications, was omitted, and another item requiring a test of 200 pounds on each 50-foot length, not originally in the Mutual Specifications, was added. From that time to the present the specifications for underwriter hose for both organizations have been essentially the same, although their ideas regarding the method of enforcement have differed widely.

The intervening years up to 1911 were occupied with the continual testing of samples from the field and from the factories and the gradual accumulation, especially in the later years, of evidence that most of the manufacturers of hose were not turning out a product made in accordance with the specifications. During this time the methods of rubber analysis and testing developed considerably, and the Insurance Laboratories made an effort to keep pace with the progress. In this way the number and character of the analyses and tests made in connection with the examination of hose gradually changed. It should be noted, however, that the chemical and physical tests which were used, were employed merely as laboratory standards with the idea of determining whether or not the specifications had been complied with. Owing to the fact that many points in connection with rubber testing had not been established with the same degree of certainty as in other lines of chemical work, some of the manufacturers did not neglect the opportunity to deny the findings of the laboratories, although in many instances the cases were so clear cut as to leave no question.

A typical example of this kind taken from many others, is one where a certain lot of hose which failed after four years' service was sent by the assured to the Factory Mutual Laboratories for test. An acetone extract of over 20 per cent. was found after deducting the free sulphur, and a small percentage of wax, and this, in connection with other chemical tests, showed beyond question that the requirements regarding rubber in the specifications had been seriously violated. Notwithstanding this evidence, the manufacturer steadfastly maintained that the lining contained only a mixture of fine and coarse Parás. He even went so far as to claim that he could show samples of Pará which would give an extract of 20 per cent. He also obtained a sample of the lining which he submitted to an independent chemist for analysis. Needless to say his proposal to submit a sample of Pará containing 20 per cent. resin extract never materialized, but a representative of the manufacturer called up on the telephone some time later, and stated that he had a report from his chemist showing that the lining in question had consisted only of Pará, as he had claimed. He was requested to bring in the report, but although that was four years ago, it has not put in an appearance as yet, and the manufacturer finally agreed to replace the hose with another lot fully in accordance with the specifications and without charge to the assured. The hose was replaced in time and to make a long story short, suffice it to say that the second lot was no better than the first. The manufacturer was surprised to learn that we had tested the second lot, but after an extended controversy agreed to replace the hose again.

This case, although in some of its features a little more extreme than most of the others, is simply a sample of similar incidents that took place, and which made it very difficult for us to appreciate the position of some of the manufacturers whose integrity had previously never been questioned. These controversies also made it evident that before the hose situation could be definitely cleared up, it would be necessary to include as part of the specifications the laboratory standards which had been used in testing hose.

In the meantime, in 1906, the Underwriters' Laboratories of Chicago developed their system of "Label Service." In brief, this system required that an inspector should be stationed at the factory and inspect every length of hose sent out; also that each length should bear a label stating that the hose had been manufactured under the supervision of the Underwriters' Laboratories of Chicago. Samples of hose could be taken at any time and shipped to the Underwriters' Laboratories for more detailed tests than could be conducted at the factory. The labels were to be purchased by the manufacturers from the Underwriters' Laboratories at the price of 25 cents each. Owing to several objectionable features which it was found impossible to have removed in spite of a number of conferences, the label service has never been adopted by the Mutual Companies.

The proposition, although at first opposed by some of the manufacturers, was adopted by a few of them. Owing to various differences of opinion and controversies, however, these few manufacturers later dropped the labels and during 1909 and 1910, all of the manufacturers on the Approved List of the Chicago Laboratories were dropped. The opposition to the label service on the part of the manufacturers was very bitter and for over a year their ranks were kept unbroken. In the early part of 1911, however, two of them submitted samples of hose to the Underwriters' Laboratories, which were approved, and adopted the label service. Later in the year another manufacturer followed. At the present time these three are the only ones using the labels.

The system has been developed, it is understood, until now the inspector at the factory supervises the washing of the crude rubber, the weighing and compounding of same and the calendering and making up of the tubes. In short, the rubber from the beginning of the manufacturing operations until the hose is completed is either in the inspector's presence or under lock and key kept in his possession. The tests which the specification require are made on every length, and are conducted in the presence of the inspector.

In 1908, the National Board of Fire Underwriters undertook the preparation of specifications for public fire department hose, both cotton, rubber-lined and rubber-covered. Regarding the history of the development of these specifications the writer has no detailed knowledge since the Mutual Companies have, as an organization, never taken a sufficiently active interest in this matter to warrant drawing up specifications for this class of hose.

In brief, however, it may be stated that after a long series of conferences between the National Fire Protection Association and the manufacturers, a set of specifications were drawn up which, at the time, were satisfactory to both parties, and which allowed a much lower grade of rubber than the present specifications. The manufacturers insisted, however, that these specifications should be used merely as a laboratory standard, and not furnished freely to purchasers. In other words, hose would be approved by the Underwriters' Laboratories without its becoming generally known that it was all made in accordance with a definite set of specifications. Whatever may have been the understanding, or misunderstanding, the specifications were used freely throughout the country by the Underwriters' Laboratories. The manufacturers accordingly cancelled their agreement and dropped all negotiations. The N. F. P. A. later worked out a much more stringent set of specifications which were proposed at the annual meeting in May, 1911, and formally adopted in May, 1912. The requirements regarding rubber lining in these fire department hose specifications are very similar to those contained in the underwriter hose specifications. The three manufacturers who have adopted the label for underwriter hose are also manufacturing label hose under the fire

department hose specifications, which we already referred to.

As previously stated, the accumulated experience of the Factory Mutual Laboratories during the last five years showed that much more specific and definite requirements regarding rubber lining would have to be included in the specifications before the situation could be improved. A considerable amount of experience backed up with experimental work showed pretty clearly what was necessary to produce good hose, and a new set of specifications were accordingly drawn up in the latter part of 1910. At the same time the Underwriters' Laboratories prepared more definite specifications and presented them at the annual meeting of the National Fire Protection Association in May, 1911. The two specifications differed somewhat, however, and the matter was referred back to the Hose Committee in order that the two organizations might have an opportunity of agreeing upon a uniform standard. A number of conferences followed and a specification was finally drawn up satisfactory to both organizations. It was formally adopted by the Factory Mutual Companies in December, 1911, and by the National Fire Protection Association in May, 1912. Owing to the various delays, the Mutual Companies have not yet put these new specifications into effect, but in the near future the manufacturers of underwriter hose will be notified that after a certain date, approval will be withdrawn in cases where the hose is not made in accordance with the new specifications. The specifications have already been sent to the manufacturers and in a few cases they have voluntarily expressed their satisfaction with them and stated that they were heartily in favor of the change.

The most important points where the new specifications differ from the old are with respect to the rubber lining. The change consists simply of a more definite statement of what was required in the old specifications. The new specifications call for 40 per cent. of fine Pará instead of pure Pará, and specify tests which the compound must meet, including acetone extract, free and total sulphurs, alcoholic potash extract, tensile strength, elongation and the so-called permanent set.

In closing, it may be stated that the only object of the Mutual Companies in this matter of hose specifications is to make it possible for their members to obtain good hose. The work of testing and inspection is done without charge to the manufacturers, and it has always been the intention to treat them fairly and co-operate with them as far as they would allow.

Referring to the situation in 1908 between the manufacturers and the National Fire Protection Association the author says:

"It may be stated that after a long series of conferences between the National Fire Protection Association and the manufacturers, a set of specifications were drawn up which, at the time, were satisfactory to both parties, and which allowed a much lower grade of rubber than the present specifications. The manufacturers insisted, however, that these specifications should be used merely as a laboratory standard, and not furnished freely to purchasers. In other words, hose would be approved by the Underwriters Laboratories without its becoming generally known that it was all made in accordance with a definite set of specifications. Whatever may have been the understanding, or misunderstanding, the specifications were used freely throughout the country by the Underwriters' Laboratories. The manufacturers accordingly cancelled their agreement and dropped all negotiations."

OVER 100,000 AUTO-CARS IN NEW YORK.

The automobile is exceedingly popular in the State of New York. This State owns over one-tenth of all the motor cars of the United States. In 1912 the number of automobile owners registered with the Secretary of State was 107,262, an increase of 21,961 over the number recorded in 1911. In the same period 45,347 chauffeurs were licensed, an increase of 9,457 over the previous year. The registrations were divided as follows: Pleasure vehicles, 95,484; commercial cars, 9,767; dealers, 1,716; exempt vehicles, 295.

REPORT OF THE RUBBER SECTION OF THE AMERICAN CHEMICAL SOCIETY.

By D. A. Cutler, Chairman of the Section.

[Presented at the Third International Rubber Conference.]

In regard to what the Rubber Section of the American Chemical Society is endeavoring to accomplish, I would say that in the first place it aims to select or to elaborate standard methods for the analysis of vulcanized rubber products, and to define these methods with sufficient precision so that they will yield accurate results.

Having agreed upon such a series of analytical methods, the Section will endeavor to secure for them the endorsement of the American Chemical Society. If successful in this, the methods will then be published as the official methods of the Society. The great advantage of such official methods would lie in the fact that analyses made according to them would possess, in very high degree, impersonal validity. This would be an indispensable factor in cases of dispute, whether forensic or not, and in all cases in which the public might be concerned.

On the other hand, with reference to individual practice, our Section would have no desire to urge unduly the adoption of the official methods, but we do permit ourselves to hope that these methods will so commend themselves by their evident and inherent practicability, definiteness and accuracy, that chemists will be glad to adopt them in their practice.

In the second place, our committee is endeavoring to bring about uniformity in the manner of stating the specifications to which consumers wish the manufacturers of rubber goods to conform.

As to this matter we do not wish to be misunderstood. Our aim is not at all to formulate specifications of any sort, much less to impose them upon anyone. For if it is the province of the consumer to specify the goods which he will accept, and if it is equally the province of the manufacturer, after studying his market, to decide what goods he will make, we have no desire to interfere.

What the Section hopes to do in this field is to provide official terms and phrases and to define them so carefully and precisely that the consumer may state his specifications by means of them, if he will, without any ambiguity.

At present the Rubber Section of the American Chemical Society has over 100 members. These include nearly all the manufacturers of rubber products, as well as a great many consumers. The committee believes itself, therefore, to be in possession of exceptional facilities to serve both these interests.

There is no desire on our part to gain any information, or to pry into any processes or policies which the interested representatives may wish to guard, but it is our sincere desire to do what we may along the lines indicated, to minimize the chances of ambiguity, confusion, and misunderstanding between the manufacturers and consumers of rubber goods.

THE CHEMISTS TO GIVE A COMPLIMENTARY DINNER.

The presiding officers of six of the important chemical societies of the country, including The Chemists' Club, The American Institute of Chemical Engineers and The American Chemical Society, intend to give a dinner on April 19, at the Chemists' Club in New York—and at the same time to present testimonials—to Dr. W. H. Nichols, president of the Eighth International Congress of Applied Chemistry, "in appreciation of his unswerving fidelity to the welfare of chemistry of the United States, and more particularly for his self-sacrificing services in behalf of the recent congress." On the same occasion there will be a presentation to Dr. Bernhard C. Hesse, the secretary, "whose devotion to his duties gave constant evidence of high efficiency." Professor Edward W. Morley, the honorary president, has been asked to preside.

REPORT OF THE RUBBER COMMITTEE OF THE AMERICAN SOCIETY FOR TESTING MATERIALS: STANDARD SPECIFICATIONS FOR RUBBER PRODUCTS.

By E. B. Tilt, Chairman of the Committee.

PRESENTED AT THE THIRD INTERNATIONAL RUBBER CONFERENCE.

THE Executive Committee of the American Society for Testing Materials, appointed in December of 1911, a committee known as "Committee D-11 on Standard Specifications for Rubber Products." The first meeting for organization and the appointment of sub-committees was held in New York in February, 1912, and another meeting was held in New York in March, 1912, for a continuation of the organization and the distribution of work. Since then the sub-committees have been completing their organizations and gathering information relative to their work and data upon which to base specifications. Another meeting was held in September, 1912, in New York, and the present situation with reference to specifications on rubber products and the work of the different sub-committees was discussed. It is expected that a report of material progress, with perhaps one or more specifications covering rubber products, will be presented at the Annual Convention of the American Society for Testing Materials to be held in 1913.

The organization of a committee on Standard Specifications for Rubber Products by the American Society for Testing Materials is due to requests from a number of sources that a committee be organized to draw up specifications covering the following: Rubber Tubing, Air Hose, Steam Hose, Hot-water Hose, Cold-water Hose, Rubber Belting, Gaskets and Rubber Insulation, as well as Rubber Inner Tubes and Casings for Automobile Tires. Sub-committees have been appointed for all of these, excepting Rubber Tubing, Inner Tubes and Casings for Automobile Tires. In addition, sub-committees have been organized to gather data for specifications for rubber valves and for rubber tiling, and it is probable that committees will be appointed to cover cement, rubber rolls and other important rubber goods just as soon as the work at present in hand will permit.

It is expected that the specifications which are to be forthcoming will cover each product with tests, physical or chemical, or both, with instructions for making these tests, as well as description in detail of the construction desired, together with such physical dimensions as will permit of the manufacture of a standard product. It is not intended that other than commercial materials or articles shall be described by these specifications, and where necessary different grades will be included in the same specification, with such difference in the tests as may fix the limits. The intent is not to hamper the manufacturer, but to assist him to establish standards which will be the basis for the making of a reasonable price and which we hope will also be the guarantee of reasonable service.

It is unnecessary to debate upon the advantage from the consumer's point of view, of securing standard material in rubber products. Many of us are familiar with the difference in service given by similar materials, sold by different manufacturers. It is for this reason that standard materials are at this time most necessary.

The question as to what extent chemical analyses will be a part of these specifications, it is impossible now to answer, but each material will be covered by a chemical analysis in so far as our present information warrants such analysis; but the dominating feature of these specifications will be physical tests of as simple a character as is consistent with the characteristics it is intended to expose and the service demanded of the material.

The American Society for Testing Materials is fortunate in being able to select from its members a committee which represents the producer and the consumer, and the regulations governing technical committees are very clear on this point as they read: "On committees dealing with subjects having a commercial bearing, either an equal numeric balance shall be maintained between the representatives of consuming and producing interests; or the former may be allowed to predominate with the acquiescence of the latter. Unattached experts shall be classed with the representatives of consuming interests." This means that a committee will include men having the data relating to the service given by material as well as men having knowledge of the theory and technique of manufacture. It seems to us that the only other essential to make a specification which may be pronounced a success is the use of judgment in its application. It is intended of course to co-operate with all other societies having similar interests in so far as that is desirable, as well as to do such additional research or investigation as may be required.

If I may be permitted to say a word about specifications generally, I should like to add here that the manufacturers who fear a specification have been unfortunate in their experiences with the use of specifications, and I can truthfully say that after a number of years' experience on various materials, bought with and without specifications, that the greatest satisfaction has been on those materials covered by a specification. Referring to rubber particularly I may say that the most satisfaction is gotten with the material at present bought on specification. I am not prepared to say that the unspecified materials are not made as good as they would be if covered by a reasonable specification. It is, however, a fact that a great deal of dissatisfaction exists in the use of these materials. A guarantee of service by a reputable maker is, in the abstract, the sweetest thought that ever consoled a purchasing agent worried with the fear that he was not getting value for the purchase price. It may be possible in a closely consolidated plant to take advantage of a guarantee, but on a large railway, a guarantee on small rubber mechanical goods is probably not worth the time of consideration.

Our policy in drawing up these specifications will be to do justice to manufacturers and consumers alike, and we shall be open always to suggestions or ideas from those interested in our work. We may go further and say that we invite criticism, though we realize that we cannot hope to satisfy all. It is believed that progress is made when the majority are satisfied. We would welcome to membership on our committees any of those here now or any others who are interested, and again we can assure the manufacturer and consumer that our attitude is that of friendliness and a desire for progressive co-operation.

Regarding the use of specifications that we may offer, we believe that the governments of the United States and Canada, and large corporations such as railways, will welcome them, and as a recompense for our work we shall have the satisfaction of knowing that their use will be immediate and general, if not *in toto*, at least in their main essentials.

ASSESSING THE DUTY ON TIRES.

The Board of United States General Appraisers in a case that recently came before it decided that tires should be assessed separately from automobiles. The Collector of New York had held that tires and wheels were assembled articles and they should, therefore, properly be assessed at 45 per cent. ad valorem as "parts of automobiles." But the Board decided when the case was appealed to them that tires should be assessed at 35 per cent. ad valorem as coming under the head of "manufactures of rubber," and that they were not dutiable under the classification of finished parts of automobiles.

EDITOR'S BOOK TABLE.

THE FINANCIER RUBBER SHARE HANDBOOK. TENTH EDITION. London, 1913. The Financier & Bullionist, Ltd. [Cloth, 8vo., 988 pages. Price, 2s. 6d. net.]

THE 1913 issue of the Rubber Share Handbook shows further increase in the number of companies domiciled in England or in English possessions, and controlling rubber plantations in various parts of the world. The general tendency of rubber cultivation during the last few years is exemplified by comparing the number of companies at present operated with those of a year ago. The grand total has during the time increased from 729 to 749, as follows:

	1912.	1913.
Malay States	263	277
Ceylon	201	209
Java	43	44
Sumatra	39	40
Borneo	28	27
India	34	37
Oceania	4	4
Africa	52	49
South and Central America and Mexico	37	33
Rubber Trust Companies	28	29
	729	749

The numerical increase is therefore practically confined to the Malay States and Ceylon. The above figures are not directly shown by the Handbook, but are the result of a careful examination of its contents. Thus in actual numbers the Malay States and Ceylon have together 486 companies, or nearly two-thirds of the grand total of 749. Of this total of 486, about 140 are operated with local capital in the form of "Dollar and Rupee" companies, the others being financed in sterling by British interests.

Of course mere alterations in numbers of companies do not represent their actual development. That information is contained by the "Handbook" as to each company in separate alphabetical order.

The grand total of 749 companies includes 67 new companies and is arrived at by the deduction of 47, which for one reason or another are absent from the new book. There is thus an increase of 20 companies within the year.

This handy volume contains this time 988 pages as compared with 884 last year. It has many well executed illustrations of rubber planting operations, and the uniform manner in which its information is presented, adds much to its value.

ECONOMIC PLANTS IN THE WEST INDIES. AGRICULTURAL Bureau, German Kali Works, Havana, Cuba. [Paper. 88 pages; illustrated.]

In this comprehensive booklet this large German potash concern has grouped a quantity of information upon West Indian economic plants generally, giving prominence to rubber. Experiments at Porto Rico have shown that *Castilloa* will not thrive on hard clay soil, without cultivation or fertilization; the latter course being specially recommended when the trees do not make the desired growth.

OVER THE ALPS BY AUTO.

Hitherto it has been something of an undertaking to cross the Alps, but now it can be done very comfortably in less than two hours in an auto omnibus. An electric automobile service has recently been established at a very considerable cost. The line is about 25 miles in length, running from a point in Switzerland to a point on the Italian side of the Alps. These autos hold about 22 passengers each and make three trips a day in each direction—when the snow will permit.

NEW TRADE PUBLICATIONS.

METAL fittings constitute an indispensable accessory in the application of rubber to industrial or domestic uses; particularly in the case of sprinklers, hose nozzles and hose couplings. In few branches of the metal industry has greater exactness of standard dimensions been attained. This fact is demonstrated by catalog No. 32 recently issued by the W. D. Allen Manufacturing Co., of Chicago, which in its 96 pages forms a complete guide to the buyer of such goods; while its copious illustrations bring each article of importance clearly before him.

Starting with the various makes of spray nozzles, the important article of Lawn Sprinklers is reached, of which there are no less than 71 varieties in the Allen line. Hose fittings next claim attention in the form of holders, couplings, nozzles, clamps, play pipes and other articles, including Allen's "Bull Dog" hose clamp. Fire hose fittings naturally form an interesting section of this booklet, in addition to a large variety of hose racks. The completeness of the catalog is typical of that which marks the productions of this enterprising firm; the established character of which is emphasized by the fact that this catalog is the thirty-second issued by the house.

HOW RUBBER IS GATHERED AND MANUFACTURED.

So much has been written in the papers of late regarding the whole rubber industry and especially about the manufacture of tires, that there is a very general interest on this subject, and many inquiries are received at this office from people who want some general information regarding rubber, its characteristics, the methods of gathering and cultivating it, and the various manufacturing processes. Several manufacturers have issued little booklets that give just this information. Among them might be mentioned a booklet of twenty-two pages, entitled, "From Latex To Tire" issued by the Goodyear Tire & Rubber Co., of Akron.

This little booklet devotes four pages to the consideration of the geography of rubber, gathering it in the native forests, and cultivating it in plantations. The remaining pages are devoted to a description of the many processes through which the crude rubber has to pass before it comes out as a finished tire.

A HANDBOOK OF THE GOODRICH FACTORY.

The B. F. Goodrich Co. has just sent out a handsomely printed little booklet of about forty pages describing what one would see in making a tour through the company's big factory in Akron. One valuable feature of this book is the large number of half-tone illustrations—there are fifty of them—which give an excellent idea of the different departments of the factory and the various processes through which rubber passes before it becomes a finished tire. The first few pages of the book are devoted to a description of the rubber forests and plantations.

THE INTERNATIONAL RUBBER REVIEW.

A new monthly rubber publication has come into the field; namely, *The International Rubber Review*, a technical and scientific publication devoted to the rubber industry, and particularly to the plantation field. It is edited by Gustave Van den Kerckhove, a well-known rubber planting expert, and its place of publication is Brussels, Belgium. This review is printed in three languages—English, French and German. The initial number is highly creditable. It contains an interesting article on "Artificial Rubber," by Mr. Van den Kerckhove. Another valuable contribution is "*Hevea* Rubber, the Future of Plantations on the Coast of West Africa," by Alfred Chandler, and in addition there are in a department entitled, "Sales of Rubber Plantations," a good many items of interest to people engaged in that industry.

Conrad Poppenhusen, Manufacturer and Philanthropist.

THE rubber industry of this country during its seventy-five years of existence has produced a number of men who have not only been conspicuous for their commercial success, but who have been equally marked for their broad philanthropy — men who not only acquired wealth, but used it generously and wisely for the good of those about them. One of the earliest of the rubber manufacturers to attain marked financial success, and to turn that success to the lasting benefit of the community was Conrad Poppenhusen.

Standing on a plot of ground, given to the former village of College Point, L. I., as a park by Conrad Poppenhusen, and directly opposite the grounds on which his residence was built,

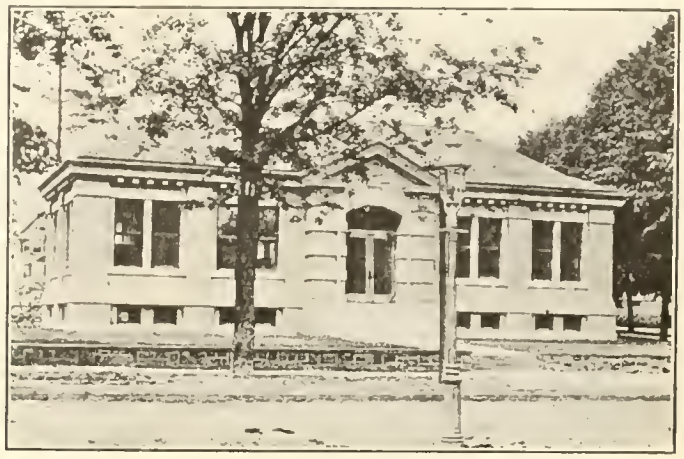
The Monument Erected to Conrad Poppenhusen, at College Point.

is a granite shaft with a bronze bust in heroic size, bearing the inscription: "To the Memory of the Benefactor of College Point. Erected November 1, 1884."

In the year following Conrad Poppenhusen's death, citizens of College Point, many of whom had been associated with him in his various interests, bore testimony to their affection and respect for the man by uniting in erecting this permanent monument to his memory.

Mr. Poppenhusen was born at Hamburg, Germany, April 1, 1818, and came to America about 1843. He became a member of the firm of Meyer & Poppenhusen, manufacturers of whalebone at Williamsburg, Long Island. In 1852 this firm secured the license for the manufacture of artificial whalebone, using the newly discovered compound, hard rubber.

In the following year the license to manufacture hard rubber combs was obtained, and in 1854 a plant called "Enterprise



The Poppenhusen Branch of Queens Borough Public Library.

Works," was built at College Point for the manufacture of artificial whalebone, combs and other articles of hard rubber. The firm name became Poppenhusen & Koenig, which was used until 1867, when the India Rubber Comb Co. was formed. This name was continued until 1898 when the American Hard Rubber Co. was incorporated to include the College Point plant with other hard rubber factories.

In his connection with industrial matters Mr. Poppenhusen showed great foresight, as evidenced by the adoption of the Corliss engines shortly after the invention of the Corliss valve and other devices whereby economy of manufacture was obtained, and in his securing ample land and valuable water grants about his plant, also in providing homes for his employes, and in organ-

Church and Chapel Donated by Mr. Poppenhusen.

izing a mutual benefit association in his works, through which employes were assured aid during absence from work when ill, together with provision for burial in the event of death.

His desire to help those among whom he lived is shown by his gift to the people of College Point in 1868 of $100,000 for the erection and maintenance of the Poppenhusen Institute, in cele-

bration of his fiftieth birthday. This Institute under the management of the Conrad Poppenhusen Association provides free instruction in arts and crafts, industrial and commercial subjects.

In 1872 Mr. Poppenhusen gave $30,000 for the erection of the First Reformed Church of College Point in memory of two daughters who died in infancy.

When the Queens Borough Library established a branch at College Point, the books of the circulating library at the Poppenhusen Institute were transferred to the city, and they are now a part of the equipment of the Public Library in the building erected under the Carnegie fund of New York City, and known as the Poppenhusen branch of the Queens Borough Public Library.

Conrad Poppenhusen was married when about twenty-two years of age to Miss Bertha Kaerker, who died in 1858. Three sons, Adolph, Herman and Alfred were associated with their father in his industrial works.

He was married a second time to Miss Caroline Huetterott, who died in 1903, twenty years after the death of Mr. Poppenhusen. One son of this marriage, Mr. F. A. Poppenhusen, of Hamburg, Germany, is the only surviving member of the second generation.

A grandson, Mr. H. C. Poppenhusen, is now secretary and treasurer of the Conrad Poppenhusen Association, and three grandsons are prominent in business circles of Chicago. Two granddaughters have their homes abroad, and one granddaughter lives in New York.

The illustrations given above show the monument erected in honor of Mr. Poppenhusen by the people of College Point; the Public Library known as the Poppenhusen Branch; and the Church, Chapel and Parsonage of the Reformed Church which were among his benefactions to the community.

RAILROADS RUBBER COMMITTEE.

(Communication from the Secretary.)

IN response to numerous inquiries which this committee has received regarding its activity, the following communication is submitted:

The committee consists of nine members, of whom three represent manufacturers, three consumers, and three public laboratories. The object of the committee has been to formulate standard specifications for high-grade rubber insulation (30% Hevea rubber). In connection with this work it was found necessary to devise a standard procedure for the chemical analysis of such products. The following determinations are being studied:

Total acetone extract—saponifiable, unsaponifiable, hydrocarbons, and free sulphur.

Chloroform extract—alcoholic potash extract, mineral fillers, (free from sulphur) total sulphur, and rubber.

In the course of its studies the committee has considered or tested most of the methods which have been published and several which were privately communicated. The most important types of extraction apparatus have been tried in order to determine the variation in results obtained from the several forms.

The main idea has been to determine the sources of error so that these could be definitely enumerated or eliminated. It is hoped that this will result in closer harmony among results obtained by different chemists, whether they represent buyer or seller.

Considerable progress has been made along these lines, and the committee is doing its utmost to presents its results at the earliest possible date. This will not be done until it has reasonable assurance that the proposed methods of analysis are adequate.

WM. A. DEL MAR.

NEW YORK, February 26, 1913.

AMERICAN RUBBER FOR THE ARGENTINE NAVY.

AN officer of the Argentine Navy, met by a reporter for THE INDIA RUBBER WORLD, at the F. H. Lovell Co.'s naval machinery works at Arlington, New Jersey, spoke of the increasing use of manufactures of rubber in all navies. This officer is here for inspection service on the two large battleships that are being built in domestic yards for the Argentine Republic—at the cost of $23,000,000 for both ships. The specifications under which the contract was awarded did not call for any rubber products. But it is now semi-officially declared that all the rubber products for both ships will be of American manufacture. Provisional estimates put the rubber goods requirements for both dreadnoughts at $78,000. This does not include estimates for some sort of rubber flooring in cabins, hallways and certain parts of several decks. Such flooring will be used. But just what kind has not been officially determined.

So far as is possible steam-actuated auxiliary engines and other kinds of steam power apparatus will not be used on these ships, as compressed air power will be used instead. This ensures the liberal use of rubber packing. Steam-actuated auxiliary engines and long runs of steam pipes, in which defective unions together with inferior metal, spun-yarn and leather packing were used by the contending fleets in the great battle of the Japanese-Russian War, brought about almost as many deaths and severe wounds through steam pipes fractured by projectiles, as the medical corps reported as due to cannon fire. This explains the elimination of steam-actuated auxiliary machinery, so far as is practicable, by all navies since the medical reports of the navies of Japan and Russia in the late war became accessible to naval engineers and constructors. It is a remarkable fact, that during the Civil War all our naval commanders reported strongly against the inferior oakum, spun-yarn and leather packing then in use, and as to defective unions and long runs of steam pipes, the use of which as Admiral Goldsborough reported, "caused greater loss of life, and more wounds to officers and men throughout the war than occurred from engagements between ships."

The historic "Monitor" narrowly escaped going to the bottom in a violent gale on her first voyage, because an old-school naval officer insisted upon removing the rubber ring set within a bronze frame at the base of the turret, and which John Eriesson had designed to prevent water from getting into the turret and thence into the engine room. The fossilized officer took out the rubber and bronze rings and substituted strands of oakum soaked in grease, and he caused the removal of the rubber belting from the air and water pumps. The result was, that off Hatteras, the great waves washed out the oakum, and left a space of sixty-four feet in circumference and two inches high as an open water-way down which the water rushed, and soaked the leather belting so that it slipped, and thus the choking coal gas drove out the engine-room crew, and left the vessel at the mercy of the gale until it subsided. After that, Ericsson brought about a return to rubber packing and belting on the "Monitor." But once more, when the vessel was being outfitted to go on a sea voyage, an old-school naval officer had the rubber packing and belting removed and rope-yarn packing and leather belting restored. In a gale off Cape Hatteras, the turret packing was washed out, the engine room was flooded, and all who were unable to reach the naval towboat that stood by were lost, and the "Monitor" went to the bottom. So far as the writer hereof knows, this incident that places the blame for the loss of the "Monitor" on defective packing and belting has not been in print. THE INDIA RUBBER WORLD's representative noted it down a few days ago from the lips of the last surviving officer of the "Monitor," when she was lost. He lost an arm by being caught in the loop of a hawser that bound the "Monitor" to the towboat that rescued all who escaped from the vessel which revolutionized naval warfare.

Protection of Intellectual Property in Relation to Chemical Industry.

[EXCERPTS FROM A PAPER READ BEFORE THE AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, AT THE DETROIT MEETING, DECEMBER 4, 1912, BY DR. L. H. BAEKELAND, PRESIDENT.]

THE mass of unthinking people, as well as those whose views are predominantly guided by precedent, have little or no conception of the natural rights of intellectual property. It is difficult to teach such people that adequate protection of intellectual property is abundantly more beneficial to the community at large than to the temporary individual possessors of these rights.

Yet these same people consider as sacred and inviolable, any other property rights as soon as the latter relate to chattels or real estate, whether such rights were obtained by purchase, by inheritance, by gift, by privilege, by labor, or by any other way.

When, however, it comes to recognize the claims of ownership to intellectual property, the result of the truly creative effort of the citizen, we butt right away against some stubborn conceptions, which have petrified into the code of our long established laws.

If Tom steals Dick's two-dollar scarf pin, Dick will have little trouble in putting Tom in jail, even if Dick himself has obtained his pin by questionable methods. But when it comes to protect even for the short period of 17 years, the most logical, the most legitimate personal property, intellectual property, as embodied in patent rights, with all that it involves, with enterprise depending thereon, based often on the work of a life-time, then our law courts are woefully deficient, on account of uncertainties, delays and enormous expenses connected with the adjudication of patent rights. All this works overwhelmingly in favor of the litigant with the well-filled purse, the large corporation.

Yet, no country in the world has expressed in a fairer and broader spirit, the rights of intellectual property, than the United States, in Article 1, Section 8, of the Constitution: "Congress shall have power to promote the progress of science and the useful arts by securing for limited times to authors and inventors, the *exclusive* right to their respective writings and discoveries."

This proclamation lifted the right of a patentee at once, far beyond the mere privilege conferred by most countries, which grant patents not only to the real inventor or originator, but also to those who are first to introduce unpublished inventions into their respective countries. With some legitimate pride, we can say that in this respect, at least, American patent law stands head and shoulders above the laws of Germany, France and England.

The wisdom of these provisions has been abundantly proved by subsequent events. Only a man stubbornly blind to evident facts, will deny that just those countries which have the most liberal laws for patent protection are also those which have taken the lead in the industrial and scientific development of the world.

Up to about thirty years ago, our patent system covered tolerably well the purpose for which it was intended. It stimulated individual inventions and promoted numerous private enterprises. Since then, with the extraordinary growth of our nation, with the tremendous increase of agglomerations of capital for industrial enterprises, and more especially with the astonishing increase in the ramifications of applied science, our patent system has become totally inadequate to the needs of the country; it suits our new conditions in about the same way as baby clothes fit an overgrown boy.

Our patent system, although based on an excellent fundamental law, has now degenerated in a set of exceedingly complicated technicalities of law practice, a system of legal acrobatics, whereby any contestation before the courts can be turned into "perpetual motion" to the advantage of wealthy litigants, and whereby the individual patentees of slender means and the small industrial concerns find themselves under smothering disadvantages when opposing rich antagonists. In this way our patent system, instead of accomplishing its intended purposes of stimulating individuality, simply reinforces the rich and big industrial enterprises, and discourages the individual inventor unprovided with a liberal bank account.

It is true that on November 4, 1912, the Supreme Court of the United States, has promulgated revised Rules of Practice for the Courts of Equity, which intend to simplify our methods of litigation. Unfortunately, this is only a half-way measure, leaving still abundant opportunity for the tactics of delay, chicane, and expense which have too much disgraced American patent litigation.

These new rules might gain in efficiency, if they were supplemented by the creation of a final court of patent appeals. They might be made incomparably more efficient, if they could be strengthened by a system whereby the adjudication of the validity of patents does no longer devolve upon judges who do not possess the technical or scientific preparation, required nowadays for discerning the merits of complicated patent questions. Some of the far reaching details of scientific technology absolutely baffle the comprehension of those who have no preliminary technical or scientific training. Certain problems of chemistry and physics involved in many patent suits can no longer be understood by an intelligent judge, if he has not had long and systematic preliminary training in that branch of knowledge. I do not deny that an intelligent judge can be coached and instructed by long, tedious, time-robbing methods, even in intricate scientific problems; but his education has to be made over again for each special case. After you have made a chemist of him for one case, the next adjudication will require the knowledge of a physicist, an electrician, an engineer, and so forth.

Even under the new rules, it will not be difficult to drag on a case by presenting an unrestricted amount of testimony taken before an incompetent examiner, and by calculating every step so as to tire out your opponent, and so as to lead the judge into doubt and error, by swamping him with endless contradictory expert testimony calculated to befog the issue instead of making it clear. Such tactics are relatively easy for the litigant, who, for that purpose, can afford to pay accommodating experts and skilful lawyers. Even if at the end, the judge, after laborious and conscientious efforts, masters the technicalities of the case and reaches a good decision, much needless time has been wasted. All this might easily be avoided, and judges might be saved the trouble and responsibility of going in every single case through a different scientific or technical training, if their intervention could be limited to what they are more competent for, namely, to determine what claims have been infringed and in how far this infringement entitles the patentee to damages.

That such a method of settling patent suits is quite practical, is shown by the example of Germany. In that country, patents are allowed after preliminary examination, just like here; but, after the patent is granted it can be attacked for annulment or revocation before a competent court in the Patent Office. So that any party who is sued for infringement of a patent which he thinks is invalid can avoid temporarily the adjudication of the infringement issue by starting an annulment or revocation suit. In the meantime, the courts in which infringement cases are examined have to take the patent as it stands, and it is only left to them to interpret the scope of the claims, and to what extent these claims have been infringed.

This relieves the equity court of all the complicated questions

of validity or non-validity of a patent, and puts this whole matter in the hands of a properly constituted court of experts, who can handle this subject with incomparably less hesitation, or delay. Besides this, the whole system of practice in the German Patent Office tends towards systematic elimination of invalid patents. After an examiner has decided upon preliminary allowance of a patent, the claims and specifications are open for public inspection, and for a period of two months, anybody whomsoever can file arguments against the final grant of the patent. In this way, the nation does not too lightly confer patent privileges and has furthermore, the benefit of the free advice of any experts in the art, who may advance good reasons for non-allowance of the claims, of which the examiner was not aware, when he rendered his first decision. These opposition proceedings give added thoroughness to the work of the examiners. They are relatively inexpensive and do not necessitate the intervention of law counsel. Sometimes they delay the issue of a patent, if there is any good reason for doing so. On the other hand, a patent that has successfully withstood vigorous opposition proceedings is very much strengthened thereby; this, in itself, is a very valuable compensation for any delays to which the patentee may have been subjected. In other words, by that system, a good patent becomes stronger, while a defective patent application is easily weeded out. A similar system of public opposition exists here in the United States in relation to the granting of trade-mark rights, and seems practical enough that it could be extended to our methods of allowing patents.

All officers of our patent office, high or low, should be made independent of any political favoritism; they should be better paid, with more opportunity for promotion, according to merit; their work should be made simpler by an improved office equipment and increased facilities for a thorough search; furthermore, our unnecessarily complicated and expensive methods of interference proceedings should be simplified.

With these reforms, there is no doubt that we can organize right in the patent office, a competent court, supplemented by the Court of Appeals of the District of Columbia, for deciding, in a very expedient way, all questions of validity of patents.

This Court of Appeals, because it is situated right in Washington, would have easy and immediate access to all the records of the Patent Office; by this fact alone, it would have superior opportunities for prompt and efficient work.

At least some of these facts seem to have been very well recognized in the masterly report of Hon. William A. Oldfield, chairman of the House Committee on Patents. (See report No. 1161, on H. R. 23417, August 8, 1912.)

Unfortunately, his proposed Oldfield Bill (H. R. No. 23417), with a regrettable lack of consistency, neglects utterly the paramount issues, and busies itself with secondary regulations which, if carried out, will practically put a penalty on patented articles.

The new provisions of the Oldfield Bill aim at curtailing the power of patents in the hands of trusts or large corporations; but, in doing so, new provisions are introduced which will create endless new opportunities for protracted litigation.

The Oldfield Bill overlooks the axiom that whatever increases the expense or delays of litigation, is a very potent weapon in the hands of large corporations, which they can hurl against the poor litigant who stands in their way.

The saddest thing of all is that the new Oldfield Bill tries to abrogate the hitherto accepted principle established by our Constitution, that a patentee has the right to license or sell his patent on whatever terms he pleases. It has been feared that this principle, if carried too far, might become a dodge for avoiding the Anti-trust Laws. Since the decision of the famous, but harmless Dick case, the most hysterical exaggerations have been published on this subject. Fortunately, since then, the recent and unanimous decision of the United States Supreme Court in the "bath-tub trust" case, November 18, 1912, does away with all these redundant arguments and settles, beyond doubt, the principle that, patent or no patent, unlawful combinations in restraint of trade can be stopped by the Sherman Law.

The Oldfield Bill, in its eagerness to avoid any hesitation on the subject, goes one step further, and unfortunately, one step too far. It puts so many restrictions on the sale of a patent article, or on a patent license, that it may become a positive disadvantage to transact business by means of patents.

Examined in the last analysis, it threatens a business based on patented processes or patented articles, with penalties which unpatented articles thus far are not subjected to. It takes the proposed patent law as a pretext for saddling a patented article with restrictions which have not heretofore been formulated for non-patented goods.

This unexpected paradox, promoted by the Oldfield Bill, is distinctly in opposition to the rights of intellectual property conveyed by the words and the spirit of the Constitution, and if the Oldfield Bill becomes an effective law, it will be the saddest blow ever given to our patent system. It will do comparatively little harm to large business interests, because for them, there are many ways of circumventing its provisions; on the other hand, it will cause great discouragement to smaller enterprises which, until now, have held the hope of matching inventive genius and initiative against the money power of big organizations.

Another unfortunate miscarriage of purpose in the Oldfield Bill is its provision against so-called wilful "supression" or "non-use" of patents. It does not take into consideration that in numerous instances, a patentee or an assignee possesses a series of so-called alternative patents, which can be used to bring about identical or similar technical results by modified means. Among such alternative patents, the best or the most suitable are used, absolutely irrespective of any other reason or intention to suppress their use. Yet without the exclusive possession of every one of these patents, the invention would not sufficiently protect against competitors, and the field would be so much reduced as not to make it worth while to put one's best energies to the development of the invention. In most cases, it would become a material impossibility for a small concern to maintain the exclusive ownership of its patents, if it had to go to the enormous expense of working simultaneously all its "alternate" patents; by omitting this expensive technicality, it would be exposed to the risk of being compelled by its competitors to grant a compulsory license; this would practically annihilate the advantage of exclusive ownership as expressed by the constitution. There again large concerns would be at an overwhelming advantage, because they can at an expense relatively small for them, equip the necessary appliances for remaining within the technical provisions of the law. In the meantime, they could easily harass their financially weaker competitors in exacting from them compulsory licenses which would break up the only prospects of successful competition which the smaller concern might have possessed, until then, in its patents.

I have no doubt that this bill has been framed with the best intentions for the interests of the country. Unfortunately, the framers of this bill do not foresee the far-reaching and dangerous effects of its provisions.

ENGLISHMEN WANT AMERICAN SOLID TIRES.

The representative of an English firm of motor truck manufacturers opening up a sales business in Canada informs an American consul that he would like to receive catalogs and price lists from American manufacturers of detachable solid rubber tires suitable for motor trucks carrying a load of one to four tons. The number of the consular report is 10546.

THEY WANT AMERICAN RUBBER SHEETING.

An American consul in a European country states (Report No. 10,395) that a local firm desires to be placed in communication with American manufacturers of rubber sheeting for hospital use, with a view to making direct purchases or of representing such firms on the local market.

TESTING OF GERMAN EAST AFRICAN RUBBER SOILS AND PRODUCTS.

DURING his visit in 1911 to German East Africa, Dr. Eduard Marckwald, of Berlin, in addition to investigating actual conditions on many points (as reported in THE INDIA RUBBER WORLD, March, 1912, p. 269) laid the foundation of researches, which have since been more or less completely carried out, particularly as to fertilizing agents.

These tests, made in East Africa, are fully described in the latest quarterly report of the Colonial Rubber Section of the Henriques Laboratory, Berlin. In making them three samples of chemical compounds, weighing 145, 185 and 145 pounds, were prepared, with various proportions of sulphate of potash, superphosphate, bone meal and sulphate of ammonia. In a fourth sample the first of the agents named was omitted; the sample weighing 100 pounds. These samples were incorporated with the soil by a thorough mixing, one field being left unfertilized, for comparison with the three others. For convenience of handling, these samples were each divided into three.

According to the report of the Henriques Laboratory, the results obtained are by no means uniform or conclusive as to the effects of artificial fertilization. This fact, it is added, should cause no surprise, as experience with salts and other fertilizers has often shown them in virgin soil, to be directly prejudicial, or to have no effect. The above-named tests were unofficial, but official tests have led to similar conclusions.

Apart from the question of the effects produced by artificial fertilization, the report urges that results obtained show German East African plantations to be in a position to deliver first class rubber, adapted for all technical requirements. The German Potash Syndicate contributed financially to the carrying out of the above-named experiments.

SOILS FOR RUBBER.

The experiments made in Germany by Dr. Wohltmann, of Halle, and Dr. Marshall, dealing with the properties of South American soils, indicate that the demands of rubber plantations for nutriment from the soil are not very exacting; the samples of South American soils showing only an extremely small proportion of nutritive substance. The results of experiments have been reprinted from the "Tropenpflanzer."

Other experiments indicate the importance of fineness and deepness in soils intended for rubber cultivation. Heavy soils, of the nature originally preferred, have given relatively unfavorable results. Soils in West Africa, Ceylon and Sumatra, which had at first been condemned on account of their low proportion of nutriment, have now been approved for rubber.

SAMPLES EXAMINED.

Samples of rubber received from East Africa included two of *Manihot* rubber, which, after being treated, proved to be a first-class product.

An interesting group of five samples was received from Mr. R. Fyffe, director of the Botanic Gardens, Uganda. One sample was of *Clitandra Orientalis* and showed good working qualities, while a sample of *Hevea* rubber was very pure and proved in working equal to wild Pará soft cure. A third sample of *Kickxia*, coagulated with tannic acid, was very clean; producing a good rubber after normal working. Another sample of *Manihot*, tapped according to Mr. Fyffe's process and coagulated with water, proved well vulcanized even after an hour's heating. It would not dissolve (a fault common to *Manihot* rubber); the quality only proving a better class of second grade. The fifth sample was of *Landolphia Davei*, which likewise was perfectly clean, and was coagulated with acetic acid, but could only be designated as second grade. Its working qualities corresponded with what might be expected from its origin. A sample from Togo was good and fully equal in value to the best East African grades. From Kamerun a large number of samples was received, produced by various methods of coagulation. In addition a sample of *Kickxia* came to hand from the Gold Coast Botanic Station.

In all, 63 crude rubber samples were examined. The work of the Laboratory was, however, not confined to rubber; castor seeds from New Guinea, and other tropical products having also been dealt with.

Other subjects handled included the determination of albumen in rubber, on which the work of the laboratory is complete, and the results of which will soon be published.

RUBBER CULTURE IN SOUTHERN ASIA.

IN a recent discussion of the above question in the "Tropenpflanzer," Herr Emil Helfferich, of Hamburg, supplemented his former investigations in that direction. Continuing its earlier review of Herr Helfferich's work, the "Annales de l'Institut Colonial" of Bordeaux remarks that plantation rubber has now taken possession of the market; everything pointing to its soon occupying the leading place. The first yields had aroused considerable enthusiasm, the most fantastic calculations having been made as to the future of the plantations. The results achieved and the analysis of the reports published by some companies, today allow of a more just appreciation of the value of these enterprises, and of formulating some rules as to the organization of rubber plantations. It is no longer a question of the varieties to cultivate, *Hevea* more and more replacing all others; vines and *Maniçoba* being almost abandoned on the African continent, in the same way as *Castilloa* and *Ficus* are in Southern Asia.

Hevea plantations, it is remarked, should only be established in well drained soil, freed from the roots of old trees, or ligneous debris, which might afford a home to that dreaded parasite, the *fomes semistotus*, which attacks the roots. Some of the best known estates, such as Batu Caves, Glenshiel, Highlands and Lowlands, Federated Malay and Vallambrosa, have had to make considerable sacrifices in combating this pest.

GENERAL PLANTATION REQUIREMENTS.

In the choice of seeds, it is necessary to select those from healthy trees, in regions free from disease, at an altitude and under a climate as near as possible to those of the plantation contemplated.

As to distance, opinions are divided as to whether it is best to give the trees enough space for them to attain their full development, or to place them close together, in order to better utilize the soil, and thus facilitate the work of the plantation. An average distance of 26 feet is recommended by Herr Helfferich, making about 150 trees to the acre. This number of trees would be subject to reduction where there is risk of disease being propagated or of yield diminished.

As to interplanting, Java and Sumatra, it is added, have advantages over Malaya in "Robusta" coffee, but this does not grow uniformly well. It needs a deep soil rich in *humus*, and ought to be planted at same time as the *Hevea*.

English planters, it is remarked, favor clean weeding as a preventive of parasitical diseases, but it is calculated to do harm to the soil in plantations on sloping ground. Dutch planters, on the other hand, seek to avoid this result by covering the soil with vegetation, which impedes the growth of weeds and increases the quantity of azote which would be utilized by the *Hevea*. This system, however, renders it more difficult to combat diseases attacking the roots; the managers of the Kuala Lumpur and Glenshiel estates having pulled up the *Passiflora* and other plants which covered the soil of their plantations.

Excessive pruning favors the growth of the trunk and the widening of the top of the tree, but it exposes the tree to the action of the wind, and cutting should therefore be practised with caution. It should, however, be recalled that the yield in

general depends on the size of the trunk, which it is naturally endeavored to enlarge as rapidly as possible. Attempts have been, however, wrongly made to tap trees from three to five years old, without considering the medium quality of the rubber they might furnish.

Definite rules for tapping, it is remarked, can only be fixed after long years of experience, but in most cases the half herring-bone on one quarter of the circumference has been adopted. In this way the bark is spared as much as possible. Each zone tapped rests for three years; time being thus given for its wounds to heal before fresh incisions are made.

No positive indications are available with respect to the time needed for the regeneration of the bark of old trees; nor as to the age when they cease to be tappable. This, it is added, is all a matter of experience and observation.

COST OF UP-KEEP.

Cost of up-keep varies according to the ages of the trees on the plantations. As the shade becomes more dense, spontaneous vegetation becomes more rare, and the cost of up-keep diminishes. The following costs, given by leading companies, are quoted:

	Up-keep per acre, 1910.
Kapar Rubber Estate (50 per cent. in bearing)	$7.12
Harpenden (51 per cent. in bearing)	4.32
Highlands & Lowlands (85 per cent. in bearing)	7.61
Pataling (60 per cent. in bearing)	7.80
Kuala Lumpur (productive surface)	3.23
Kuala Lumpur (unproductive surface)	7.75

The figures of Kapar, Highlands & Lowlands, and Pataling include not only the regular expenses of up-keep, but also those caused by the removal of trunks and roots. Eliminating these expenses, which really belong to the initial cost, it is estimated that the yearly average per acre equals $5 for a plantation in full yield. This figure, it is added, is inferior to the cost of up-keep of tea and coffee plantations, which for the same surface and period represent $15 to $20.

YIELDS PER TREE AND ACRE.

The reports of different companies show various yields, being based on an average of 150 trees to the acre, while accidental destruction or loss through disease reduces the average after the fourteenth year to 125.

	Age of trees.	Yields per year per acre.	per tree.
		lbs.	lbs.
Batu Tiga Estate	4	90	0.60
Damansara	4	92	0.61
Bikam	5	250	1.66
Seafield	6	450	3.00
Seremban	6	572	3.80
Klanang	10	741	3.93
Seremban	11	870	6.96
Federated Malay	12	1,030	8.24
Federated Malay	13	1,147	9.18
Kuala Lumpur	14	1,302	10.42

Experience has shown that the yield of trees regularly tapped increases from the fourth year up; these results in various cases surpassing all expectations. At the same time, it is added, it is better only to count on a regular production of 500 pounds to the acre. One English rubber expert will not endorse a higher estimate than a maximum production of 300 pounds per acre.

The quality of rubber depends not only on the nature of the soil and the climate, but also on the age of the trees producing it. Young *Heveas* give a resinous product, inferior in value to that of older trees.

FIRST LATEX.

It is further added that as long as no uniform method of coagulation has been found, based on the principle of smoking, it will not be possible for the different plantations to deliver a uniform product. However, a system of classification has been elaborated in London, Antwerp and Hamburg, where the term "First Latex" has been adopted as signifying a plantation rubber made from the latex of *Hevea Brasiliensis*, collected immediately after tapping, and not containing any traces of scrap or foreign latices. To be classed as belonging to this type, the rubber ought to be nervy, without any admixture of earth, and must not be mouldy or sticky.

"Prime Plantation" rubber formerly commanded in the London market 4*d*. to 8*d*. more per pound than "Fine Pará"; the reason of this difference being the smaller loss which plantation rubbers suffer in washing. In Hamburg, in contracts for later delivery, "First Latex" is valued at the equivalent of about 3 pence per pound above "Fine Pará."

These facts show the strong position which plantation rubber has attained on the market, and which is expected to become more marked as the quality is improved.

PRICE OF RUBBER LANDS.

When planting companies first started in Southern Asia, land was very dear, as much as £5 sterling ($25) per acre having been paid. Today, however, matters are different. Not only can good lands for rubber plantations be obtained, it is stated, at 10*s*. ($2.50) per acre, in Malaya and the Dutch Indies, but certain companies which had acquired too extensive holdings are trying to resell part of them at low prices.

LABOR.

The extension of Asiatic rubber cultivation depends to a great extent upon the question of labor; the scarcity of which has been exaggerated. The cost of hiring coolies has, it is true, considerably increased, but the immigration of Chinese and Tamils has furnished the Dutch possessions with an abundance of workers. The number of laborers arriving there amounted in 1909 to 24,568; in 1910 to 58,616; while for the first eight months of 1911 70,000 arrived, compared with 45,000 for the corresponding period of the preceding year. India and China furnish the greater proportion of the immigrants to the Malay States.

Great efforts have been made by the Government of the Dutch Indies to improve the condition of the coolies, particularly on the east coast of Sumatra. Before granting permission for estates to receive workers, the administration is thoroughly posted as to their situation and their sanitary conditions, the mode of living and the medical service available. The establishment of workers' settlements under the most favorable hygienic conditions forms an important step. The scarcity of coolies on certain estates is attributed to the insufficient measures there adopted regarding their food and lodging. Complaints have been heard from Java as to Chinese workers, who are more expensive than Tamils, while their work is defective. On the Malay Peninsula and in Sumatra tapping is effected by contract workers, who remain a long time on the same plantation, regular and satisfactory work being thus ensured; while in Java, where the work is done by free workers, good results are not easily obtained.

Such are a few of the points brought forward by Herr Helfferich in his review of the subject covered.

EAST INDIAN POTENTATES ADOPTING AMERICAN AUTOS.

According to the "Manila Daily Bulletin," East Indian sovereign princes are fast abandoning their gorgeous formal equipages of state for motor cars made in the United States. Five Maharajahs have lately become owners of American automobiles. The upper classes in India generally are developing a similar tendency, owing to the saving of time thus effected.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

A GENERAL SURVEY OF THE SIX WEEKS' STRIKE.

THE strike in the Akron rubber trade, mention of which was made in the March number, which arose in the Firestone Tire & Rubber Co. through a dispute over wages, due to a new schedule for tire finishers, spread rapidly through the Firestone company, and later through the other rubber companies in Akron until almost two-thirds of the rubber employes in Akron had quit work. These quit work for various reasons, a small minority on account of some alleged grievance in regard to wages, a large number in sympathy with the few who claimed a grievance, and probably a still greater number either through fear or because of their work being dependent upon that of some other person who was on a strike, and consequently the material could not be supplied to them.

To secure recruits from other companies, the strikers had large parades, part of the time headed by a small band and a number of women, which continually marched around the rubber factories, using every form of argument and invective to try to get recruits. At first, this action was peaceable and practically no opposition was offered by the city police or county sheriff's office, or by the rubber manufacturers, but when this matter of marching in a body failed to secure recruits, the strikers became unruly and tried to force the employes who were still working, either by threats or actual bodily harm, to leave their employment. The various rubber companies had prepared for this by erecting board fences around each of their plants and had guards on duty inside the fences.

Then the citizens of Akron formed a "Citizens' Welfare Association" and tried to get the strikers to go back to work, subject to a reconsideration of whatever grievances they might have by the rubber companies at a later time, but this the strikers refused to do.

A rubber worker who left the factory with the intention of striking was hustled down town and, without any explanation whatever, was generally induced to sign an application to the I. W. W., whereupon he paid the initial fee and was given a red ribbon, and to all practical intents and purposes was a regular member of the I. W. W. As soon as many of the workmen understood the real purpose of this organization and their former methods of conducting strikes, they ceased to wear the red ribbons and took no part in their matters whatever.

The I. W. W. then commenced their chain picketing, which consisted of a long single file of men marching very close together at some opportune place, generally the entrance to one of the rubber factories, up one side of the street and down the other, so that the chain remained unbroken, persuading any person who happened to pass to join them, and if they could not be reached by persuasion, they hurled the worst form of invective, and if they could not be reached in this manner, would grab their dinner baskets, and scatter the contents upon the streets. At other times, the men themselves would be grabbed and hustled along rudely, and sometimes beaten This form of picketing became a menace because some of the leaders of the I. W. W. not only encouraged open violence and disrespect of law and order, but took any means whatever necessary to make their strike effective, not excepting personal violence, injury to property and sabotage. At this point, many of the rubber workers who had not gone on the strike became fearful lest they would receive bodily harm.

The Citizens' Association, which up to this time had been formed wholly for persuasive methods of securing an end to the strike, now took the form of a Citizens' Police Association, and approximately 1,000 able-bodied men were sworn in and furnished with a policeman's badge and a club, and the use of about fifty automobiles was given to the city for rapid reconnoitering. The city was placed under martial law by the sheriff, and the citizens' police, together with the city police and deputy sheriffs, were placed wherever needed, many going on duty at five o'clock in the morning. Parading and general picketing was prohibited and, after several clashes with the citizens' police and the city police, it was effectively stopped. Then guerilla warfare was started throughout the city, where lone workmen were held up and beaten by strikers. This was broken up by means of a large number of automobiles, manned by four or five policemen rapidly reconnoitering from one point to another where strikers or rubber workers were apt to be, especially at the time the workers were going to work or when they were coming from work. A large number of slater's tacks were thrown upon the streets and a number of these automobiles had punctured tires, but instead of frightening the owners of the automobiles it only made them more determined and more vigilant. Forty or fifty undesirable persons who had come to Akron during the strike, and who had no known means of support, were ordered out of town and they left immediately. This seemed to have the effect of completely stopping the guerilla warfare.

During the first week or ten days of the strike, the rubber factories fully supplied all their branch offices with tires and all kinds of rubber goods to fully protect their trade against any bad results which might come from the strike. They provisioned their plants, and offered any man who did not desire to go home necessary sleeping quarters and meals. A great many meals were served to the employes, but not many took advantage of the sleeping provisions offered, as they felt safe to go to their homes from work and to return to work in the morning.

Before the Citizens' Police Association was formed, the mayor of Akron, believing the militia necessary, asked the governor of the state to provide militia, which was refused. This compelled the citizens to give aid to the police of the city of Akron and the sheriff of Summit county, each of om had been very vigilant and effective, cautious and careful, yet firm; and the fact that there was practically no blood shed in the whole strike where thousands of men were out of employment, is due largely to the foresight of the mayor in closing the saloons for over two weeks, and to the efficiency of the Akron police and the sheriff of Summit county and his deputies, backed by the Citizens' Association and the good common sense and high intelligence of the Akron rubber employes.

There were several elements in this strike which stood out prominently. The first is that whatever dissatisfaction existed arose chiefly from a cut in wages. With few exceptions, the Akron rubber worker is contented with the working condition of the various factories, the one complaint being that a system of payment is used whereby a man is paid for his work and that he must "hustle" to earn what he feels is his day's wage. Secondly, the strike had a very depressing effect upon the stock of the various rubber companies and on business in general, which, however, is gradually recovering. Third, practically all the buildings of the rubber factories have been built within the last six years, and light, fire protection, space for working, toilets, hospital service and everything necessary for the convenience of an employe have been provided better probably than in nine-tenths of the factories in the United States in any line.

Another fact which stands out pre-eminently is that these immense organizations for the production of rubber goods have been built up chiefly within the last six years. Six years ago, the majority of the superintendents knew every

man in their employ. On account of the rapid growth of the work, the immense amount of new machinery that has been invented and placed in the factories, the great diversity of labor, where six years ago one man completed a whole article himself, this same article at present may be made by at least a dozen persons. This has caused a constant change of work and, consequently, a change of wages and many times a shifting of labor and many new laborers, so that this is now impossible for the employer; and no matter how determined and careful he may be to bring about a maximum of efficiency, and at the same time the greatest comfort for his employes, many causes for grievance have arisen, which are generally of minor importance and would be readily overcome and provided for by the manufacturer, if they were specifically and clearly called to his attention. The officials of the various rubber factories have stated time and again that they would be glad to discuss with any of their employes any differences they may have and, if possible, settle these grievances amicably and satisfactorily to both the employer and employes. This sometimes has been impossible on account of some sub-foreman or inspector who was arbitrary and overbearing, and, to make a good showing for himself, would not report these small differences to his superiors, and if he did report them, would do so in an untruthful manner. This strike no doubt has called the attention of the rubber manufacturers to many of these small grievances which they will remedy, and would have remedied even if no strike had occurred, if they had been properly placed before them.

The American Federation of Labor in no way sympathizes with the I. W. W. and gave them no support in this strike, the principles of the two organizations being diametrically opposite.

The strikers, through the I. W. W., after almost two weeks of meetings and argument, sent a scale of wages which they desired, which called for from 25 per cent. to 100 per cent. increase, which demand was absolutely refused.

The Senate of the state of Ohio appointed an investigating committee, which has been taking testimony in Akron for several weeks, both sides being represented by attorneys. As a result of this investigation it was brought out that the average wage of the Akron rubber worker is something like $2.60 per day; that the average wage paid in the United States is about $1.40 per day; that a few of the girls working in the rubber factories receive small wages, but that this is the exception rather than the rule; that the wage of the day-worker in the Akron rubber factories is practically the same as that of the average day-worker throughout eastern Ohio and, if anything, the work more steady; that there are some lines of rubber work that are not the most healthful, but that the factories have done their utmost to remove, as far as possible, these unhealthful conditions; and that the factories have tried to provide safe and suitable places to work and surroundings for their employes.

On March 24, at least three-fourths of the rubber workers were back in their places working and many more going back each day, and a number of new men have been hired who will necessarily need to be trained, so that the maximum efficiency of the rubber plants cannot be expected for several weeks and perhaps a couple of months.

The consensus of opinion among the I. W. W. leaders is that the strike will be declared off by them about April first. The rubber companies so far have refused to re-hire the active participants of the I. W. W., believing that they may follow the teachings of their leaders and put in effect sabotage, which is the revenge of a lost cause inflicted upon the material and machinery of the employer.

The basis of the I. W. W. movement is that all wealth is created by labor, that capital has no rights whatsoever, that the control and ownership of all factories should be given to labor and that this should be brought about, if possible, by peaceable means; if it cannot be brought about by peaceable means, then by any means whatsoever. This doctrine is revolutionary and anarchistic and is wholly opposed to the principles upon which our government is based. The writer believes that strong laws should be passed that where violent acts are the result, or probably will be the result, of speeches setting forth such doctrines, that the instigator should be punished at least as severely as the perpetrator.

The writer suggests that, as it is to the advantage of the rubber manufacturer and the public, as well as the employe, labor should secure a fair and reasonable wage; that wage reductions generally are caused by the fierce competition in the rubber trade, which competition is becoming more severe from year to year; and that the rubber manufacturers should, among themselves, adopt a minimum wage both for men and women, under which they will not go, and thus avoid future wage reduction—the natural result of increased competition—and the strikes that such reductions are always liable to provoke.

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Akron was visited by an unprecedented rain of over three days' duration, which made every brook a running river. This created an immense increase in the Little Cuyahoga River, and at least forty homes and business places were washed away and destroyed as if of so much kindling. On account of the vigilance of the city fire and water departments, only two persons lost their lives.

The rising of the waters caused The Goodyear Tire and Rubber Co. and the Buckeye Rubber Co., the Akron branch of The Kelly-Springfield Rubber Co., to suspend operations for a few days, the water having reached their engine rooms. The water stopped the fires in the power house of the N. O. T. & L. Co., so that the city was without car service and in darkness for two days and a night.

Over half the bridges and culverts in the county have been washed away, and for a short time railroad and street car service to all outside towns was suspended.

The large reservoirs which supply the rubber plants, with the exception of the Big Reservoir, remain intact, and the Big Reservoir, on account of an overflow at one of its feeders, was lowered about nine feet.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

THE past month has been an exceedingly active one with the Labor Union advocates, and strikes have occurred in more than a dozen plants and trades. The rubber industry has not been hit as hard in this respect as was first anticipated. Notwithstanding the strikes and the strike talk, many plants are working day and night shifts.

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Former Mayor Frank A. Magowan, who in former years was a power in the rubber world in this section of the country, is back in town planning to launch a half-million-dollar tire-making company. He states that he has subscriptions to stock to the amount of $150,000. Judge Richard Peck, of New York City and Atlanta, is interested in the proposed venture. Mr. Magowan states that he has been granted a patent on a stitch tire which he proposes to manufacture. Some time ago he organized the Braender Rubber and Tire Co., of Rutherford, New Jersey, a $90,000 concern, and placed an order with the John E. Thropp & Sons' Co. for tire equipment. The order was filled by the Thropps.

Mr. Magowan and the heads of the Thropp concern were to have had a conference March 25, but a fire in the Thropp plant on that day interfered. The fire destroyed the pattern shop. The exact amount of the damage has not been ascertained, an inventory now being taken; but many devices for making tire moulds, vulcanizers and other tire equipment were either destroyed or damaged.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

BUSINESS has hardly started out into springtime activity. Not much change is noted since last report. The boot and shoe trade—in rubber goods—has received a severe blow, when, after an almost snowless and nearly iceless winter, a warm and early spring has discouraged the jobbers and the retailers, all of whom are likely to carry over considerable stocks of rubber footwear. Thousands, probably millions, of New England and New York people have gone through the entire season without wearing rubbers for a single day, and, of course, they haven't bought any.

The druggists' sundry business, it is claimed, is likely to be a misnomer if things continue to develop, as at present, for the department stores now prove to be the largest buyers of these goods. To be sure, the two syndicated drug store concerns compete with each other in seeing which can cut prices the deeper, and this discourages retail druggists from stocking up. The result is large sales to the syndicated druggists and to the department stores, but as they are very close buyers, the result isn't so extremely satisfactory.

The mechanical lines still feel the effect of conservatism and the tendency of mill men to allow the manufacturers and jobbers to carry the lion's share of the stocks. Many purchasing agents are so reducing supplies of belting, etc., in their stock rooms that they have to shut down some of their machinery while waiting the filling of rush orders, this in some cases proving costly economy.

But whatever may be the report in other lines, the automobile tire business continues lively. Some of the factories are working overtime to increase their capacity to supply the urgent demand. A man well posted in the tire business estimates that there are 700,000 cars now in use, which will require 3,000,000 tires to run them through this season, and judging from last year and the year before, about 300,000 new machines will be sold this year which will require 1,200,000 tires to equip, and at least 400,000 more to renew those worn out or seriously damaged. Thus the whole country will need 4,500,000 tires during 1913, and to make these will require more rubber than in all the other rubber industries combined.

The reclaimers are feeling the effects of the lack of rubber-wearing weather mentioned above. As few people have worn rubbers, not many cast-off rubbers are found by the junk men, and prices of scrap rubber shoes are soaring. There is a sympathetic rise in the prices of scrap tires, etc., with the result that reclaimers are paying out large sums for desirable lots of second-hand material.

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The automobile show last month was a gigantic success in many ways. The show itself made good, clearing a handsome profit above all expenses. The attendance was larger than ever, and at times the great building proved too small for the careful inspection of the exhibits, owing to the crowded condition of the aisles and enclosures. As a means of inducing business this has far surpassed any previous show, and with the aftermath of orders which will come later as a direct result of the exhibition, will certainly prove that Massachusetts stands near the top in the proportion of automobiles to the number of inhabitants. The tire men were unusually well represented, and seem perfectly satisfied with the results of their exhibits.

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Among the exhibits at the Truck Show was a fine Packard motor-truck, specially designed for the Monatiquot Rubber Works, of South Braintree. This truck has since been added to the service department of that company for use between the factory and the Boston store on Atlantic avenue, and is intended for emergency shipments where rush delivery is required.

The new building of the United States Tire Co. briefly mentioned in this department in the March India Rubber World, is now fully completed and is occupied. Manager E. H. Kidder is very proud of the new headquarters which in location, thoroughness of detail, adaptability to the requirements of the business, and elegance of fittings are in perfect accord with the enterprise of the company. The building is neatly triangular in ground-plan, at the junction of Beacon street and Commonwealth

United States Tire Co.'s New Boston Building.

avenue, at the very gateway of Boston's Automobile district. It is of reinforced concrete, four stories and basement, with large windows giving a flood of light on all sides. A large clock occupies a prominent position, which will be consulted daily by the thousands who pass along these two prominent streets every day in the year, while in the evening strikingly conspicuous electric signs flash out the name of the company.

The first floor is utilized as salesrooms, suitably and handsomely fitted. The second floor contains the business offices. Both these floors are carpeted with artistic rubber tiling, a product of the United States Rubber Co. The third and fourth floors are for stock, and here are carried, ready for immediate sale or shipment, a full assortment of all the different styles and sizes of tires, including pneumatic, motor-truck, motorcycle and bicycle tires made by the company. In the basement, which is reached by an inclined run-way, a complete motor truck department is installed, with everything in the way of machinery and tools to repair and equip trucks with the tires of this manufacture.

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Hon. L. D. Apsley, president of the Apsley Rubber Co., invariably plays a game of checkers on March 13 of each year, unless that day falls on Sunday. March 13 is the birthday of his venerable father, who was born ninety-five years ago. Mr. George Apsley, of Lock Haven, Pennsylvania, is a wonderful man, straight, active and vigorous. He opens his store in the morning, waits on customers, and closes up at night. When his son, of whom he is very proud, visits him on his birthday there is always a game of checkers on the program, and the older man is fully as often the winner as the younger. It is because L. Dewart Apsley has seen so many games played in little shoemakers' shops and country grocery stores that he decorates every case of Apsley rubbers with a checker board on one end, and distributes boxes of checkers to dealers.

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George H. Hood, who is well known to our readers as a former rubber footwear manufacturer, but who sold out his business to the United States Rubber Co. some years ago, has not been in rugged health for the past year or two, while Mrs. Hood was also an invalid. Last January, they left their hand-

some residence in Hamilton, this state, to spend the winter in Florida. They went to Palm Beach in their own private car, accompanied by a physician and several trained nurses. On the 13th of last month news came from Palm Beach of the death of Mrs. Hood. The body was brought North, interment being in Chelsea on Sunday the 17th. Mrs. Hood was the mother of Frederick C. Hood, president of the Rubber Club of America, and general manager of the Hood Rubber Co., and also of Arthur N. Hood, treasurer of that company, and of Richard Hood, of Paris, European agent for the company.

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The B. F. Goodrich Co. stores have good window displays. Their Boston store on Boylston street contains a very attractive exhibit. It is a model of the plant at Akron, Ohio. It is of wood, but so finished as to imitate the original, some buildings being of brick and others of concrete. The model shows in a ground space about six feet square ten or twelve of the factory buildings, each built to scale, and all electrically lighted, thus representing a night view of the plant. This model, which is an exact copy in miniature, is a center of attraction. A bird's-eye view alongside shows all these buildings, and also a large part of the plant not included in the model. Manager Limric is receiving many compliments on the attractiveness of the exhibit.

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The Walpole Rubber Co.'s tire salesroom, at 757 Boylston street, has in its window another unique display of the tires made by the company. In the center, however, is a model which brings passers-by to a stop. It is a miniature automobile, perfect in its appointments, exact in its proportions, although only two feet long. It has left-hand drive, thoroughly upholstered seats, fore doors, full canopy top, clock, speedometer, etc. Instead of a six-cylinder engine, however, is a clock-work which enables the machine to propel itself "like life." The miniature tires, naturally, are labeled "Walpole." The remarkable thing about it is that the model was made by a prisoner in Charlestown State Prison, who has never seen an automobile except through the bars of his cell, but who has fashioned this model from pictures in advertisements.

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Carpenters, painters and floor layers are busy at 863 Boylston street, where preparations are being made for its occupancy by the Republic Rubber Co., which expects to move into these larger and more convenient quarters about April 1.

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The Patterson Rubber Co.'s plant at Lowell is well along toward completion. It was expected that it would be making tires by April 1, but there is a possibility of some slight delay beyond that date. The foundations for the heavy machinery are ready and the machines arriving, but it may be some days before they will be properly set and so adjusted that real production can begin. However, it is safe to say that before another issue of The India Rubber World is printed, the factory will be turning out goods.

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W. F. Stevens, who was Charles A. Coe's right-hand man, when the latter was managing the American Rubber Co.'s agency in Pearl street, this city, is now a prosperous fruit farmer and automobile merchant in San Juan, Porto Rico. "Billy," as all his friends know him, is at present in this country. He and his brother started a fruit ranch in Porto Rico a few years ago, and while waiting for the trees to come into bearing worked up a fine pineapple business, and at the same time took the agency for two lines of automobiles and a line of trucks, so that he has enough to keep him busy, prosperous and happy.

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The garment workers' strike in this section has interfered materially with some of the raincoat makers. Some of the concerns have accepted the terms of the strikers, while others in their attempts to run their factories with non-union help have found more or less difficulty in doing so. In Milford, Massachusetts, a near-riot occurred on March 3 in front of the Archer Rubber Company's factory, in which several non-union men were badly bruised, and two policemen were roughly handled. The trouble appears now to be settled satisfactorily.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

BUSINESS in the various lines of the rubber industry in Chicago continues fair, with reports from scrap rubber dealers that conditions are much better in their line than they were one month ago. It was the general belief that the Akron strike would play havoc with the scrap rubber interests, but Chicago dealers assert that the worst has passed and that they are now anticipating a fairly active spring. Business in scrap rubber had been good until the Akron strike began, and then there was a setback for about three weeks. However, this period of inactivity simply served to move slowly what little overstock there has been on hand.

Belting and packing lines are moderately active, though manufacturers note a tendency on the part of consumers to let the mill-supply houses and manufacturers carry the bulk of the stock, by buying in smaller quantities and only as needed.

The unusual weather that prevailed during March gave quite an impetus to the clothing market and many dealers who had a small stock on hand in anticipation of a late spring lost no time in sending in their orders. The result has been that jobbers have had their hands full getting orders out on time.

The demand for footwear throughout the month of March has been up to expectations, and this is due in a large degree to the favorable weather conditions. The prosperity that is being enjoyed at the present time is sadly needed, as business in footwear during the winter has been unusually poor. Some houses report that their sales of footwear during the winter were smaller in volume than in any winter for years, and this is ascribed to the comparatively mild weather. The blizzard that prevailed recently and the consequent slush had a tendency to assist the foot-wear market, and the appalling storm of a week ago created a wide demand for rubber shoes and especially for boots.

Mechanical rubber goods are reported stronger at the present time than they have been at any time since the beginning of the year. Throughout the winter the mechanical rubber interests have at all times expressed themselves as pleased with market conditions, but since the beginning of March their feeling of satisfaction has been more pronounced than heretofore. A feature of the trade has been the remarkable demand for belting, and this activity is attributed to the unexampled prosperity of Chicago's manufacturing concerns at present. Orders for belting have been coming in regularly, and for large lots, mechanical rubber goods houses report, and most of the demands are for immediate delivery.

The Cowell Rubber Co., which has recently put on the market the Keystone bath spray line, has made application for a state charter for incorporation. The capital of the concern will be $10,000.

"The market has been much easier in scrap boots and shoes during the last few weeks than it had been at any time since the Akron strike began," said H. Muehlstein. "A feature of the market is that prices have been steady and the trouble at Akron has little bearing on the Chicago market at the present time. Collections are much better than they have been in some time and offerings are being made more freely in boots and shoes. There is a good demand for all items of hose, excepting air brake, which shows little activity. The Chicago trade is pleased to note that the prospects are good for an early adjustment of difficulties at Akron, and is also glad to announce that the strike has not been affecting the local market near so much as most of us believed it would."

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

JAMES W. FRANKLIN, superintendent of the boot and shoe departments of the National India Rubber Co., at Bristol, has had a long term in the service of rubber concerns in his home town. While he is a young man in appearance, he has served in various capacities in the National India Rubber Co.'s factory and the Byfield Rubber Co.'s factory—now the plant of the Consumers' Rubber Co.—for 32 years.

Not only is Mr. Franklin well known in the rubber business, but he also has a wide acquaintance in political circles, having been at one time a member of the Rhode Island General Assembly. He has also held many offices in Bristol, including that of Town Councilman, and he feels a proper pride in the fact that he was never defeated in a political contest.

In former days when the National India Rubber Co.—now employing 1,300 hands—was known as the National Rubber Co. Mr. Franklin, as a boy, procured employment in the packing department at the modest wage of 75 cents a day. Since then he has worked upward step by step until he is now the directing superintendent over nearly 1,000 hands. Serving his apprenticeship in the rubber industry, sweeping the floors and putting things in order in the department in which he worked, he soon showed an aptitude for a more responsible position and before he attained his majority he was in charge of the packing department at night, continuing in this position for several years. When a vacancy existed he was appointed day foreman of the packing department, eventually being promoted to the position of assistant superintendent.

When the Byfield Rubber Co.—later merged with the Consumers' Rubber Co. of Bristol—was organized, Mr. Franklin became its superintendent, remaining there for about three years, or until 1898, when he was recalled to the factory of the National India Rubber Co. A native of Bristol, Mr. Franklin has had a wide experience in the rubber business and his knowledge of the vulcanizing of rubber is considered to be the best in Bristol. During his employment in the National India Rubber Co.'s factory he has seen the shipments of footwear increased from 14,000 pairs of shoes to 30,000 pairs of shoes a day.

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John T. Fales, for years connected with rubber factories in Newport, died of pneumonia at the Rhode Island Hospital, Providence, March 3. He was born in Pelham, Massachusetts, in 1842 and entered a mill at East Amherst at an early age. In 1893 he went to Newport as overseer of the Goodrich Manufacturing Co., and in 1896 was made superintendent of the Narragansett Web Co., remaining in that capacity until the company was moved to Providence in 1902. Of late years he was engaged in the insurance business in Providence.

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The annual shut-down of the Alice Mills and the Millville mills of the Woonsocket Rubber Co. for the taking of an inventory of stock and also for the making of needed repairs took place the latter part of March. The shut-down was for a shorter period than in the rubber mills in other places. At the Alice mill 1,400 hands were affected while at the Millville mill 600 were idle.

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Manager LeBaron C. Colt, of the National India Rubber Co. of Bristol, who has been in the West for a month, returned March 5. Mr. Colt went to Denver for a rest. He returned much improved in health.

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William D. Newbold, aged 56, died March 2 at his home in Bristol, after an illness of three days of bronchial pneumonia. He had lived in Bristol the greater part of his life. Mr. Newbold was formerly a rubber bootmaker in the factory of the National Rubber Co. and in the factory of the Boston Rubber Shoe Co., at Malden, Massachusetts. He retired from active work several years ago.

A new engine, boilers and other fittings are being installed at the International Rubber Co.'s plant at West Barrington. The company has many orders ahead and in order to keep up with the rush of business the plant is running night and day. The engine is larger than the one that it is replacing and, it is expected, will take care of the needs of the plant for some time to come.

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Albert C. Luther, a veteran of the Civil War and for years an an employee of the National India Rubber Co. of Bristol died March 13 at his home on Cottage street, Bristol, as a result of a fall on the street. He was 82 years old and was a native of Warren.

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The factory of the National India Rubber Co. of Bristol closed down March 29 for two weeks for the annual stocktaking. The mill will resume work April 15. It employs about 1,000 hands.

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Walter R. Reeves, foreman at the Washburn Wire Works, Phillipsdale, makers of rubber insulation, was painfully injured at the plant recently when his right hand was drawn between the rolls of a machine. Mr. Reeves was able to free himself from the machine just in time to prevent a more serious accident. As it was, the thumb and forefinger of the right hand were injured.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

BUSINESS activity is steadily maintained and little or no complaint is made by local rubber interests on trade conditions. Weather conditions in this section, however, are responsible for some decrease in activity in rubber footwear trade, but on the whole retail distribution has been measuring up to the average. Rubber clothing dealers report a good trade, as there seems to be a growing demand for rubber clothing.

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Rubber shoe manufacturers and jobbers are at sea over a bill introduced in the Ohio Legislature now in session, known as the "Pure Shoe Bill." While its provisions are particularly directed to leather footwear, yet local jobbers see a "sleeper" in the proposed law which would bring rubber footwear under its operation, and consequently jobbers have joined the local manufacturers in their campaign to defeat the measure. The bill has been introduced by Senator Potting of Akron, who comes from one of the principal rubber footwear manufacturing centers of the country. The bill, if it passes, will compel all manufacturers of footwear in the State to stamp the products turned out by them if substitute products have been used. It is claimed by Ohio manufacturers that if the proposed law is enacted it would practically eliminate the Ohio concerns from competing with outside manufacturers, as the former's cost of production would increase to a point where they could not compete with manufacturers in other states.

* * *

The Ohio State Pharmaceutical Association has joined forces with manufacturers of druggists' sundries in an endeavor to bring about a revision of the postal laws, so that it is made clear what articles may and may not be sent through the mails by druggists. Resolutions have been drafted by a committee of the association and will be forwarded to the postmaster general.

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The shock shifter hub, invented by John Muir, of London, England, will shortly be given a try-out in this city. Mr. Muir has been in this city for several days, and has arranged with the Taxicab company to fit the device on one of its cars. An axle company has also decided to give it a test. Instead of pneumatic tires, solid rubber tires are used. The road shock, according to the inventor, is reduced to a minimum. Mr. Muir is here primarily to interest manufacturers of solid rubber tires in organ-

izing a company to make the hub in this city. The Kelly-Springfield and several other large manufacturers of solid tires have become interested. In this invention, steel balls being placed around the axles of motor vehicles so as to give them an all but liquid bearing, and by their centrifugal movement divert road shock therefrom and convert it into propulsive effort. As 45 per cent. of the present cost of maintenance is due to vibration, the importance of the Muir system is obvious. Its practical success is vouched for by some of the largest users of motor traction in Europe.

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While many of the big rubber factories throughout the country were facing strike troubles, the Cincinnati Rubber Co. was operating its plant in a peaceable manner, not the slightest signs of disturbance being observable at this plant among its employes, notwithstanding the fact that the local newspapers were publishing daily columns of strike news from Akron.

* * *

The Revere Rubber Co., of Chelsea, Massachusetts, has inaugurated a local advertising compaign for the purpose of promoting the demand for "Red Plug Rubber Heels," one of the products of that concern. Local dealers report that there is a growing demand for rubber heels, especially since the public is becoming educated to their merits.

* * *

To the regret of his many friends in Cincinnati and vicinity, Robert Motte, manager of the local branch of the United States Tire Co. has been transferred to New Orleans, where he is to put in action his valuable services in establishing a new agency in the Louisiana metropolis. He is succeeded here by E. W. Bailey.

* * *

The Ira J. Cooper Rubber Co., representing the Kelly-Racine Rubber Co. and the Motz Cushion Tire Co., and operating branch houses in Dayton, Springfield and Columbus, has installed a battery of service motor wagons that will be at the instant disposal of auto owners meeting unexpectedly with troubles while touring within ten miles of the different cities where branches are operated. Expert mechanics supplied with every requisite for immediate repair are in charge of these service wagons, and their services are available without charge.

Ira J. Cooper, head of the company, treated his friends in the rubber trade to a surprise March 12, by taking to himself as his wife, Miss Florence Johnson of this city, who had been secretary of the company since its organization several years ago. Immediately following the ceremony the bridal couple left for a honeymoon trip through the south.

The F. M. Ross Springwheel Co. of this city has filed articles of incorporation with a capital stock of $100,000. The company will manufacture a patented solid rubber tire for automobiles which has been invented by F. M. Ross, who will head the new company.

The Pennsylvania Rubber Co. has entered the local field with its "Oilproof Vacuum Cup Tires." This company is represented here by G. M. Toe Water & Co., dealers in auto supplies, who have recently moved to 917 Race street, where spacious quarters have been opened.

The Lee Tire and Rubber Co., of Pennsylvania, is about to become a competitor in the local field for the tire and rubber auto accessories business. The company will open a branch house at the corner of Seventh and Main streets as soon as extensive repairs have been made.

Messrs. Hanke and Rothe, who are the local representatives of the Ajax-Grieb Rubber Co., of Trenton, N. J., have moved into new and more commodious quarters. The new home of the Ajax tires in this city is now located at Ninth and Race streets.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

ONE of the representatives of a local rubber establishment, dealing in rubber tires extensively, advances the opinion that the Government should step in and abolish the guaranteeing of rubber tires, hose, etc.—but particularly on automobile tires. This should be done, he suggests, not on account of the relief which it would give the rubber dealers, but because it would prevent much fraud and imposition, and would benefit the morals of the whole community. People buy guaranteed tires—say guaranteed for 1,000 miles. After they have run 4,000 miles the tire is in a bad shape. Then they remember the guarantee, are tempted and fall. The best men of the town, lawyers, doctors, prosperous business men all fall before the temptation. They bring their tires back in the hope of getting a new one, and having started they must carry the thing through, and under the shrewd cross-examination of the adjustor they tell many more and blacker lies than they started out to tell. No one but the tire man knows to what extremes the automobile owner will go. The automobile owner is buying his machine on time, and has put every cent he can borrow into his first payment. From then on he commences to beat the oil man, the gasoline man and the tire man, but he falls most desperately upon the tire man because the tire man is foolish enough to give him a guarantee. Competition compels the tire men to make the guarantee, and there seems no present chance of their abolishing it.

* * *

The new factory of the Goodyear Rubber Co., of San Francisco, has been fully completed and is now in full swing. This is one of the finest rubber factories in the west.

* * *

Mr. E. W. Balding, general sales agent for the New York Belting & Packing Co., is now visiting on this coast.

* * *

A. L. Comstock, the superintendent of the American Rubber Co., of Boston, has been in San Francisco for a few weeks, and from here he will go to Honolulu for a pleasure trip.

* * *

W. J. Gorham, president of the Gorham-Revere Rubber Co., sailed recently on the steamer "Korea" for the Orient, where he will visit the principal market cities in the interests of the company. He will be gone three or four months and will go all through the Orient. This is the first time Mr. Gorham has been across the water for years, although formerly he used to visit China and Japan, and knows the countries well.

Mr. Valberry, who formerly had the agency for the Faultless Rubber Co.'s line on the coast, has given up that agency and has gone in with the B. F. Goodrich Co.'s local branch.

B. H. Pratt, Pacific Coast manager of the Fisk Rubber Co., is in the southern part of the state, where he is visiting the branch stores at Los Angeles and the San Diego agency.

H. W. DuPuy, president of the Pennsylvania Rubber Co., who is now in Seattle, Washington, has been visiting all of the Pacific Coast distributing agencies accompanied by his coast representative, Mr. J. E. French, of San Francisco. They have already visited all of the principal cities of California, including Los Angeles and San Francisco, and Mr. DuPuy is more than pleased with conditions on this coast. He was surprised at the growth of San Francisco, this being his first visit here since immediately following the 1906 fire.

The Chanselor & Lyon Co., agents for the Lee tires, called a conference of the heads of departments which met recently to plan for a state wide campaign now that the touring season is about to open. There were present F. H. Lyon, of the Los Angeles branch; W. A. Avery, of Seattle, Washington; W. H. Whipple, of Fresno; Geo. E. Johnson, of Portland, Oregon; Henry D. McCoy and William Reed, of San Francisco.

New Rubber Goods in the Market.

THE BRAIDOID GAS TUBING.

THE Thermoid Rubber Co. has been very successful with its Braidoid Gas Tubing, which is a tube designed especially for automobiles, and is made with great care in all its details. The tube is made of selected stock so that it will stand the action of all gases, and the covering is closely braided — not wrapped — and is constructed of a particularly strong and light thread. The outside rubber cover is of the same composition as the inside tube. It is believed that this is an ideal tube for gas lamp and gas tank connections. No nipples or rolled ends are necessary in attaching it for service. [Thermoid Rubber Co., Trenton, New Jersey.]

RUBBER SHOES FOR DIVERS.

If anybody has the impression that the diver is not an important person, he will immediately change his opinion on looking over the 72 large pages of the catalogue entitled, "Diving Apparatus," issued by Andrew J. Morse & Son, of Boston, for these entire 72 pages are devoted to the diver and his divers wants. There are, moreover, fully a hundred illustrations showing the many different articles that are necessary for his work — or at least for his safety and comfort. Among articles of the latter class may be included the divers' shoes. The catalogue shows quite a variety; two kinds are illustrated here. One illustration shows a pair of very heavy rubber shoes to which are strapped iron soles running well up over the toe. These iron soles add weight to the diver's feet and operate to keep him in the desirable perpendicular position. The rest of the shoe is made of rubber, not so much, probably, with the expectation of excluding every drop of water, but because of the fact that rubber will stand innumerable immersions without deteriorating or stiffening. These shoes go over the foot of the water-proofed suit that encloses the diver's whole body.

There is no reason to expect that these shoes will become generally popular on the dry promenades of the upper world, but their utility in the subaqueous walks of life is obvious.

The smaller illustration shows a pair of lighter shoes made simply of canvas and rubber. These are called "Chaffing" shoes and serve to protect the feet of the diving shoes.—Andrew J. Morse & Son, Boston, Massachusetts.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

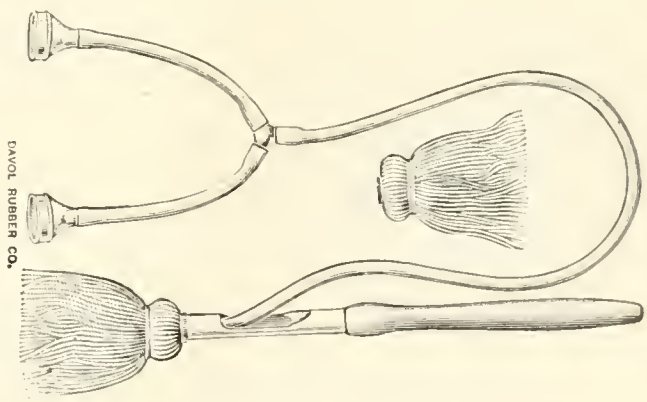
A THICK TREAD INNER TUBE.

Of new inner tubes there is no end, but here is one that is certainly interesting. It is made on the principle of the most wear where the most wear comes. In other words, instead of being of the same thickness in all parts, it is very much thicker on the tread than it is on the sides or at the base. The tread is nearly an inch in thickness, while at the base it is about a quarter of an inch in thickness. The cut shows the exact proportions of the tube. It is molded in just the shape shown. The advantages of this tube as claimed by its manufacturers — which claims would logically seem to be substantiated by the shape of the tube—are that it eliminates pinching, greatly lessens the liability to punctures and blow-outs, and requires less air pressure.

While this tube has but recently come on the market, the manufacturers have given it a very thorough testing during the last two years. [The Kokomo Rubber Co., Kokomo, Indiana.]

WASHING DISHES WITH DRY HANDS.

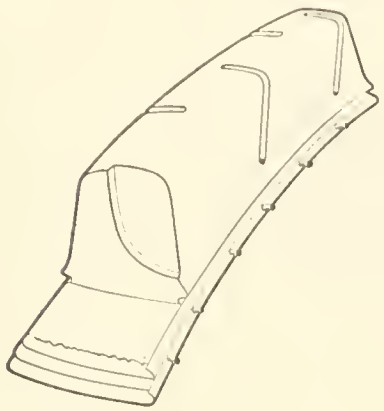
The great perpetual desideratum of the housekeeper is to know how to do kitchen work and keep parlor hands. Plenty of women are perfectly willing to do housework, but they do not want to have hands that show it. Here is a little invention that will help women in this predicament, as it will enable them to wash all the dishes without even wetting their hands. It consists, as the cut shows, of a rubber tube with a forked end, the two ends of the fork having suction cups that go over the hot water and cold water faucets of the kitchen sink. At the other end of the rubber pipe there is a dish mop. The dishes are put in the sink or in a wire tray, the water is turned on at just the temperature desired, and in whatever volume is needed. Then the housekeeper takes hold of the dry handle and mops her dishes. It is obviously a clean and sanitary process, as the dishes are washed with running water. It is simple to operate, as all that is necessary is to detach the mop after each washing, and hang it up to dry, while the pipe can be left over the faucets or taken off—as the housekeeper may prefer. [The Davol Rubber Co., Providence, Rhode Island.]



"Yankee Girl Dish Washer."

THE ST. LOUIS CO.'S NOTCH ELECTRIC TIRE.

About three years ago Mr. J. A. Swinehart, who had been for some time connected with a tire manufacturing concern, retired from the business. But once a tire man, evidently always a tire man; and Mr. Swinehart was not able to keep his mind from the great tire problem. As a result he has evolved a tire which he has called the Notch Electric Tire, and which is being manufactured by the St. Louis Tire & Rubber Co., of St. Louis, of which Mr. Swinehart is vice-president and manager. The accompanying cut gives something of an idea of this "Notch" tire. These notches are inserted alternately at regular intervals on a slant of about 20 degrees. They serve to give the solid tire more spring and resiliency, and according to Mr. Swinehart, they serve another very important purpose. Where the car is running on a smooth but muddy road-bed, these notches serve to push the mud or moisture to one side so that the smooth tire has a clean smooth surface to operate on, and thus avoid skidding. Moreover, these notches serve an excellent turn in city streets, as they make it easy for a car to get out of a street car track when it is wet.



Mr. Swinehart's new company not only makes this notch cushion tire, but is manufacturing truck tires of the flange type, and also a pneumatic tire on a new principle, which provides for the expanding of the carcass within the mold by hydraulic power, so as to insure against buckling or pinching of the fabric.

RUBBER SEAL FOR BOTTLED LIQUIDS.

Bottled liquids have come into such general use for domestic as well as outdoor purposes, that to keep them secure, and at the same time free from exposure to air, has become a matter of daily necessity. These ends have been accomplished by the "Brownie Cap," an absolutely sanitary rubber seal for bottles, which is quickly cleansed and sterilized in hot water. The rubber is always pliable and effectually protects the liquids from germs, dust, vapors and foul air or odors.

While this cap thus affords full protection for liquids, it can be easily slipped on or off, and is thus specially adaptable for use on picnics, excursions and camping trips. It is also most valuable for the purpose of sterilizing milk intended for babies and, owing to its airtight clinching under the collar, permits the bottle to be placed in any position on the ice, without risk of leaking or spilling.

A REMEDY FOR CHAFING.

Insulated wire and rubber gas tubing are liable to become chafed by passing through holes in sheet metal. This can be prevented by short pieces of heavy rubber and fabric tubing slipped over the former, and held in place by a little rubber cement.

A LITTLE RUBBER TUB FOR BABY.

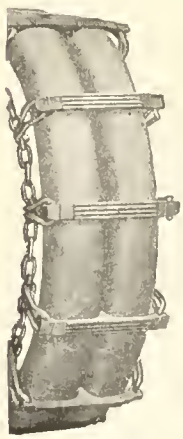
How to bathe that member of the family usually flippantly referred to as the "kid," has always been something of a conundrum. Obviously it would not do to fill a bath-tub full

The Baby's Bath Tub.

of water as the child might go under, and to bathe him in a few inches of water in the bottom of the tub is a back-breaking process for the mother or nurse. But here is a bath-tub designed especially to meet the situation. It is a flexible rubber tub, just the baby's size, on a rigid steel frame that fits on the side of any bath tub. This tub within a tub can be filled from the faucet and emptied into the tub, which obviates all carrying of water. The child gets all the depth of water necessary, and can tumble around in the tub without being injured in any way, while the nurse can stand or sit during the bathing operation in a comfortable position. [The Heaton Manufacturing Co., First National Bldg., Chicago, Illinois.]

PERFECTION NON-SKID CLIMBER.

The adaptation of motor vehicles to commercial uses has resulted in the presentation of various difficulties, prominent among which is that of skidding. While this problem is a troublesome one under all circumstances, it becomes doubly so in the case of motor-trucks where the weight of the load is naturally heavy.



With a view to remedying these troubles the "Perfection Non-Skid Climber" has been introduced, in which the shoes or treads are made from fine drop-forged steel, treated with heat, connected to Swedish iron side chains by steel side-links. The shape of the shoes prevents them from injuring the tire. Tires can be worn down to the rim without altering the shape. The cross-shoes having two flexible joints, there cannot be any permanent distortion of any of the parts, the tread freely adopting itself to the surface of the road. There are no chains over the tire to collect sand and gravel to cut into or wear it. The device is marked by simplicity of construction. Ease of adjustment and infallible action are also claimed for it. It has but three working parts, can be easily and quickly put on and taken off; operating on a simple mechanical principle which automatically checks all sliding, skipping and skidding. [Perfection Non-Skid Climber Co., Edon, Ohio.]

News of the American Rubber Trade.

THE ACUSHNET PROCESS.

THE Acushnet Process Co. report many inquiries in regard to their "New Tabasco" and "Hidalgo" brand rubbers. The good appearance of these rubbers has been generally commented upon. They also report a good demand for uncured friction scrap, and state that this part of the plant is now working on a day and night basis. A new reclaiming process is being developed by them, from which they claim that they are getting excellent results. The reclaimed products will probably be put on the market during the summer.

RUBBER GOODS MANUFACTURING CO.

The annual meeting of stockholders of the Rubber Goods Manufacturing Co. for the election of directors and for the transaction of any other business which may properly be brought before the meeting, will be held at the principal office of the company, No. 15 Exchange place, Jersey City, New Jersey, on Thursday, April 10, 1913, at 12 o'clock noon.

The transfer books will be closed, but the New Jersey Corporation law will not allow to be voted at said meeting any share of stock which shall have been transferred after March 21, 1913.

STATEMENT OF THE APSLEY RUBBER CO.

The Apsley Rubber Co., Hudson, Mass., has filed with the Massachusetts secretary of state a statement of its financial condition, dated January 20, 1913, which shows an increase of $30,000 in surplus over a year ago. Its latest statement in comparison with that made a year ago is given below:

Assets:	1913	1912
Real estate	$252,359	$252,133
Machinery, fixtures, tools	239,932	233,866
Material stock in process	511,365	508,334
Cash and debts receivable	444,797	414,173
Patent rights trade marks	8,851	8,882
Investments	120,000	120,000
Total	$1,577,304	$1,537,388
Liabilities:		
Capital stock	$750,000	$750,000
Accounts payable	197,203	117,095
Floating debt	265,000	335,000
Surplus	365,101	335,292
Total	$1,577,304	$1,537,388

A BOSTON VIEW OF U. S. COMMON STOCK.

There are few topics as interesting to financial writers as the potentialities in the way of dividends of the common stock of the United States Rubber Co. Here is a paragraph taken from a recent issue of a Boston financial paper, which shows how at least one New England observer views the situation:

"There continues to be a strong impression in quarters close to the controlling interests of the United States Rubber Co. that at their approaching meeting the Rubber directors will place their common stock on a 6 per cent. basis. Anthony N. Brady and Samuel P. Colt, I am told, retain their very large holdings, estimated by well-informed people a few weeks ago at 75,000 shares of this issue. They are the dominant interests in the company and are credited with the belief that the earnings of the Rubber company, present and prospective, amply justify the talked-of change in dividend. The open winter was against the rubber shoe business. On the other hand, the automobile industry is extremely active. The auto truck is gaining in usage by leaps and bounds. Hence a big field for the rubber tire business."

THE DUNLOP RUBBER CO. TO MAKE FABRICORD TIRES.

The "Fabricord" tire, owned by the Century Rubber Co., of Plainfield, N. J., has spread over new territory. A tire deal of considerable importance was recently completed, when the Dunlop Tire and Rubber Co. concluded an agreement with the Century Rubber Co. for the exclusive use and manufacture of the Fabricord tires in Canada. The agreement gives the Dunlop company the exclusive right to the Dominion and the goods produced in Canada will be known as the Dunlop-Century Fabricord Tire.

CAPITAL INCREASE AND OPERATIVES BACK AT WORK.

The Plymouth Rubber Co., of Canton, Ohio, has been incorporated under the laws of Massachusetts, with a capitalization of $1,500,000, consisting of 5,000 shares of 7 per cent. cumulative preferred and 10,000 shares of common at $100. The incorporators are A. Sydeman, J. Meade, D. Harris, S. Lewnberg and W. H. Howard.

Incidentally, the employees of the company who went on strike late in February returned to work on March 10, on the terms offered them by the company.

A BOSTON BRANCH FOR THE D. FEINBURG CO.

The D. Feinburg Co., 243 Water street, New York, opened on March 15, a branch store and warehouse, with full facilities for handling scrap rubber, at 168 A street, Boston. It will be in charge of M. G. Hopkins and Fred. Feinburg.

PORTAGE RUBBER CO.'S DIVIDENDS.

The board of directors of the Portage Rubber Co. at a regular meeting held on Wednesday, March 12, declared the regular quarterly dividend of one and three-quarters per cent. payable April 1 on all stock of record March 1. This company has been paying a dividend of 7 per cent. on its preferred stock since 1910. It is reported that they have already booked orders for practically all the tires they can make during the coming season, and it is believed by people familiar with the company's affairs that it can soon pay a dividend on the common stock also.

TRADE NOTES.

The Century Rubber Co., of Chicago, has acquired a five years' right to manufacture Goodall packings. This is a relatively young concern, which has made rapid strides. It makes a general line of mechanical goods, as well as an excellent quality of reclaimed rubber.

Robert Badenhop, importer of crude rubber, balata and gutta-percha, has recently moved into his new offices at 69 Wall street, New York. The change from the old quarters was occasioned by the increase of business. The firm has recently opened a branch office in the Second National Bank building, of Akron, with Mr. Harold W. Holcombe in charge. Prior to Mr. Holcombe's present affiliation, he was connected with the Trenton Rubber Co.

The Dryden Rubber Co., of Chicago, is now operating its new plant, which is as well-equipped and as busy a factory, for its size, as there is in the West. The Dryden Co., in addition to a general product, is making a line of highly successful specialties, including a rubber belt boot for horses, and a special type of plumbers' force-cup, both of which are in active request. George Dryden, the president of the company, whose methods have brought the Dryden business to its present successful condition, is one of the most aggressive and effective members of the Western rubber manufacturing trade.

The McIlroy Hose & Belting Co., of Hammond, Indiana, has put a new rubberized fibre hose on the market, said by Mr. McIlroy to be the only hose of its type now being offered.

OBITUARY RECORD.

DANIEL S. PRATT.

DANIEL S. PRATT, president of the Foster Rubber Co., of Boston, died at his residence in Brookline on March 15 after a short illness. He was well known in the rubber trade, having been connected with the Elastic Tip Co., a business founded by his father. He was the organizer of the Foster Rubber Co. He was a member of the Rubber Club of America, and had many friends in the trade. He is survived by his father and his brother-in-law, Mr. Stetson, both of whom are interested in the Foster Rubber Co.

FRANK E. HALL.

Frank E. Hall, widely known among tire men as the inventor of a sectional automobile tire, died at his home in Wollaston, Mass., March 14, after a lingering illness. He was sixty years of age, and had spent the greater part of his business life in rubber manufacturing. He devoted a great deal of time to experimenting, and six years ago was granted a patent for a sectional automobile tire. He is survived by two sons, both in the rubber business—Harry, connected with a rubber house in Portland, Oregon, and Stanley, connected with the Kelly-Springfield Co.

RHODEY P. WHALEN.

To be connected with a manufacturing company continuously for forty-five years is as creditable as it is unusual in these days. But Rhodey Patrick Whalen, who died March 19, in Tuckahoe, New York, had been in the employ of the Hodgman Rubber Co. —whose factory is located in that town—for forty-five years.

He was born in Ireland in 1852—his father coming to this country a year later and settling in Tuckahoe. The boy attended the public school, and at the age of sixteen, entered the service of the Hodgman company as a driver of one of its factory wagons. A little later he was transferred to the calender room, where his efficiency soon placed him in the position of foreman. Later he was made foreman of the compounding room, a position which he filled faithfully and satisfactorily for many years. Mr. Whalen did not confine his energies altogether to his factory work, but was active in the affairs of the village, serving at one time as a member of the Board of Education, in his district and later as receiver of taxes for the village. He was also one of the organizers of the "Holy Name" and temperance societies of the Church of the Immaculate Conception, of which he was a member.

C. E. W. WOODWARD, PH.D.

Dr. C. E. W. Woodward, of the Fisk Rubber Co., died suddenly of heart disease on March 24, in Chicopee Falls, Massachusetts. Dr. Woodward was one of the organizers of the Fisk Rubber Co., which he formed in conjunction with H. G. Fisk and H. T. Dunn in 1898, acting for the first few years as the company's superintendent. Prior to that time he had been connected with the Overman Wheel Co., Dr. Woodward was sixty-one years of age. The funeral occurred in Chicopee Falls on March 26, and the burial took place the following day in Cambridge, Massachusetts.

THE AKRON STRIKE.

An article in this issue which will prove of special interest to many of our readers is the letter from our resident Akron correspondent, giving a general survey of the strike that began among the rubber workers of that city on February 12, and was finally abandoned by its organizers on March 31—a strike without any adequate excuse, as foolish as it has proved futile, the chief result of which has been to inflict great damage upon the city of Akron, and especially upon the rubber workers of that centre, and lasting injury upon the cause of organized labor.

ENGLISHMEN WANT COTTON DUCKS.

A business man in England informs an American consular officer that there is an increasing demand for cotton ducks and sailcloth, which are used extensively in the rubber trade for sheeting, belting, hose, automobile tires, etc. The number of the Consular Report is 10,528.

PERSONAL MENTION.

H. W. DuPuy, president of the Pennsylvania Rubber Co., is making a tour of the Pacific Coast and incidentally visiting the branches and jobbing connections which have been established by his company.

Mr. R. P. Dowse has been appointed general sales representative in the Central district, with headquarters in Detroit, for the Goodyear Tire & Rubber Co.

Mr. B. W. McCabe, who was formerly with the Swinehart Tire & Rubber Co., of Akron, now covers the New York district for the Lee Tire & Rubber Co.

Mr. Max Loewenthal, of the United States Rubber Reclaiming Co., has recently returned from an eighteen months' tour of Europe. Mr. and Mrs. R. A. Loewenthal left on the *Caronia*, during the latter part of March for a Mediterranean trip.

MR. GEORGE J. BATES GOES TO THE FIRESTONE CO.

Mr. George J. Bates, who was formerly a department manager with the Diamond Rubber Co., has recently connected himself with the Firestone Tire and Rubber Co., Akron, Ohio, and will have charge of the sales department for pneumatic tires.

COMMODORE BENEDICT TO BE THE FIRST.

The society columns of a recent issue of the New York "American" contained the following interesting paragraph about Commodore Benedict, who is not only one of the directors of the United States Rubber Co., but who has made several trips up the Amazon in his private yacht, in connection with rubber planting and other enterprises in that country: "E. C. Benedict, mariner of many voyages upon the Spanish Main, is to be the first private yacht owner to steer a vessel through the turgid waters of the Panama Canal. Nothing delays Mr. Benedict's achievement except the fact that there isn't any water in the canal. But the yacht guests are all invited and the trip is a sure thing. Benedict bought John Hays Hammond's yacht, the *Atreus*, not long ago, and it's the *Atreus* that is going to show society the easiest way from coast to coast."

MR. STONE GOES TO THE PLYMOUTH COMPANY.

J. Everett Stone, assistant treasurer of the Hood Rubber Co., who has been with that company for the past fourteen years, severs his connection on April 1, to become treasurer and a director of the Plymouth Rubber Co.

THE UNITED STATES RUBBER CO. ELECTS A NEW DIRECTOR.

Raymond B. Price, president of the Rubber Regenerating Co., which was recently acquired by the United States Rubber Co., has been elected a director of the latter corporation.

THE STEIN RUBBER PLANT SOLD TO THE MOHAWK CO.

The Mohawk Rubber Co., recently organized in Akron, with a capital of $350,000—$100,000 in 7 per cent. cumulative preferred stock, and $250,000 in common stock, has bought the plant of the Stein Double Cushion Tire Co. The plant with its present facilities has a capacity of about 100 tires a day.

THE FIRE HORSE SOON ONLY A MEMORY.

One of the most spectacular sights imaginable, and one which never fails to arouse even the jaded sensibilities of the city dweller, is the engine on its way to a fire, drawn by two superb horses going at a mad gallop. But the spectacular has to give way to the efficient, and one large city after another is abandoning the horse-drawn fire engine in favor of the motor vehicle. The Fire Commissioner of New York announced early in March that no more horses would be added to the fire department, but that they gradually would be superseded. The New York department now has 100 motor vehicles and by the end of the year will have 200.

The apparatus now in the department numbers 850 vehicles, and it will take about five years and cost $2,500,000 to convert them all from horse-drawn to motor vehicles. New York fire horses die at about the rate of sixty a year, and as many more are laid off for old age or inefficiency.

A PAD MEMORANDUM CALENDAR.

J. W. Coulston & Co., 80 Maiden Lane, New York, importers of zinc oxide, lithophone, barytes and other ingredients used in the rubber trade, have supplied their customers with a small desk memorandum pad about 4 by 8 inches in size, in which each page has space for memoranda for a week. This pad is interleaved with pages printed in red, describing the various articles made and imported by this firm.

THE RUBBER STRIKE AFFECTS THE COTTON MILLS.

The interdependence of various industries has been strikingly demonstrated during the last few weeks by the serious effect that the Akron rubber strike has had on some of the New England cotton mills that supply the tire manufacturers with their fabrics. As the tire mills have been compelled to run on partial time, the fabric mills have been compelled to do the same; and the papers published in the localities where the cotton mills are situated have published the Akron strike news in detail.

AMERICAN TIRES ON THE SAHARA.

A set of 5-inch tires made by the Lee Tire & Rubber Co., of Conshohocken, Pa., is in service on the Sahara Desert. It would seem as if the wide pneumatic tire would go quite a distance towards solving desert transportation—like the wide feet of the camel.

ALLEGED INFRINGEMENT OF BATAVIA RUBBER CO. PATENTS.

The Batavia Rubber Co. of Batavia, N. Y., has served the following notification upon five tire manufacturing companies:

"You are hereby notified that you are infringing upon the rights of the Batavia Rubber Co. in the making of a non-skid tire, which is so close an imitation of the 'Security' non-skid tire, which has been made by the Batavia Rubber Co. for many years, as to deceive purchasers seeking Batavia tires, and you will be held responsible by suits at law for any damages.

"We will wait a reasonable time for your notification that you will cease further infringement."

THE H. W. JOHNS-MANVILLE CO. BUYS THE PULLMAN FARM.

The H. W. Johns-Manville Co., large manufacturers of a great variety of asbestos articles, have recently purchased the old Pullman property at Riverdale, Indiana, situated not far from Chicago. The purchase consists of 125 acres of land. The company is not yet ready to announce its plans for the improvement of this property, but it is rumored that it will build a factory, costing several million dollars, and giving employment to five or six thousand people.

AUTOMOBILES AT THE PANAMA-PACIFIC EXPOSITION.

Automobiles, motorcycles and accessories will be housed at the 1915 Panama-Pacific Exposition in a one-story structure, 600 feet long and 350 feet wide. This will be the first occasion on which a separate building of that magnitude has been devoted to the representation of the industries named, at an international exposition.

THE EASTERN RUBBER CO., LTD., OF TORONTO.

A new company has just been formed in Toronto, Canada, called The Eastern Rubber Co., Limited, with an authorized capital of $1,000,000, consisting of $400,000 cumulative preferred stock of a par value of $100, and $600,000 common stock with a par value of $50 a share. The company has been organized to manufacture all kinds of rubber goods, including auto, bicycle, truck and carriage tires, belting, hose, packing, and rubber heels. It took out its charter first under the name of the Dominion Rubber Co., Ltd. Subsequently it discovered that there was a company by this name in the Province of Quebec. Consequently it changed its name to the Eastern Rubber Co., Ltd. Its principal officers are: Roger Miller, president; W. L. Horton, vice-president, and A. G. Gamble, director and secretary-treasurer.

THE ALLIANCE RUBBER CO.

INCORPORATION papers were submitted early in March to the Secretary of State, in Ohio, of the Alliance Rubber Co., which is to manufacture rubber goods in the town of Alliance in that state. The company intended originally to take the name National Rubber Co., but as that name is already in use by more than one concern, the name Alliance was adopted in place of National. The company intends to manufacture a general line of rubber goods, including inner tubes, druggists' sundries, surgical goods, gloves and toys.

The incorporators are: George C. Russell, Milton Bejach, W. H. Purcell, M. S. Melbourne, F. E. Dussel, Robert Auld and H. F. Bohecker.

The company is capitalized at $100,000. A site containing three acres along the Pittsburgh Railroad has been acquired, which affords good facilities for manufacturing purposes.

A factory building 50 feet by 150 feet, two stories high, will be built on the location. According to those interested, the plant will be in operation by June, if nothing unforeseen occurs.

TO MARKET COUPLINGS FOR HIGH PRESSURE WORK.

The Star Supply Co., Inc., has recently been organized by a number of the salesmen of the Republic Rubber Co., with a view to marketing a special coupling for high pressure work in connection with steam and air drills. The company has its quarters at 229 West Fifty-eighth street, New York, and expects to have this special coupling on the market some time during the present month.

A NEW RUBBER COMPANY IN EAST LIVERPOOL, OHIO.

The Morgan & Marshall Co-Operative Tire and Rubber Co., with $500,000 capitalization, with R. J. Marshall, I. M. P. Marshall and Morgan Howell as incorporators, expects soon to begin the construction of a factory at East Liverpool, for the manufacture of rubber tires, tubes and sundries.

The Department of the Interior, Bureau of Mines, has recently issued a twelve-page pamphlet on the preparation of specifications for petroleum products, by I. C. Allen. It is known as "Technical Paper 36." Copies will be sent free to anyone sending in a request, but not more than one copy will be given to one person. Address, Director of Bureau of Mines, Washington, D. C.

A NEW CRUDE RUBBER FIRM.

James T. Johnstone, formerly agent in New York City for the crude rubber house of L. Sutro & Co., of London, has formed a partnership with Frank Whitworth, under the name of Johnstone, Whitworth & Co., at 130 Pearl street, New York, to act as agents in the crude rubber business for L. Sutro & Co., London, and also to act as agents for H. Diedrichsen & Co., of China, for the sale of products from the Far East.

THE AKRON TIRE AND RUBBER CO., OF BOSTON.

The Akron Tire and Rubber Co., of Boston, has been incorporated under the laws of Massachusetts with a paid-in capital of $15,000 for the purpose of handling automobile tires and rubber goods of all kinds, making a specialty of manufacturers' "second" tires. The treasurer of the company is Mr. M. Laserson, who has been connected with the rubber trade for a number of years.

AN ITALIAN FIRM WANTS AMERICAN RUBBER HEELS.

A firm of general representatives in Italy of English exporters and dealers informs an American consulate that it desires to represent American exporters of patent-leather and fancy shoes for men and women, shoes for workingmen, hunting boots, and rubber heels. This firm sends its traveling salesmen over the entire country. Correspondence may be conducted in English. The number of the Consular Report is 10,628.

THE ELECTRIC RUBBER RECLAIMING CO.'S NEW PROCESS.

In the attractive and interesting booklet lately issued by the recently incorporated Electric Rubber Reclaiming Co., of Akron and Barberton, Ohio, detailed reasons are given for the claim of that corporation, that its electrically reclaimed rubber is superior to the best grade of the article hitherto offered.

While the moisture, specific gravity, ash, tensile strength, stretch and recovery, vary with the stock from which reclaimed rubber is made, such variations can, by the company's process, be controlled within the limits of any given specification adapted for the article. Such limitation is only possible where the reclaiming is in the hands of experts and experienced reclaimers, and where the production is under laboratory control. These conditions existing with the Electric Rubber Reclaiming Co., they claim uniformity of product. The most important quality claimed for the latter is, however, its long life, due to its freedom from undecomposed fabric, sulphur and pieces of metal. By the use of the electric current on which the process depends, these objectionable features are completely removed.

Sample shipments of scrap rubber are invited by the company for treatment by their electric process, and subsequent analysis. The officers of the company are: Emil Gammeter, president; Francis A. Prodbeck, Jr., vice-president; H. A. Backderf, secretary, and Fred W. Albrecht, treasurer. The directors are the above, with William A. Byrider, Joseph Dangel, Shreve Clark, Frank R. Moore, Chas. Fosnight, E. E. Crooks and George W. Blackburn.

It is anticipated that this new company will add to the great reputation Akron already holds in the rubber world.

Plant of the Electric Rubber Reclaiming Co., Barberton, Ohio.

PAYING CLUB DUES WITH OLD TIRES.

The Massachusetts Auto Club, of Boston, has discovered a way of making it easy for its members to pay their dues. The house committee has sent out the following announcement to the members of the club: "Members wishing to dispose of worn-out tires and inner tubes may send them to the club, express prepaid and plainly marked with the owner's name. The tires will be shipped to a rubber manufacturer, and members will receive a credit on their bills for the number of pounds of waste rubber at the net price received from the manufacturer."

TO MAKE TIRES ON THE PACIFIC COAST.

Some of the business men living on the Pacific Coast have been asking themselves why tires could not be made there as well as anywhere. They have satisfied themselves in their own minds that they can, and they have formed the Panama Rubber Co., incorporated under the laws of California. The capital stock of the company is $500,000 preferred and $500,000 common. The officers are: W. D. Newerf, president; W. E. McCune, vice-president; J. S. Benner, secretary, and John F. Roe, treasurer. They have not yet decided where the factory is to be located, but are waiting for the best bid. It is likely, however, to be either in the suburbs of San Francisco or of Los Angeles. The company has prepared and issued a very pretty little book by way of a prospectus. It offers its 7 per cent cumulative preferred stock, in $10 shares, at par, giving a bonus of one share of common stock with every four shares of preferred stock purchased.

THE PERUVIAN-CHAMAYRO RUBBER CORPORATION.

A company has recently been formed, under the name of the Peruvian-Chamayro Corporation, with offices at 60 Wall street, New York, to engage in the exploiting of rubber lands in Peru. The company's prospectus states that: "The Peruvian-Chamayro Rubber Corporation absolutely controls 62,500 acres of the choicest rubber lands in the Province of Huanuco, Peru, which is in the heart of the great Montana rubber producing region. These lands lie between the Mayro and Palcazu Rivers and sworn statements by practical rubber men make the assertion that there are at least 250,000 full grown rubber trees on the property." The officers of the corporation are: President, O. P. Sperber; vice-president, Tonko L. Milic; secretary, George R. Allison; treasurer, A. C. Jenkins, of F. W. Mead & Co., New York. The board of directors is composed of the following: O. P. Sperber, Tonko L. Milic, George R. Allison, A. C. Jenkins, Dushan Trbuhovich, and F. D. Buck, of the Delaware Charter, Guarantee and Trust Company, of Wilmington. The company is incorporated under the laws of Delaware for $700,000, par value of the shares being $5. $200,000 is in 7 per cent. preferred stock, $500,000 in common stock.

TRADE NEWS NOTES.

Dr. S. W. Stratton, Director of the Bureau of Standards, Washington, has been elected to membership in the Council of Underwriters' Laboratories. The body is composed of twenty-two of the leading experts of the United States and Canada, who serve without recompense and supervise the technical work of the institution.

The Hampton Manufacturing Co., of Indianapolis, has been organized with a capitalization of $35,000, to manufacture a tire reliner. The organizers are Samuel Rubens, Simon B. Nussbaum and M. Moskin.

The Derrickson Manufacturing Co., of Muncie, Indiana, has been formed with a capitalization of $125,000, to manufacture a puncture-proof compound for tires. The principal stockholders are H. S. Osborn, R. C. White and H. L. Kitselman.

The factories of the Boston Rubber Shoe Co., at Edgeworth and Essex Fells, Massachusetts, shut down March 15, to remain closed until April 7 for the annual stock taking and repairs.

The $100,000 preferred stock of the B. & R. Rubber Co., recently offered to stockholders pro rata, has all been subscribed for. Shipments of the company for January and February are said to have increased about 25 per cent. over last year.

Receivers have been appointed for the Ferromatic Tire and Manufacturing Co., of Cleveland, which manufactured a spring tire.

The Bibb Manufacturing Company at Macon, Georgia, which owns seven or eight cotton factories in Macon and other points in Georgia, has had a large and increasing business during the last four years in the manufacture of tire fabrics. This is an old company and prior to its entrance on the tire fabric field, had been manufacturing other fabrics for over a quarter of a century.

Van Clief Bros., of 7111 Woodlawn avenue, Chicago, manufacturers of rubber cement and water-proofing substances, have recently doubled the size and capacity of their plant.

Charles E. Wood, previously with the New York Commercial Co., is now operating independently as a crude rubber dealer, with offices at 290 Broadway. Mr. Wood is handling all grades of Parás, eastern plantation, central and African rubbers. He was identified with the New York Commercial Co. for a long period.

L. Blitz, importer of crude rubber, will remove on May 1, from 5 Hanover street, New York, to the Maritime building, 8 and 10 Bridge street. Mr. Blitz was identified with the house of Livesey & Co. for a number of years, and handles a general line of crude rubber.

THE DREADNAUGHT TIRE AND RUBBER CO.

The Dreadnaught Tire and Rubber Co. has just been incorporated in Baltimore, Maryland, with an authorized capital of $1,000,000, for the purpose of making automobile casings. The company will have a site of about four acres, and expects to begin building operations within the next three or four weeks. The initial plant will consist of a main building 65 x 180 feet, three stories in height, made of brick and concrete, with a power house 35 x 50 feet. The main building will be laid out with reference to the addition, later, of wings, which may carry it completely around the power plant. The president is A. F. Gilbert; the treasurer, C. P. Triplett; the secretary, Walter E. Hill—all of Baltimore, and prominent in financial and social circles of that city. Mr. Wilmer Dunbar, very well known to the rubber trade, will be general manager and vice-president of the company, and will have full charge of the manufacturing operations.

DIVIDENDS OF RUBBER COMPANIES.

The board of directors of the Rubber Goods Manufacturing Co., on February 28, declared from the net earnings of the company the fifty-sixth regular quarterly dividend of 1¾ per cent. on the preferred stock, and a dividend of 6 per cent. on the common stock, both payable March 15, 1913, to stockholders of record of March 10.

Early in March the Intercontinental Rubber Co. declared a regular quarterly dividend of 1¾ per cent. on its preferred stock, payable March 31 to stock of record March 21.

The Walpole Tire and Rubber Co. has declared a regular quarterly dividend of 1¾ per cent. on preferred and 1 per cent. dividend on common stock, payable April 15 to stock of record April 1.

Canadian Rubber Co. has declared the regular quarterly dividend of 1¾ per cent. on preferred and 1 per cent. on common, payable April 1.

The Boston Belting Co. has declared a quarterly dividend of $2 a share, payable April 1, to stockholders of March 15.

The B. F. Goodrich Co. has declared a quarterly dividend on its preferred stock of 1¾ per cent., payable April 1, to stockholders of March 24.

UNITED STATES RUBBER CO.'S ISSUES.

Transactions on the New York Stock Exchange for four weeks, ending March 22.

COMMON STOCK, $25,000,000.

(The treasury of a subsidiary company holds $1,334,000.)
Last Dividend, January 31, 1912—1%.

Week	March	1..	Sales	34,610	shares	High	63	Low 57½
Week	March	8..	Sales	12,550	shares	High	63	Low 59¾
Week	March	15..	Sales	14,200	shares	High	61½	Low 59⅛
Week	March	22..	Sales	6,750	shares	High	60½	Low 59

For the year—High, 68¾, January 10; Low, 57½, February 24.
Last year—High, 67⅞; Low, 45¼.

FIRST PREFERRED STOCK, $39,824,400.

Last Dividend, January 31, 1912—2%.

Week	March	1..	Sales	1,515	shares	High	106¼	Low 104¼
Week	March	8..	Sales	900	shares	High	106	Low 105⅞
Week	March	15..	Sales	1,300	shares	High	105	Low 104½
Week	March	22..	Sales	650	shares	High	104½	Low 104

For the year—High, 109, January 8; Low, 104, March 19.
Last year—High, 116; Low, 105⅝.

SECOND PREFERRED STOCK, $9,965,000.

Last Dividend, January 31, 1912—1½%.

Week	March	1..	Sales	——	shares	High	——	Low ——
Week	March	8..	Sales	——	shares	High	——	Low ——
Week	March	15..	Sales	——	shares	High	——	Low ——
Week	March	22..	Sales	——	shares	High	——	Low ——

For the year—High, 81¼, January 9; Low, 78¾, February 13.
Last year—High, 85½; Low, 75.

SIX PER CENT. TRUST GOLD BONDS. $18,000,000.

Outstanding of the 1908 issue of $20,000,000.

Week	March	1..	Sales	65	bonds	High	103¼	Low 102¾
Week	March	8..	Sales	30	bonds	High	102⅞	Low 102
Week	March	15..	Sales	86	bonds	High	102⅛	Low 100
Week	March	22..	Sales	6	bonds	High	101½	Low 101

For the year—High, 103¾, February 15; Low, 100, March 15.
Last year—High, 105; Low, 102½.

A TIRE COMPANY IN FLORIDA.

A report comes from Florida that a rubber company, to be known as the Seminole Rubber Co., will erect a plant in Jacksonville, that state, to manufacture automobile tires and other auto accessories in which rubber is used. The company is capitalized at $1,000,000, and expects to employ 500 hands and turn out 300 tires per day. It hopes to be in operation within three months' time.

THE FAMOUS YACHT OF THE MONATIQUOT CREW.

The sight of boys playing marbles back of the school house is not the only harbinger of spring; another sure sign that summer is not far away is the restlessness of the chronic yachtsman who begins in March to anticipate the delightful cruises of August.

The officers of the Monatiquot Rubber Co., of South Braintree, Massachusetts, own a little craft which they have named "Hypatia," and which they use during the summer for their own recreation and for the entertainment of their friends. One of the "Hypatia" crew who is already in anticipation skimming over the blue waters of Boston Harbor on one of those rare June days that Lowell used to write about, affectionately describes his boat as follows:

"She is about 45 feet of gracefulness and sturdiness, and there's a year for every foot of her. Her timber is as sound as the day she slid from the ways. An engine or something or other furnishes the power, and an awning, or whatever is the nautical term, keeps the rain from her deck-house. She was known once to have made nine knots per hour between Hangman's Island and Hull Gut, and she is said once to have cruised seventy consecutive miles off Boston Light. But it is her cabin, which can accommodate ten or twelve rubber men and her crew of Indians, known as the "Four Good Indians," that command the most attention.

"The pilot-captain of the ship is naturally one "Squantum," who has gained some considerable fame in rubber circles; while the technical member of the crew is "Monatiquot," nominally in charge of the power plant. In the commodious cabin, where there is every delight for the passenger, "Massasoit" and "Samoset" act as steward and chief mixer."

It would appear that a trip on the "Hypatia" is equivalent to a back-to-nature cure, or better still, a "Naturizing" treatment.

THE UNDERWRITERS' NEW LABORATORIES.

The Underwriters' Laboratories, Inc., have secured ten thousand square feet of additional land adjoining their holdings on East Ohio street, Chicago, and plan to extend their present buildings to provide additional space for hydraulic and chemical laboratories and offices. This follows the recent completion of a special building for tests of structural methods and materials, and will give the institution a total ground area of 26,600 square feet, a total floor area in buildings of 45,000 square feet and a yard space of 9,000 square feet. When the present extension is completed, the plant will represent an expenditure of $175,000, this amount having been contributed by the stock fire insurance companies.

THE RUTHERFORD RED INNER TUBE.

The Rutherford Rubber Co., Rutherford, N. J., is making a red inner tube which it calls the "Sterling," and it has adopted a method of bringing this to the consumers' attention, which, while expensive, is certainly convincing. It mails a cross-section of the tube about one inch wide attached to a card describing it and giving the price, and also suggesting a good way to test the qualities of the tube, namely, to make a cut or puncture in the sample and then tear it apart. This red tube is made of floating stock, and will not crack after long usage, as it is not heavily compounded. It has a cross grain to prevent splitting or "running."

100,000 GROSS OF JAR RINGS.

The B. & R. Rubber Co., North Brookfield, Massachusetts, recently shipped off to the South a single order of 100,000 gross of jar rings. This is not the company's record order, but it is the largest yet received this season.

A STRIKING TIRE ADVERTISEMENT.

The Fisk Rubber Co., of New York, recently had a full page advertisement in the humorous weekly "Life" that was certainly different. It was printed in colors and in the upper left-hand corner there was a small panel showing a robust native tapping a rubber tree, from which prodigious drops of latex exuded As these drops fell down the page they gradually assumed circular form until finally they appeared as full fledged Fisk tires on a red touring car going at a spanking pace. This advertisement leaves the impression that Fisk tires are made of genuine rubber—you can see it coming out of the tree—and that it is pure rubber and of very recent origin. It is a striking advertisement.

A RUBBER FACTORY TO BUILD A CLUB-HOUSE.

The Republic Rubber Co., of Youngstown, Ohio, have just embarked upon a project that ought to be very effective in making the 1,500 employees of that plant pleased with their lot. The company has decided to build a large and commodious club house for the use of its operatives. The house will be just across the street from the company's main offices. It will be an attractive three-story brick building 60 x 130 feet in size.

The first floor will be given over to bowling alleys, pool tables, shower baths, reading and lounging rooms; the second to a lunch room in which all employees can secure hot coffee and eat their lunch, and the third floor will be devoted to dining rooms for office employees. The second floor also will be used for meetings in which employees are interested.

Building of the Underwriters' Laboratories.

SIX-BY-FORTY TIRES.

The Fisk Tire Co. is said to have the distinction of making the largest pneumatic truck tires manufactured. They make a tire 6 x 40, used exclusively for fire apparatus, protective wagons and similar vehicles, where tires of great durability and strength are necessary.

"THE PRICKING OF THE BUBBLE."

Mr. Frank A. Seiberling, president of the Goodyear Tire & Rubber Co., gave some very interesting testimony before the Senate Committee appointed to investigate the Akron strike. But nothing that he said impressed his hearers more than this reference to the effect of the strike upon the market prices of the stock of some of the tire companies. He observed: "Perhaps one feature of value has come out of it all; namely, the pricking of the bubble of fictitious values on the stocks of the various corporations. Speculators had carried the value of Goodyear common stock to a basis of $465 per share ten days ago; it is now around $350; while its intrinsic value is approximately $125. Let this good work go on, and we will not have as much false reasoning when this fictitious basis of values has been properly exploded."

DIVINE TIRES.

The Divine Tire Co., of Utica, New York, filed incorporation papers early in March. The capitalization is $225,000, $100,000 preferred and $125,000 common. The directors are Bradford H. Divine, Charles W. Wicks and A. James Eckert, of Utica; William Dalton, of Schenectady, and Edward F. Torrey, of Clinton.

NEW INCORPORATIONS.

The Akron Tire & Rubber Co., of Boston, February 28, 1913; under the laws of Massachusetts; authorized capital, $15,000. Incorporators: Abraham Palder, 6 Milford street, Boston; Max Laserson, 99 Brunswick street, Roxbury, and Charles Braunstein, 205 Chelsea street, East Boston—all of Massachusetts. To manufacture, buy, sell and deal in tires, rubber goods, etc.

The Alliance Rubber Co., March 7, 1913; under the laws of Ohio; authorized capital, $100,000. Incorporators: George C. Russell, Milton Bejach and W. H. Purcell. Location of principal office, Alliance, Ohio. To manufacture any and all kinds of rubber goods, etc.

American-West African Corporation, March 7, 1913; under the laws of Maine; authorized capital, $250,000. Incorporators; James J. Wardrop, 160 Fifth avenue, New York; George Walker, 12 Martha place, Passaic, New Jersey, and George Douglass Wardrop, 293 Welling street, Richmond Hill, New York. To carry on a general rubber business in all its branches, including importing and exporting, etc.

Continental Rubber Works Selling Agent Incorporated, March 8, 1913; under the laws of New York; authorized capital, $3,000. Incorporators: Clarence E. Thornall, 50 Church street, New York; William A. Darling and Walter S. Tullis—both of 35 Murray street, New York. Location of principal office, New York. To deal in rubber goods, tires, etc.

Dreadnaught Tire & Rubber Co., February 24, 1913; under the laws of Delaware; authorized capital, $1,000,000. Incorporators: F. D. Buck, George W. Dillman and B. M. Grawl—all of Wilmington, Delaware. To manufacture and deal in tires, etc.

Du Fay Tire Filler Co., February 28, 1913; under the laws of Illinois; authorized capital, $10,000. Incorporators: Joseph C. Fuhs, Will T. Lostetter and Lebel M. Wheeler. Location of principal office, 714 South Clark street, Chicago, Illinois. To manufacture and sell a compound for filling tires for automobiles.

F. C. D. Inner Tube Protector Co., January 30, 1913; under the laws of New Jersey; authorized capital, $150,000. Incorporators: Gilbert S. Field, 379 Trumbull avenue; James H. Christensen, 1653 Second avenue, and Thomas Dick, 26 Cadillac square—all of Detroit, Michigan. To manufacture, purchase, etc., land and wares of every description, and to carry on any business, etc., so acquired.

Franco-American Safety Tire Co., February 17, 1913; under the laws of Delaware; authorized capital, $100,000. Incorporators: Emile Le Fevre, Eugenie Wolff and Armand Gaillard—all of Philadelphia, Pennsylvania. To manufacture and deal in automobile tires, etc.

John A. Gallagher Co., Inc., March 13, 1913; under the laws of New York; authorized capital, $2,000. Incorporators: Edward G. Weiser, 632 Grant street, Buffalo, New York; John A. and Ida B. Gallagher—both of 215 Crescent avenue, Buffalo, New York. Location of principal office, Buffalo, New York. To manufacture and deal in press blankets of rubber and felt, printers' supplies, etc.

Henschel Tire and Rubber Co., March 24, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Rudolph and Anna Henschel—both of 147 East 90th street, New York, and William A. Wollman, 1402 Lexington avenue, New York. Location of principal office, New York.

Hesco Tire Co., February 15, 1913; under the laws of Illinois; authorized capital, $300,000. Incorporators: C. S. Hayden, John Schwarz and Joseph Ellis—all of Chicago, Illinois. Location of principal office, No. 3204 South Michigan avenue, Chicago, Illinois. To manufacture and sell tires and automobile supplies, etc.

Mercer Rubber Co., March 19, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: William A. and James G. Dale—both of 340 East Fifty-second street, New York, and William H. Saijen, Jr., 294 Nassau street, Princeton, New Jersey. Location of principal office, New York. To deal in rubber goods.

Merritt-Elliott & Co., March 8, 1913; under the laws of New York; authorized capital, $350,000. Incorporators: Daniel T. Merritt and Charles E. Elliott—both of 130 Duane street, New York, and L. D. Apsley, Hudson, Massachusetts. Location of principal office, New York. To deal in boots, shoes, rubber goods, etc.

Mohawk Rubber Co., of New York, Inc., March 24, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Morris E. Mason and Charles W. McLaughlin—both of Akron, Ohio, and Milton Dammann, 141 Broadway, New York. Location of principal office, New York. To deal in tires and rubber goods.

Star Supply Co., Inc., March 14, 1913; under the laws of New York; authorized capital, $800. Incorporators: Charles W. Hardin, 315 West Ninety-ninth street, and Gustave A. Lepkem, 558 West 164th street, and Frederick C. Iringer, 507 Manhattan avenue—all of New York. Location of principal office, New York. To manufacture rubber hose and hose couplings, etc.

United States Graphite Co., February 21, 1913; under the laws of Illinois; authorized capital, $500,000. Incorporators: Eugene McSweeney and A. D. Eddy—both of Saginaw, Michigan. Location of principal office, 18 North Clark street, Chicago, Illinois. To sell graphite and graphite products.

Divine Tire Co., Inc., March 12, 1913, under the laws of New York, authorized capital, $225,000. Incorporators: Charles W. Wicks, 770 Genesee street; A. James Eckert, 108 Genesee street, and Bradford H. Divine, 202 Whitesboro street—all of Utica, New York. Location of principal office, Utica, New York.

Morgan & Marshall Co-operative Rubber & Tire Co., March 3, 1913; under the laws of Delaware; authorized capital, $500,000. Incorporators: R. J. Marshall, East Liverpool, Ohio; Morgan Howelk, Pittsburgh, Pennsylvania, and Ila M. P. Marshall, East Liverpool, Ohio. To deal in rubber tires and tubes, sundries and other rubber supplies.

THE SEAMLESS COMPANY ISSUES STOCK.

The Seamless Rubber Company, of New Haven, Conn., which makes the Bragg stitched tire, has certified to an issue of 5,000 shares of its treasury stock. The issue makes the total outstanding stock $1,000,000, of which one-half is common.

PRESIDENT WORK'S ANNUAL REPORT.

At the annual meeting of the B. F. Goodrich Co., held March 12, President B. G. Work read the following report:

"Since the purchase of the Diamond Rubber Co., on April 1st, 1912, excellent progress has been made in the unification of the Goodrich and Diamond organizations and their plants, providing thereby for great improvement in economy and a large increase in capacity.

"The report of the treasurer as certified by public accountants shows the company to be in a strong financial condition.

"As I pointed out in the published report, the bringing together of two large organizations entails a great many readjustments, the benefits of which do not appear immediately. It has been the policy of your directors to place the company upon a sound economical basis of operation as quickly as possible, and, while this may have interfered with the showing of earnings for the period, they feel that the best interests of the stockholders have been conserved for the future.

"The volume of business transacted during the nine months was practically the same as that of our company combined with that of the Diamond company for the corresponding period the previous year.

"It is unnecessary for me to comment on the disturbed labor conditions which have existed among the rubber industries in Akron during the past month, as you are all undoubtedly familiar with them.

"In reference to the future, I believe that it should be the policy of this company to husband its resources and accumulate a substantial surplus, and I shall not recommend to the directors the payment of a dividend on the common stock for the current period, nor until such substantial surplus over and above the preferred dividend and amortization requirements shall have been accumulated from the earnings."

GOODRICH STATEMENT FOR NINE MONTHS.

The statement of The B. F. Goodrich Co., Akron, Ohio, for the nine months ending December 31, 1912, shows net sales amounting to over $37,000,000; with net earnings of over $3,500,000 and undivided profits for that period of a little over $800,000. The detailed statement is given below:

Income Account.

Net sales nine months	$37,533,861.00
Expense	33,814,526.87
Net profit	3,719,334.13
Other income	571,844.51
Total income	4,291,178.64
Depreciation	440,851.73
Interest on bills payable	327,837.92
Net profit nine months	3,522,488.99

Assets.

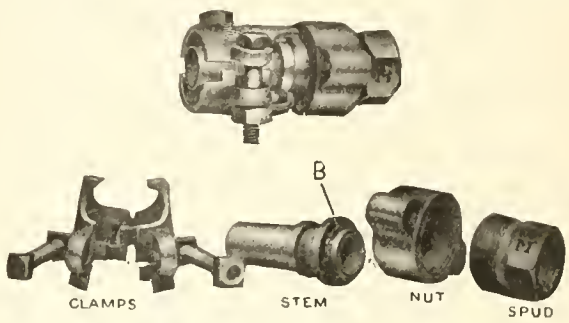
Plants, good will, etc.	$70,685,721.89
Investments other companies	1,635,957.93
Twenty thousand five hundred and eighty-seven shares preferred at cost.	2,227,117.03
Inventory	16,226,639.63
Trade accounts receivable	5,147,703.47
Other accounts receivable	1,223,186.26
Bills receivable	606,944.44
Cash	803,224.60
Prepaid accounts	229,618.98
Total	$98,786,114.26

Liabilities.

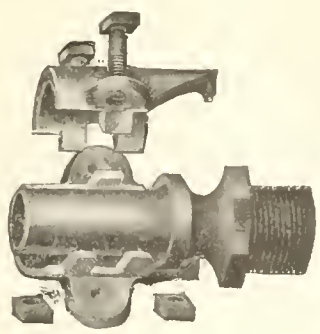
Common stock		$60,000,000.00
Preferred stock		30,000,000.00
Bills payable		6,479,410.54
Accounts payable		653,185.45
Sundry		547,283.03
Contingent reserve		300,000.00
Nine months' profit	$3,522,488.99	
Preferred dividend	1,519,505.75	
Common dividend	1,196,748.00	
Total dividend	$2,716,253.75	
Undivided profit		806,235.24
Total		$98,786,114.26

THE MULCONROY COUPLING AND NIPPLE.

TWO mechanical devices extensively used by rubber manufacturers are the Mulconroy Coupling and Nipple, said to be original types. They are specially designed for high pressure steam, air and water and are described as very durable.



The new features of the coupling are represented in the smooth stem, rounded and tapered, permitting easy access into the hose without injury to the tube, and a grooved lip at the spud-end of the stem, which prevents loss of the washer, a frequent cause of annoyance and lost time. The improved clamps cover the exterior of the hose so completely that when they are tightened they do not injure the hose cover itself. They are sufficiently long to cause such pressure at the end of the hose or stem, so as to occasion no injury. The projections over the collar render it impossible for the coupling to blow off, irrespective of pressure.



The new Mulconroy nipples are made with a thread of such size as to render the use of reducers unnecessary. For instance, ½-inch nipples are made with either ¼-inch, ⅜-inch or ½-inch thread, and the ¾-inch nipples with either ⅜-inch, ½-inch or ¾-inch thread. Both couplings and nipples are made from maileable iron and threads are standard iron pipe.

RUBBER WORKERS GET AN INCREASE.

The A. & A. Rubber Co., South Framingham, Massachusetts, early in March posted a notice announcing a 5 per cent. increase in the wages of all its employees, to take effect immediately. Voluntary increases in the wage rate are great lubricators of factory operations.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

THIS North of England Show, organized by the Society of Motor Manufacturers and Traders, was held at Manchester February 14 to 22. There were really two exhibitions, the pleasure cars being located at the Rusholme exhibition buildings in the suburbs and the commercial vehicles at the city exhibition hall in the center of the town near to Deansgate, where the offices and show rooms of so many motor and tire companies are to be found. With the idea of expediting business and relieving the congestion of former years no free admission tickets were given to exhibitors to distribute among their friends, the result being that at no time were the premises overcrowded. The lessened attendance, however, must not be taken as reflecting in any way upon the importance of the show, which was the largest and most complete ever held in the provinces. Prospective purchasers attended in satisfactory numbers and the bulk of exhibitors seem to have been well satisfied with the business done. This applies more particularly to the motor vehicle show which, though sparsely attended by the public, was officially visited by deputations from corporations and other public bodies interested in traction engines and motor fire engines.

MANCHESTER MOTOR SHOW.

The question of motor lorry transport (the lorry is a long low platform wagon) is one of great interest to the industrial centers of Lancashire. It is recognized that for going to and fro in towns the horse lorry has the advantage, but in conveying goods such as machinery and cotton for distances of five to twenty-five miles the motor vehicle is being increasingly used. With regard to the port of Manchester it is estimated that 7 per cent. of the traffic is now dealt with in motor lorries, and, though this figure is not an imposing one, it is higher than pertains to any other British port. Though motors of several types and capacities are employed, there is a consensus of opinion that the best paying vehicle is the 5-ton wagon with rubber tires and with steering lock so arranged as to enable the wagon to turn in a small space. It has not been customary in these notes to go beyond tires when referring to motor shows, and with regard to these important accessories there was very little of novelty. Practically all the prominent British makers, as well as half a dozen leading European manufacturers, had stands, the show in this respect being far more complete than any of its predecessors. Shrewsbury, Challiner and Dunlop tires were shown at both Rusholme and City Hall, the other makers contenting themselves with one exhibit. Various bodies of the plastic nitrocellulose class have now for some time been used as leather substitutes in the upholstering of cars, and a quite modern use of plastics is the case of the wind-screen.

STANDARD specification and tests for rubber draw-bar springs used on private owners' wagons have recently been issued from the London Railway Clearing House. Embodied with the letterpress is a drawing showing the construction and dimensions of the spring, it being also laid down that the manufacturer is to guarantee a life of three years. After this it is not surprising to read that only vulcanized rubber of good quality is to be used, and that this must be thoroughly compressed, of a homogeneous character throughout, and free from defects. With regard to tests five per cent. of the springs are to be submitted for testing purposes. Rigid adherence to the detailed specification is not a *sine qua non*, as it is stated that springs of approved design may be used, provided they comply strictly with the test enunciated. This specification, I may say, is a new departure, buffers in the past having always been supplied according to the particular manufacturer's ideas of what is wanted. If it has the effect of doing away with the cheap buffer it will serve a useful purpose.

RAILWAY BUFFERS.

IN February occurred the death at the age of 72 of Mr. Benjamin Blundstone, manager of David Moseley Son's India Rubber Works, Manchester. He had been in the employ of the firm for 52 years, having commenced work with Mr. David Moseley, founder of the firm and grandfather of the present partners. The deceased was of a retiring disposition and was very little known in the trade, though Mr. J. B. Dunlop consulted him in 1888, soon after he invented the pneumatic tire, and for some years they worked together at this matter. As late as January 28 of this year he took out a patent for improvement in pneumatic tire air tubes.

OBITUARY NOTICE.

IN the "India Rubber Journal" of December 7, 1912, Frederick Kaye and R. S. Sharp describe a method for the estimation of sulphur in vulcanized rubber and other organic compounds. Of late years several new or modified processes have been evolved by different chemists, but it is generally recognized that all of these have some drawbacks more especially in point of accuracy or in the length of time required for the determination. An important point which seems to be frequently lost sight of is the extremely heterogeneous character of what is sold as vulcanized rubber, and it may easily happen that a method which will work well for a certain range of compounds will prove unsatisfactory in the case of other vulcanized rubbers. This is testified in the variations in the sulphur figures which usually characterize rubber analyses when carried out by different chemists; though the other figures may agree closely, yet it is generally found that those for sulphur differ considerably. A matter which has perhaps not always been allowed for is the migration of sulphur from the interior to the exterior of the rubber goods, thus leading to segregation. Unless therefore each analyst takes his sample in exactly the same way discrepancies in the results may easily occur.

NEW METHOD FOR SULPHUR ESTIMATION.

Not to linger further, however, on generalities, I proceed to the new method which resembles a good many previous ones in being a fusion method, while it differs from them in that zinc oxide is the base of the fusion mixture. The process in a few words is as follows: .25 to .5 of a gram of the finely divided sample is weighed out into a porcelain crucible and mixed intimately with eight times its weight of pure zinc oxide and four times its weight of potassium nitrate. Ignition with the lid on is effected by cautious heating after a layer of pure zinc oxide has been put in the crucible. After the reaction the crucible is heated strongly and after cooling the contents are dissolved in hydrochloric acid and the sulphur weighed as barium sulphate in the usual way. This method is certainly a simple and rapid one, and is admirably adapted for a great many cases. In all fusion methods, as distinct from wet methods, a good deal depends upon the state of subdivision of the rubber; i. e., the finer the particles the better the result. Unfortunately there are many rubbers which either from their purity or their oil content cannot be finely divided, and it would be interesting to know how far the accuracy of this method is affected in cases where the rubber cannot be finely divided.

One other point which is not without importance may be mentioned. This has reference to the presence of sulphates such as barytes and sublimed lead in the mixing. These are decomposed to a variable extent by the fusion mixture and will add considerably to the amount of sulphur found, thus necessitating a correction if the sulphur of vulcanization is the object of the

determination. Such a source of error applies also to other fusion methods, and further, as sulphates are by no means widely employed in rubber compounding, it need not be taken as destructive criticism of what promises to be a decidedly useful process both in point of accuracy and saving of time.

TRAVELERS' AGREEMENTS.

On February 21, in the King's Bench Division, London, Mr. J. A. Heath, late traveler for the firm, was sued by the Continental Tire and Rubber Co. (Great Britain), Limited, in respect to an agreement not to enter the service of a competing firm for one year after leaving the plaintiffs' employ. After a year's service with the plaintiffs Mr. Heath was discharged with a month's salary in lieu of notice, and subsequently was engaged by the Bavarian Rubber Co. Mr. Heath had had considerable experience in solid tires, the manufacture of which is a comparatively new departure for the Continental Co., and it appears that he brought in business amounting to about £1,000 a year with Messrs. Pickford, the well-known carriers. This business had recently, the plaintiffs stated, been transferred to the Bavarian Rubber Co., which sold Metzger tires. Evidence was given by Mr. Wolff, manager of the Michelin Tire Co., that his company's travelers all entered into similar agreements, five years being a common period of time. The main defense was that such agreements were harsh and against the public interest, especially in the present case, which applied to all rubber goods, whereas the defendant's business at the Continental Co. had to do with solid tires alone. The judge found for the Continental Co., holding that it was incumbent on the defendant to keep to his agreement. Recent decisions of the courts, he said, were against such contracts being held to be in restraint of trade, freedom to make agreements as to terms of service being considered as of importance in these days of trade competition. The judge also thought that the application of the agreement to rubber goods generally was fair, in view of the facilities a tire traveler would have of getting information on other goods from a company doing a general business. The result of this case is doubtless considered satisfactory by those tire companies which make it a rule to bind their travelers down. This procedure, though common, is not universal, as I know of at least four large manufacturers who do not insist on any such agreements being entered into. In the bulk of cases where such agreements are signed it is more or less on compulsion, the travelers as a whole being naturally averse to them because of the prospect of being out of work for one or more years, if their engagements are suddenly terminated. That this feeling is general is seen in the action which is being initiated by a certain travelers' association to have the matter discussed, with the view of getting all travelers to agree not to sign any such documents. It is recognized that it is only by concerted action that any effective steps can be taken to deal with the matter. There is, of course, plenty to be said on the other side, but space prevents the matter being discussed now at greater length.

ENGLISH WOMEN WEARING SUSPENDERS.

The differences between men and women grow less with the revolving years. One of the vital distinctions for some time has been the fact that men wore suspenders and women did not; but that distinction is soon to be obliterated—possibly. The London department stores have recently displayed, among their other attractions for women, feminine suspenders. Just how generally they will be adopted remains to be seen. Some women hardly appear to need them, but for perpendicular spinsters, for instance, who are straight up and down, suspenders would certainly appear to be a convenience. According to the best information at hand, this article has not yet appeared in the American stores.

A WELL-KNOWN MAKER OF GLASS MOLDS.

One of the best known makers of glass molds for rubber goods is Arnold Prox, of Leyland, near Preston, England. He has been blowing glass molds for rubber manufacturers for a great many years. He began making glass teat molds for the trade about 20 years ago, and has supplied a great many of the leading English firms; such for instance as Imgram & Son, of London; Macintosh & Co., of Manchester, and John Dowell & Son, of London. He has recently applied for a patent for a dipping-board, which is very simple and inexpensive, and said to be a great time saver.

THE LONDON COTTON AND FIBRE EXHIBITION, 1914.

Rubber, however important, is only one of the tropical products which have been taken up by the industrial nations of the world. Hence much attention is being paid in the East to the First International Exhibition of Cotton, Fibres, Tropical Products and Allied Industries, to be held in London June, 1914, concurrently with the Fourth International Rubber Exhibition.

Efforts are being made by the exhibition authorities to secure the co-operation of local experts in tropical countries. Reports from Manila state that Mr. M. M. Saleeby, chief of the fiber division of the Bureau of Agriculture, has been invited to join the advisory committee of the exhibition. Director F. W. Taylor and Mr. Otis W. Barrett, chief of the horticultural division, have also been asked to participate.

There are so many points of connection between rubber and fibres in their distribution, if not in their cultivation, that the two exhibitions will be complementary to each other.

PURCHASE OF MANUFACTURED RUBBER GOODS.

In commenting upon the recently published work of Pierre Pellier on the above subject, the "Revue Internationale" of Paris remarks that buyers of rubber manufactures, in addition to the necessary information as to the nature and properties of rubber need guidance as to the choice of qualities specially applicable to their contemplated employment.

Rubber, it is remarked, has many new and growing applications, being required in most branches of industry. From pumps to pneumatic tires and balloon coverings it is used for the most varied purposes. It would, however, be a mistake to think that for all uses it is indispensable to insist on a large proportion of rubber or upon the best qualities. In many cases it is necessary to incorporate with the rubber other substances in greater or less quantity, imparting to the compound special qualities in view of the uses contemplated.

To make a judicious choice it is necessary to be well acquainted with the properties of all the substances entering into the composition of manufactured rubbers, and in particular the influence of each of them upon the qualities of the compound.

In further illustration of this point, it is added that vulcanized rubber placed in contact with liquids not exercising any chemical action on it, such as water, only absorbs a small quantity of these liquids.

CORK-LINED BALLOONS.

One of the theories, and one quite widely accepted, advanced to explain the disastrous termination of Vaniman's balloon experiments, accounted for the explosion of the ill-fated "Akron" by the fact that the heat of the early sun breaking suddenly from the morning mists inflated the gas of the balloon so rapidly that the fabric was not able to stand the strain, and burst. A German manufacturer believes that he has found a way of counteracting the effect of external heat on the gas enclosed within a balloon. He is making a balloon fabric with a layer of pulverized cork on its inner side, on the theory that cork being a very poor conductor of heat, will render the enclosed gas less liable to rapid expansion. The cork is not a separate layer, but is incorporated and vulcanized into the fabric itself.

GROSS LICHTERFELDE MATERIAL TESTING BUREAU.

By Our Regular Correspondent.

THE annual report of the Gross-Lichterfelde Material Testing Bureau, dealing with the year ending March 31, 1912, records the work of the establishment in various branches of testing, including rubber, both crude and manufactured.

Among the samples tested was one of crude rubber, respecting which it was desired to ascertain whether it was really *Hevea*, so far as this point could be ascertained by the known process. The test made showed 2.1 per cent. of components soluble in acetone, which were almost completely saponifiable, but did not display optical activity. On the basis of these facts it could be stated that the sample was probably of *Hevea*.

Another sample of rubber was to be tested for loss in washing, which exceeded 20 per cent. As, however, the sample had been shipped during the hottest season and in a bag which admitted water, the report called attention to the fact that a considerable portion of the water must have been taken up on the way and in storage.

Numerous tests were made of technical rubber goods, such as hose, etc., with the object of ascertaining their chemical composition. Samples of balloon material in the unused as well as used state were subjected to comparative chemical investigation. From the results of the analyses it was to be determined whether the destruction of the used material was produced by the gas used in filling the balloon or not. The analyses only displayed slight differences in the chemical composition of the two samples. The changes noticed corresponded with those which might in practice be expected from the influence of air, light and mechanical causes (apart from that of the gas).

VULCANIZATION.

The large number of vulcanization tests had showed that physical absorption was combined with a chemical reaction of the sulphur with the rubber. The former occurs in a moment, while the latter often takes a considerable time. Vulcanization can take place at any temperature, even at a normal degree, but its speed varies with the temperature.

CRUDE AND VULCANIZED RUBBER.

The analyses of vulcanized and crude rubber included in the first place different forms of the bromide process. In this way a number of sources of error were discovered. Consequently, for determining the rubber content of crude rubber or rubber compounds it is necessary to resort to indirect analysis. That is, the other components are defined and the difference between their total and 100 per cent. is assumed to be rubber.

DEVELOPMENT OF GERMAN COLONIES.

In a retrospect of the past six years in the German colonies, Dr. Wohltmann, editor of the "Tropenpflanzer," advocates the importance of training young German agriculturists, both theoretically and practically, with a view of utilizing their knowledge and experience for the benefit of the German colonies. The number of such students is annually increasing. Such has been the policy of the German government since 1907.

Respecting the prospective rubber supplies from the German colonies, the author remarks:

"Only the next few years will afford us a reliable idea of how much good rubber is to be obtained from our colonies. On the one hand, the best methods of cultivation, tapping and collecting, are the subject of much discussion; while on the other hand, the trees planted in East Africa and Kamerun are in part so young, or have been in bearing so short a time, that an indisputable prognosis cannot be made. * * * It is today certain that the results of our plantations will not be unfavorable. What yields and profits they will show in the future, we must wait to see."

THE JAPANESE WASTE RUBBER AND RECLAIMED RUBBER TRADES.

By Our Regular Correspondent.

WASTE rubber is supplied to Japanese consumers from two sources, domestic collection and imports. In the former shape it is gathered by ragpickers, who go from door to door in search of various kinds of waste, including waste paper and rags. Each broad class of waste is then handled by houses in the particular branch. Thus waste rubber passes through the hands of waste rubber dealers. Waste rubber is also obtained in more or less important quantities through tenders made to the naval and military administrations and large industrial corporations.

Another source of waste rubber is the purchase of old cycle and motor car tires from dealers in those articles.

Imports of waste rubber are from Shanghai and other points, representing an average of $1,500 a month. Such imports take place when Japanese waste is scarce or dear. The latter is, however, in most cases, preferred by the Japanese rubber manufacturers. Waste is sorted into black, red and white; in each class there being superior, medium and inferior grades.

The quantity of waste rubber produced in Japan is estimated at about 2 million pounds, and the value at about $200,000. Black waste is in the largest quantity and varies in price from 5 to 15 cents per pound. The production and consumption of Japanese waste rubber are alike increasing at the rate of 20 per cent. annually. Most of the waste rubber produced was originally of Japanese manufacture. Tokyo is the principal center of the Japanese waste rubber trade, the waste being shipped thither from Osaka and other points, for eventual distribution among the principal cities of Japan.

RECLAIMED RUBBER—JAPANESE AND IMPORTED.

At one time Japanese rubber manufacturers used to mix waste rubber with crude rubber, in order to cheapen their product. The waste, after being mixed with certain ingredients, was brought into an unsulphurized state by mixing it on a roll with certain ingredients. This compound was designated as "reclaimed rubber" by Japanese manufacturers and used for the production of molded goods, such as "tabi" soles, tubes, tires, etc., either alone or in conjunction with crude rubber.

Reclaimed rubber, properly so called, is not produced in Japan, but is imported to the extent of about 15 tons a month. It is principally consumed by several insulated wire makers, who must have the genuine imported reclaimed rubber, as they cannot use the Japanese article; although the latter can be used for the manufacture of other goods, such as molded articles. The efforts made to get copper wire wrapped or tubed in thin sheets of the Japanese so-called "reclaimed rubber" have been unsuccessful. The imported reclaimed rubber principally comes from England and the United States.

DUTY ON IMPORTED RECLAIMED RUBBER.

The Japanese duty on reclaimed rubber is 20 per cent., while the article is free of duty in England, the United States, Anstria, Italy, Denmark, Norway and China. Several years ago there was no duty in Japan, but a duty of 10 per cent. was imposed to meet the case of the Dunlop Rubber Co. (Far East), importing free of duty as "reclaimed rubber," a compound, the ingredients of which in some cases paid 5 to 20 per cent. Under the new Japanese tariff it was made dutiable at 20 per cent. Waste rubber was still retained on the free list as being of benefit to Japanese manufacturers, but reclaimed rubber was treated as a manufacture of waste, at the lowest rate applicable to manufactured rubber.

Efforts are being made to get the duty reduced to 10 per cent., in which the correspondent of THE INDIA RUBBER WORLD is taking an active part. This rate has met with the approval

of the principal manufacturers. It will be submitted to the legislature through the Custom House Bureau of Finance. Mr. Ernest E. Buckleton, who has been visiting Japan in the interests of his company, the Northwestern Rubber Co., Litherland, Liverpool, England, as well as various Japanese manufacturers, advocate the freedom from duty of reclaimed rubber, but they in some cases fear a repetition of the attempt to import as reclaimed rubber an unvulcanized compound, the separate ingredients of which would pay from 5 per cent. to 20 per cent.

JAPANESE CRUDE RUBBER IMPORT STATISTICS.

Official Japanese statistics show the following comparative results for the last three years:

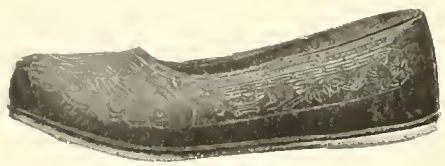
	Pounds.	Value.
1910	1,580,918	$1,515,093
1911	2,054,864	1,530,008
1912	2,004,010	1,514,560

The quantities for 1911 and 1912, it will be remarked, are about equal, and in each case represent an increase of about 25 per cent. on the figures of 1910. Owing to the depreciation of the article in the two later years, the value still remained about the same.

THE CHINESE MARKET FOR RUBBER GOODS.

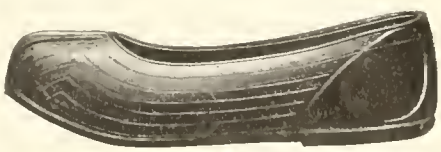
A WRITER in a recent issue of the "Gummi-Zeitung," discourses at some length upon the fact that the German rubber trade—and particularly the rubber footwear trade—has not been able to make any conspicuous progress in the Chinese market. In this particular the German rubber trade does not stand alone. The American rubber trade has enjoyed no very glittering success in this direction.

For instance, in the line of rubber footwear, American exports of boots and shoes to China are noticeably smaller now than they were some years ago. Nine or ten years ago



Chinese Sandal.

some of the American manufacturers of rubber footwear made a special Chinese rubber shoe, similar in shape to the ordinary sandal that the Chinaman wears, with a pointed rising toe, thick sole without heel, and without any arch. The accompanying cuts show some of the styles manufactured for Mongolian consumption. At one time this trade reached the



Chinese Sandal with Low Heel.

fair proportions of 200,000 or 250,000 pairs a year, with a net value to the American manufacturer of from $65,000 to $85,000. These shoes were made at a very low price, so that the Chinaman could get a pair at retail at a price in the neighborhood of 50 cents. But that was when crude rubber was considerably lower than it is now, and with the rise in the price of rubber, and the consequent increase in the price of manufactured goods, the Chinaman went back to his native shoes and dropped the American-made Chinese "golosh"; so that now the value of American-made rubbers going to China is very small.

The voluminous book on statistics, called "Commerce and Navigation of the United States," issued by the Department of Commerce and Labor, gives the following valuation of American rubbers sold to China for the last five years:

1907	3,850 pairs	$4,414
1908	2,055 pairs	2,360
1909	386 pairs	416
1910	385 pairs	447
1911	318 pairs	620

This certainly is nothing to boast about.

The entire rubber exports (including all articles) for the last three years as given by the same authority are as follows:

	1909.	1910.	1911.
Belting, hose and packing	$10,172	$12,265	$12,372
Boots and shoes	461	447	620
Tires for automobiles	Not specified	Not specified	590
Other tires	Not specified	Not specified	38
All other goods	6,455	7,125	4,883

The automobile is seen daily in Chinese cities, more and more of them being constantly purchased by rich Chinese merchants. Solid tires are being used in an increasing scale,

Chinese Gaiter.

particularly in connection with the improvement in the character of the rickshaws used.

Rubber goods are likewise profiting by the extension of demand for railway and electrical purposes.

There is also a demand for rubber rings in Shanghai, for use in preserving fruit for the European market.

BALATA INDUSTRY AND RUBBER PLANTING IN BRITISH GUIANA.

At the opening of the Combined Court of the Colony of British Guiana, the Governor referred to the promotion of Mr. F. A. Stockdale, the Assistant Director of Science and Agriculture, to the post of Director of Agriculture of the Island of Mauritius, and to the appointment in his place of Mr. Keith Bancroft, of the Federated Malay States Agricultural Department; upon which he congratulated Professor Harrison. He added:

"I trust that Mr. Bancroft may be able to take up the important question of investigating the best method of extracting the latex of the balata tree and also that the weight of his opinion may be used to induce planters in this colony to more seriously consider the planting of Pará rubber. I have inspected several estates and small plantations of this product but nowhere have I found the necessary care and attention being given to the planted area. This is a great disappointment to me, for the few trees I have seen properly attended to prove, as might be expected, that this tree grows here as freely and satisfactorily as in the Eastern Hemisphere."

NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

WHILE to the outsider matters in balata circles are quiet, the present is by no means a period of waiting. The short rainy season is drawing to a close and in a couple of months—possibly less—we shall have the long rainy season upon us. Most companies, therefore, which intend serious business this year, are getting ready to dispatch their expeditions, especially those whose grants are in the far interior. There is no reason at present to anticipate other than a successful season. Up to January 30 the exports have been 90,932 lbs. as against 11,839 lbs. exported to the same date last year.

THE ASSISTANT DIRECTOR OF AGRICULTURE—A GOOD APPOINTMENT.

An appointment has now been made to the Assistant Directorship of Agriculture, rendered vacant by the promotion of Mr. F. A. Stockdale to the Directorship of Agriculture of Mauritius. The appointment has been given to Mr. Keith Bancroft, B.A., who is at present in the Colonial Service in the Federated Malay States. The appointment is an exceedingly good one, because Mr. Bancroft will not only be able to do much to assist rubber cultivation, but, being a Barbadian, he will by no means be a stranger to the West Indies. Coming from the Malay States, where he has had an opportunity to study the *Hevea* from the scientific as well as the practical standpoint, he should prove of immense value to the owners of young *Hevea* plantations.

THE FELLING OF BALATA TREES.

A good deal of discussion has been created in the neighboring colony of Dutch Guiana on account of the Government having given A. F. C. Curiel permission to experiment in the felling method of bleeding balata, over an area of 8,640 hectares (21,600 acres). The Government's action is described as unconstitutional, and complaint is to be made to The Hague. An echo of the Surinam dispute has been heard in this colony. The "Daily Chronicle," dealing with the Surinam dispute, and with an article on the subject in the January number of The India Rubber World, says: "Into the merits of the system we do not propose to enter. The subject is largely in the domain of theory. We have heard it stated by equally competent authorities that the tree yields more latex when it is felled than when standing, and also that it yields less. This is a thing that perhaps our authorities will be able to tell us in the future—the not too distant future, we hope. Nor do we propose now to enter into the very alluring figures that have been placed before us regarding the value of the felling method. Mr. Henry Daley, who was a prime mover in the business, said that the cost of collection would be one-third of what it is now, and the output would be three times as great; that the balata licensees would be willing to pay a royalty of six cents per pound of balata, and that 5,000 men would be provided with work for 25 years, from which the Government would draw in royalties $100,000 per annum, which would pay the guarantee of interest. A very attractive prospect, but just why we should sacrifice our balata trees for the purpose of providing company promoters with a guarantee of interest on their capital, we do not know. It is a somewhat curious thing that this proposal should have come—not from the old established companies, but from those that came into the colony on the crest of the rubber boom. Looking back at the proposal at this period of time, we can see that it is fortunate that the project came to nothing. It was suggested that provision can be made that for every balata tree felled, a rubber tree should be planted in its place. This is a suggestion with merits, but supposing that such arrangements had been made with the several companies which have since failed, of what value to the colony would have been the rubber trees they planted? Granted that Mr. Daley's figures were correct, the question that calls for consideration is whether it would have been worth while to sacrifice our balata resources for a railway—the necessity of which would to that extent have diminished—and a very prospective rubber industry? On these terms this act of vandalism would, we think, have been wholly unjustified. We agree with The India Rubber World that the only way to arrive at truth in this matter is by experiment. It is urged that under existing conditions the trees die before they give that amount of balata that they would if they were at once felled. But to what extent that is the result—if it exists—of improper bleeding we have no means of knowing. It is certainly worth experimenting in the matter over a small area, but these experiments should be conducted by the Government, and should not be handed over to a private company, as apparently is being done in Surinam, to operate over 8,640 hectares. We shall watch the progress of events in Surinam with much interest."

Mr. Henry Daley, who was the prime mover in the former discussion, has replied to the *Chronicle* in the following terms: "Of course, if the colony wishes to refuse to support 'this act of vandalism,' the colony is the chief loser. It is certainly a very nice and patriotic feeling but likely to be expensive. I find generally though, that in the end business will override patriotism and also vandalism. It will be the same here. The Government will have to modify their balata regulations—within a short time—if they wish to derive revenues from the industry. My arguments in favor of allowing balata licensees to bleed trees as they think fit—with certain restrictions—are as follows: 1.—A considerably increased revenue could be secured, as licensees could well afford to pay higher royalties. 2.—Grants could be worked that are today impossible to work at a profit. 3.—Bleeders would earn more money; naturally, also the licensees. 4.—If the Surinam Government has followed its Venezuelan method of bleeding, they surely have fully considered the position. From my knowledge of the Dutch they seldom act on impulse. 5.—There is nothing to show today that trees will stand re-bleeding with advantage and it certainly seems improbable that a tree will survive a long number of years, if bled every five. 6.—There is little doubt that the equivalent amount of balata can be secured from a tree at one bleeding—as from the same tree in 30 years—under the existing regulations. 7.—The price of balata today is good and likely to remain so for the time being. What will be its value in 10 or 30 years? 8.—The demand for balata, unless the price goes down, is not likely to increase. Cables are not being laid nowadays, and low-grade rubbers treated can and do replace balata. 9.—That if the Government allowed the destroying of certain trees, it will take more men than there are today available, 30 years to bleed them, assuming there is only one balata tree to every 10 acres of the colony's area. 10.—Trees destroyed could be replaced—on plantations on the coast—by cocoanut or other trees, under some scheme of Government control, paid for by the increased royalty, which would yield in 20 or 30 years a very much finer revenue than balata is ever likely to give."

CATTLE RAISING PROPOSED IN BRITISH GUIANA.

Mr. C. L. Foot, an Englishman, with long experience in the cattle raising business in the Argentine, has applied to the British Guiana authorities for concessions of land, on which to establish ranches. Owing to the scarcity of cattle in Argentina he had determined on making a trial of British Guiana, which he considered excellently adapted for that purpose.

TWO MONTHS' BALATA EXPORTS.

British Guiana statistics from January 1 to February 27, 1913, show exports of 102,125 pounds, as compared with 23,483 pounds in the corresponding period of 1912.

Some Rubber Planting Notes.

THE AKERS RUBBER COMMISSION.

ONE of the most interesting events in the recent history of the rubber industry was the appointment of the Akers Commission, which has now published its reports upon the rubber situation in the Orient and in the Amazon territory. The commission was divided into two sections as follows:

Orient Commission.—Mr. C. E. Akers, Dr. Jacques Huber, Mr. A. Ufenast and Mr. F. Lugones.

Amazon Commission.—Mr. C. E. Akers, Mr. H. C. Rendle and Mr. F. Lugones.

The objects of the Commission included the reporting upon the Amazon rubber industry, and the endeavor to find improved methods of administration, collection and preparation, with a view to enabling the Brazilian product to compete with that of the Orient. Another subject treated was the formulation of practical ideas for the colonization of waste lands. While the investigations of the Commission have thus been of an extended character, it had been appointed by a group of financiers closely connected with the port of Pará, in conjunction with the Booth Steamship Co., and other interests closely allied with the trade of the Amazon Valley. Its inquiries were first carried out in the East and then continued on the Amazon.

Among the subjects treated in the reports are the working of wild rubber properties, as well as tapping and preparation, and other points tending to facilitate comparison between Brazilian and Eastern methods.

The questions of labor supply and relative cost of production are likewise treated. The reports will be dealt with later in detail.

MABIRA FOREST (UGANDA) RUBBER COMPANY, LTD.

At the recent extraordinary general meeting of the above company, a resolution was carried for the creation of 30,000 new Participating Preference shares of £1 each. It was stated that a surplus of revenue over expenditure might be expected in 1915, and a satisfactory profit in 1916. By latest census published the company had about 700 acres planted in rubber, chiefly in *Hevea*.

SUNGEI MATANG RUBBER COMPANY, LTD.

In his report on his recent visit to the company's estate of 1,000 acres, in the State of Perak, Federated Malay States, Mr. F. O. Streeten, a member of the board of the company, commented on the fact that the older rubber was doing very well, while the younger was excellent for its age. About 700 acres are planted. Mr. Streetem adds that the treatment of Tamils is thoroughly understood, they being well and happy. In proof of the assertion, he mentions that it is no uncommon thing for those who have worked on the estate and then returned home, to come back again subsequently, bringing friends and relations with them. The hospital accommodation he found to be excellent, but, fortunately, in limited demand.

SMALL COMPANIES PAYING BEST.

Dealing with the successful record made by some of the smaller rubber companies, "Truth," of London, remarks that it is the small companies which have done the big things. The Cicely Company (established 1904) with £16,000 capital, brought 829 acres into bearing and paid for 1910 a dividend of 200 per cent. Pataling (established 1903) with a capital of only £22,000 has brought 1,467 acres to the tapping stage, paying for 1910 as much as 325 per cent.; while Selangor (established 1899) with 1,836 acres under cultivation, has a capital of only £30,000, and paid 375 per cent. in 1910.

While profits are lower than in the bonanza year 1910, the latest dividends of respectively 75, 175 and 187½ per cent. are still highly remunerative for the original investors in the three companies named.

Comparing past conditions with future prospects, the journal adds: "Companies formed in the early days, however, had the advantage of cheaper land, cheaper labor, and lower salaries; and estates were brought into bearing at a figure which would now be impracticable. No one expects to see the young producers reach the magnificent premiums attained by the older companies. The days of prosperity, however, have not yet departed from the rubber market, and if profits are to be smaller in the future, there is still a margin large enough to bear a gradual diminution without seriously cutting into the profits of progressive companies."

MANURING RUBBER.

Commenting upon the general question of manuring rubber, Mr. J. F. Naughton in a letter from Colombo, in the columns of the "Malay Mail," remarks that the subject is still more or less in a stage of discussion in the Federated Malay States, as compared with Ceylon, where manuring is almost universally recognized as a *sine qua non*.

With reference to comparisons which have been drawn between the manuring of wheat and rubber, he calls attention to the fact that wheat is a field crop and a direct product, whereas latex is only an indirect product obtained by the unnatural method of removing bark. The largest and healthiest trees naturally produce the most latex: the object of manuring rubber trees being the indirect increase of latex by the direct nourishment of the tree.

OFFICIAL REPORT ON BRITISH MALAYAN EXHIBIT AT NEW YORK RUBBER EXPOSITION.

In his official report on the above exhibit, Mr. Leonard Wray, I. S. O. (the commissioner to the recent New York Rubber Exposition for the Federated Malay States and the Straits Settlements) has described the preparations which led to the satisfactory result achieved on that occasion.

This section occupied about 3,500 square feet, being second in extent only to Brazil. Seventy-four plantation companies were represented, as against 34 at the London Exhibition of 1911; the total number of samples being 141, with an aggregate gross weight of 18,474 pounds. In quality, it is recorded that the rubber showed as great an advance over that sent to the 1911 exhibition as the latter did over that of the 1908 exhibition. This statement is confirmed by the fact that out of the ten awards in the prize competition of the Rubber Growers' Association, London, eight were taken by the Federated Malay States.

TO EXPLORE THE UPPER AMAZON.

The expedition organized under the auspices of the University of Pennsylvania, for the purpose of exploring the upper tributaries of the Amazon—an enterprise regarding which quite a little has appeared in the press during the last year—set sail from Philadelphia on the 19th of March in the "Pennsylvania," a yacht of 184 tons burden. The expedition will be gone about three years and is expected to penetrate to regions never before visited by white men.

The yacht is in command of Captain J. C. Rowen, U. S. N., retired, and the expedition is headed by Dr. William C. Larrabee, curator of the American section of the museum. His chief associates are Dr. Franklin B. Church, an authority on tropical medicine, and H. Sandy McNab, a traveler and scientist. The "Pennsylvania" carries a crew of eleven men.

THE BATAVIA EXHIBITION OF 1914.

POSTPONED from April, 1914, to the following September, the Batavia Rubber Exhibition will form the next link in the chain after the London display of June, 1914. By this arrangement of dates the visitors to the earlier exhibition can still take in the later one.

In the official program of the Batavia (Java) International Rubber Congress and Exhibition, attention is called to the fact that there are in the Netherlands East Indies 260,000 acres planted with rubber; the exports having amounted in 1911 to 2,249 tons. In addition to Dutch capital, the equivalent of about 92 millions of dollars has been invested by other nations in the Netherlands East Indies, this amount including about 75 millions British, 12 millions Belgian and four millions American. Germany is only represented by about three-quarters of a million.

As in the case of previous rubber exhibitions in other parts of the world, a Congress will be held, when it is expected that the views of well-known authorities on vital questions will throw light on many matters of consequence. One of the special features of the exhibition is—that being held in a rubber-producing country, rubber-yielding species will be planted in the exhibition grounds; while an opportunity will be afforded for visiting rubber estates in the vicinity of Batavia and in other parts of the East.

The Congress will be divided into eight sections, as follows: 1, Botany and Zoology; 2, Climate and Soil; 3, Culture and Crops; 4, Preparation, etc.; 5, Working Policy, etc.; 6, Synthetic Rubber; 7, Commerce; 8, Publications.

Prizes and diplomas will be offered by official and commercial organizations, the jury dealing with them being international in character. According to the latest announcement, the exhibition will be open from September 8 to October 10, 1914; the congress being scheduled to close on September 12, 1914.

A definite program of the congress will shortly be issued. Meanwhile, information can be obtained from the secretary of the committee, Dr. C. J. J. Van Hall, Buitzenborg, Java.

The Congress and Exhibition will be held under the patronage of the Prince Consort of the Netherlands and with the support of the Dutch Government. Applications for space should reach the secretary-general of the exhibition before November 1, 1913, mentioning floor or wall area required.

Among the principal objects of the exhibition will be to show how the culture and preparation of rubber are conducted in the principal rubber producing countries of the world. The necessary attention will also be given to wild rubber species.

Major General J. G. H. de Voogt is president of the executive council, the vice-president being Dr. W. B. Tromp de Haas, the well-known rubber expert.

SINGAPORE AS A DISTRIBUTING POINT FOR PLANTATION RUBBER.

The East Asiatic Co., Limited, of Singapore, has issued a circular to plantation companies, pointing out that the charges incurred by selling rubber in London represent 4⅜ per cent., of which 2¾ per cent. would be saved by selling in Singapore. The expenses of shipping and landing rubber from Singapore for the American market are estimated at 2⅛ per cent.

MANCHESTER (NORTH BORNEO) RUBBER, LIMITED.

According to the report of Mr. T. A. Ball, one of the directors of the above company, who recently visited the property, the rubber trees are everywhere looking healthy and strong. The best individual trees measured at three feet from the ground, 15½ to 16¾ inches, all tappable now at 2½ years' growth, which Mr. Ball considers very good indeed. By the last accounts about 1,700 acres were planted in rubber on the company's estates.

BRITISH MALAYA RUBBER PRODUCTION, 1906-1911.

OWING to the crop reports being furnished by various departments, the aggregate of the items of British Malayan rubber production is not always clear.

This point is, however, distinctly shown by the report of the Director of Agriculture of the Federated Malay States, which gives the returns of the four divisions comprised in the term "British Malaya":

ACREAGE UNDER RUBBER.

	1906.	1907.	1908.	1909.	1910.	1911.
Federated Malay States	85,579	126,235	168,048	196,953	245,774	352,974
Straits Settlements	11,341	42,866	50,121	57,587	60,568	80,629
Johore	2,310	10,126	20,944	33,344	43,516	74,975
Kelantan & Kedah	.....	.....	2,025	4,151	12,995	34,299
Total British Malaya	99,230	179,227	241,438	292,035	362,853	542,877

The preponderance of the Federated Malay States in the rubber production of British Malaya is shown by the official tables; those States representing about two-thirds of the total acreage under rubber and seven-eighths of the total yield.

Another feature of this return is the comparative table of acreage under rubber and yield of the four States which constitute the Federated Malay States. For 1911 the figures stand as follows:

	1911. Acreage Under Rubber.	1911. Yield. Pounds.
Selangor	145,222	11,438,966
Perak	124,681	6,041,762
Negri Sembilan	75,356	4,297,745
Pahang	7,715	31,144
Total of Federated Malay States	352,974	21,809,617

Thus, the State of Selangor produces the largest actual quantity of rubber, while the average per acre was approximately: Selangor, 79 pounds; Perak, 48 pounds; Negri Sembilan, 56 pounds; Pahang, 4 pounds. Selangor therefore leads under both heads. In connection with this total for 1911 of 21,809,617 pounds as yield of British Malaya it is of interest to note that the aggregate estimate of Malayan exports for 1912 is 44,588,807 pounds; thus showing an increase for last year exceeding 100 per cent. Official details on same basis as shown for 1911 will follow at a later date.

YIELDS OF RUBBER (POUNDS).

	1906.	1907.	1908.	1909.	1910.	1911.
Federated Malay States	861,772	1,990,754	3,192,710	6,083,493	12,617,383	21,809,617
Straits Settlements	25,560	105,621	145,580	330,381	1,045,577	2,137,644
Johore	47,724	182,495	201,632	327,635	664,352	905,218
Kelantan & Kedah	.....	.....	.....	.....	41,551	51,564
Total British Malaya	935,056	2,278,870	3,539,922	6,741,509	14,368,863	24,904,043

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED FEBRUARY 4, 1913.

No. 1,051,939. Resilient tire. P. F. Wobst, Milwaukee, Wis.
1,051,975. Tire fastener. E. G. Watrous, Chicago, Ill.
1,051,987. Process of treating rubber and product of the same.
1,052,009. Cushioned automobile wheel. W. F. Nelson, Exira, Iowa.
1,052,064. Vehicle wheel. E. F. Krell, Detroit, Mich.
1,052,088. Combined hose coupling and faucet. L. C. Prettyman, Los Angeles, Cal.
1,052,103. Hose clamp. W. J. Tuttle, Albany, Wyo.
1,052,106. Hose. F. D. Voorhees, Montclair, N. J.
1,052,129. Tire fastener. F. M. Carhart, Sea Cliff, and A. Van de Water, Glen Cove, N. Y.
1,052,143. Rubber stamp. E. L. Hamilton, Lumberton, N. C.
1,052,270. Wheel. L. H. Perlman, New York.
1,052,289. Milk bottle stopper. T. B. Sluby, Canonsburg, Pa.
1,052,290. Wheel. B. Smartt, Indianapolis, Ind.
1,052,350. Spring wheel. V. E. Lane, Brooklyn, N. Y.
1,052,358. Cushion spring wheel. H. J. Marks, Toowoomba, Queensland, Australia.
1,052,391. Sediment tester. T. L. Valerius and O. Larsen, Fort Atkinson, Wis., assignors to Creamery Package Mfg. Co., of Illinois.
1,052,422. Inclosed core for tires. J. M. Miller, Washington, D. C.
1,052,430. Vulcanizing distinct parts or surfaces of rubber. O. Walter, Hanover, Germany.

Designs.

43,495. Wheel tire. J. Christy, Akron, Ohio.
43,499. Rubber cushion. W. A. Force, New York.

Trade Marks.

55,728. New York Belting and Packing Co., Ltd., assignor to New York Belting and Packing Co., N. Y. The trade mark *Great Seal*, with company's name and dates of foundation and incorporation in circle.
67,188. Chicago Belting Co., Chicago, Ill. The word *Reliance*. For leather belting.

ISSUED FEBRUARY 11, 1913.

1,052,508. Rotable heel lift. W. J. Newland, Omaha, Neb.
1,052,560. Tread band for tires of motor vehicles. J. C. Berry, Harrow, England
1,052,565. Spring wheel. R. M. Burgess, Columbia, Mo.
1,052,570. Spring spoke. W. H. Clark, West Burlington, N. Y.
1,052,572. Rim brace and tire clamp. J. P. Corbett, Fayette, Ala.
1,052,576. Spring cushion and weather strip. J. F. Fauner, Newark, N. J.
1,052,757. Vehicle tire. J. T. Shea, Glen Cove, N. Y.
1,052,765. Man's garment. J. C. Strauss, St. Louis, Mo.
1,052,801. Emergency tire for automobiles. S. Davidson, Detroit, Mich.
1,052,861. Steam hose. C. A. Swanson and A. B. Brooke, Hancock, Md.
1,052,873. Protector for pneumatic tires. C. B. Woodworth, Niagara Falls, N. Y.
1,052,936. Belt fastener. J. Mathews, Plymouth, Pa.
1,053,101. Vehicle tire. F. A. Magowan, N. Y.
1,053,141. Rim and tire for vehicle wheels. J. A. Cooper, Chattanooga, Tenn.

Designs.

43,556. Rubber bathing cap. R. Parker, New York, assignor to Parker, Stearns & Co., Brooklyn, N. Y.

Trade Marks.

59,107. The Republic Rubber Co., Youngstown, Ohio. Illustration of portion of inner tube.

ISSUED FEBRUARY 18, 1913.

1,053,142. Tire tightener. J. Alcorn, Mecca, Ind.
1,053,155. Vacuum creating apparatus. C. G. Campbell and M. Benbrook, Milwaukee, Wis., assignors to Creamery Package Mfg. Co., Chicago, Ill.
1,053,186. Typewriter roller. A. G. Hug, Chicago, Ill.
1,053,238. Tire. G. A. Stewart and H. E. Goodell, Ridley Park, Pa.
1,053,299. Brake liner fabric and process of making same. E. B. Knowles, Bridgeport, Conn., assignor to C. L. Hill, Lancaster, Pa.
1,053,304. Pneumatic tool. H. E. Le Gendre, Creskill, N. J., assignor to E. W. Bliss Co., Brooklyn, N. Y.
1,053,332. Vehicle wheel. A. R. Weaver, Batesville, Ark.
1,053,346. Wheel rim for pneumatic tires. E. K. Baker, assignor to Universal Rim Co., both of Chicago, Ill.
1,053,347. Wheel rim for pneumatic tires. E. K. Baker, assignor to Universal Rim Co., both of Chicago, Ill.
1,053,402. Spring wheel. E. B. Keemer, Washington, D. C.
1,053,404. Machine for preparing cores for re-use in manufacturing pneumatic tire shoes. F. L. Killian, assignor to F. R. Ormsby, both of Akron, Ohio.
1,053,408. Machine for covering circular objects. C. J. Landin, Boston, assignor to Boston Woven Hose & Rubber Co., Cambridge, Mass.
1,053,427. Acetylene gas apparatus. A. Moser, Hickman, Neb.
1,053,439. Process for treating worn or waste rubber or the like for the utilization thereof. W. E. W. Richards, assignor to The Bourn Rubber Co., Ltd., both of London.
1,053,504. Anti-skidding device for tires. M. C. Harris, Philadelphia, Pa.
1,053,535. Pump. J. Meklensek, San Diego, Cal.
1,053,636. Vehicle wheel. C. J. Ohlsson, New York.
1,053,707. Spring tire for vehicle wheels. S. J. Casey, Keeseville, N. Y.
1,053,723. Resilient wheel. C. D. Galvin, Merchantville, N. J.
1,053,778. Wheel. G. L. Bourquin, Sellersville, Pa.
1,053,821. Resilient tire. R. L. Jenkins, Richmond, Va.
1,053,847. Tread band for pneumatic tire wheels. J. McLeod, St. Kilda, Victoria, Australia.
1,053,852. Cushion wheel. A. Moon, Fallon, Nev.
1,053,879. Self-filling fountain pen. J. L. Schnell, Arlington, N. J.
1,053,889. Vehicle wheel. J. F. Starbuck, Philadelphia, Pa.
1,053,910. Locking device for train pipe couplings. W. A. Greenlaw, Melrose, Mass., assignor to The Greenlaw Mfg. Co., Boston.
1,053,933. Rubber-lined fabric hose. B. L. Stowe, Jersey City, N. J.
1,053,953. Detachable tire tread. A. Ascheri, Puteaux, France.

ISSUED FEBRUARY 25, 1913.

1,054,060. Soldering apparatus. W. Ulbrich, Leipzig, Germany.
1,054,171. Tire holder. Henry Buermann, Newark, N. J.
1,054,245. Detachable rubber heel. J. E. Shell, Lenoir, N. C.
1,054,312. Sectional pneumatic tire. M. P. Prince, Cambridge, and C. M. Reinheimer, Newburyport, Mass.
1,054,444. Resilient tire for wheels. E. L. A. Olivier, Paris, France.
1,054,501. Spring wheel. S. D. Brooks, Oneonta, N. Y.
1,054,504. Means for tire inflation. L. Burgraff, Jr., Mason City, Iowa.
1,054,516. Resilient tire for the wheels of vehicles. M. G. C. Dodwell, Wellington, New Zealand.
1,054,519. Wearing apparel. M. M. Dryfoos, New York.

Trade Marks.

61,738. The J. F. & W. H. Warren Co., Worcester, Mass. The trade mark *B and F*. Leather belting.
59,847. Voorhees Rubber Mfg. Co., Jersey City, N. J. The word *"Ideal."* Rubber boots, etc.
63,769. The Philip Carey Mfg. Co., Lockland, Ohio. The words *Est. 1873 Carey* in black and white diamond. Packings, etc.
64,403. F. Goetze, New Brunswick, N. J. The words *Goetze Devo Gaskets* over illustration of gasket. Gaskets.
66,556. Morley Bros., Saginaw, Mich. The word *Wedgeway*. Automobile tires and rubber hose.
66,645. Mishawaka Woolen Mfg. Co., Mishawaka, Ind. The word *Vac*. Rubber boots and shoes.
66,858. Fort Wayne Oil and Supply Co., Fort Wayne, Ind. The word *Paratex*. Canvas stitched belting.
67,354. Hood Rubber Co., Watertown, Mass. Illustration of a rubber shoe, boots, shoes, etc.

[Note.—Printed copies of specifications of United States patents may be obtained from The India Rubber World office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911.

**Denotes Patents for American Inventions.*

[Abstracted in the Illustrated Official Journal, February 12, 1913.]

23,109 (1911). Spring wheels with rubber cushions. G. S. Ogilvie, Sizewell Hall, near Leiston, Suffolk.
23,116 (1911). Rubber couplings for vehicle wheels. E. Schneider, Le Creusot, Saone-et-Loire, France.
23,133 (1911). Improvements in solid and pneumatic tires. F. Baptiste, 36 Cannon street, Birmingham.
23,210 (1911). India-rubber substitutes containing soya-oil. J. W. Butler, 29 Glenshiel Road, Eltham, Kent.
23,349 (1911). Protecting rim during painting of tires. J. W. Harrison, Cranford, Layters Way, Gerrards Cross, Buckinghamshire.
23,419 (1911). Tire attachments to rims. C. S. Challiner, 18 Park Range, and J. A. Challiner, The Glen, Anson Road—both in Victoria Park, Manchester.
23,475 (1911). Pneumatic tire with solid rubber tread band. D. Strang, Esk street, Invercargill, New Zealand.
23,593 (1911). Round links in tread bands. C. Mercanton, Clarens, Vaud, Switzerland.
23,611 (1911). Spare wheel cover. Dunlop Pneumatic Tyre Co., and H. J. Dunn, Alma street, Coventry.
23,630 (1911). Rubber substitutes containing gelatinous solvents. J. Stockhausen, 105 Fischelnerstrasse, Crefeld, Germany.

[Abstracted in the Illustrated Official Journal, February 19, 1913.]

23,700 (1911). Leather tread bands for tires. H. Roths, and G. Schwyzer, Mannedorf, Zurich, Switzerland.
23,722 (1911). Improvements in pneumatic tires. H. A. Fleuss, Dunston Lodge, Thatcham, Berkshire, and R. H. Davis, 187 Westminster Bridge Road, London.
23,723 (1911). Improvements in coagulation of latex. J. Y. Johnson, 47 Lincoln's Inn Fields, London.
23,738 (1911). Tire repair outfits. M. J. Schulte, Hillcrest, Kenilworth, Warwickshire.
*23,741 (1911). Detachable rim attachments. J. H. Wagenhorst, Akron, Ohio, U. S. A.
*23,838 (1911). Improvements in solid tires. G. T. Doty, 3625 21st street, and J. D. Show, 1609 Race street—both in Philadelphia, Pa., U. S. A.

24,074 (1911). Stair treads. D. Baxter, Inveresk, Compton avenue, Cathcart, and R. L. Baxter, 150 Bothwell street, Glasgow.

24,117 (1911). Packing for gas pipe joints. L. Schomburg, 53 Kaiserstrasse, Gelsenkirchen, Germany.

24,124 (1911). Plastic composition including rubber or gutta-percha. J. W. Aylsworth, 223 Midland avenue, East Orange, N. J.

24,156 (1911). Stocking suspenders. C. Nicholson, The Leylands, Hatfield, near Doncaster.

24,196 (1911). Spring wheels with pneumatic cushions. E. Allen, 78 Salop street, Penarth, South Wales.

[Abstracted in the Illustrated Official Journal, February 26, 1912.]

24,313 (1911). Mud-guards for vehicles. C. H. Nichols, 40 Stratford Road, Wolverton, Buckinghamshire.

24,412 (1911). Rubber tubes for lubricators. K. Rotherham, 27 Spon street, and W. Johnson, 39 Park Road—both in Coventry.

24,429 (1911). Use of rubber buffers in hanging pictures. A. Hailey, 4 The Mall, and H. A. Green, 2 The Mall—both in Church End, Finchley, London.

24,437 (1911). Vulcanized fabric composed of leather and rubber. S. F. Connolly, 101 Chalton street, Euston Road, London.

24,484 (1911). Safety stair-treads. Safety Tread Syndicate, Ltd., 15 Barbican, and E. S. Higgins, 21 Cornfield Grove, Balham, both in London.

24,496 (1911). Rubber in fabric-stretching rolls. S. Hough, Ash street, South Shore, Blackpool.

24,549 (1911). Decomposition of terpene in production of isoprene. P. A. Newton, 6 Breams Buildings, Chancery Lane, London.

24,615 (1911). Rubber shock absorbers for flying machines. A. V. Roe, 47 Rusholme Road, Putney, London.

*24,752 (1911). Inflation and deflation of motor tires. L. Burgraff, 1437 Third avenue, Mason City, Iowa, U. S. A.

24,758 (1911). Closing punctures in tires. F. H. Michelsen, E. W. and H. P. Hudd, Burnet street, Hatfield, Pretoria, Transvaal.

24,781 (1911). Rubber rings in toy pistols. G. Schrödel, 18 Maiacbstrasse, Nürnberg, Germany.

24,878 (1911). Construction of air tubes. W. R. Bourne, 12 South street, Ponder's End, and G. Welch, 35 Warwick Road, Edmonton, both in

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

446,541 (July 26, 1912), MacQueen. Elastic vehicle tires.

446,557 (July 26). C. Michot. Improvements in apparatus for vulcanizing repaired tires.

446,598 (July 27). Farbenfabriken, vorm. F. Bayer & Co., Manufacture of a product resembling vulcanized rubber.

446,600 (July 27). Badische Anilin und Soda Fabrik. Manufacture of products resembling rubber.

446,602 (July 27). G. Roumier. Pneumatic tire.

446,659 (July 30). U. Sarrat and E. Sarrat. Separation of air chambers of pneumatic vehicle wheels.

446,670 (July 30). L. Steurs. Leather cut and incrusted with rubber, for use in footwear, soles, heels, etc.

446,702 (July 31). Harvey, Frost & Co., Ltd. Improvements in electric heating appliances and particularly in vulcanizers.

446,724 (July 31). L. Tervièire. Elastic tires for automobile and other vehicles.

446,749 (August 1). J. E. Johnson and F. G. Mason. Protective cover for pneumatic tires and its process of manufacture.

446,758 (August 1). R. Trautwein. System of combined solid and pneumatic tires for automobiles and other vehicles.

446,828 (August 2). R. Muller. Protective cover for solid and pneumatic tires.

446,851 (August 2). C. Schragin. "Ventilating" tire, with protective cover for automobiles.

446,742 (August 1). M. Kochnitzsky and A. Field. Process for extracting resin from crude rubber.

446,942 (August 6). G. E. Starr. Pneumatic tire for automobiles and other vehicles.

447,024 (October 16, 1911). G. Kantor. Pneumatic vehicle wheel.

447,025 (October 16, 1911). G. Kantor. Automatic pneumatic vehicle wheel.

447,093 (August 9, 1912). R. Angelle. Mud guards for vehicle wheels.

447,142 (August 12). E. Junghaus. Automobile tire.

447,166 (August 13). E. H. Koken. Improvements in elastic vehicle tires.

447,245 (August 16). L. J. G. Collet. Central pneumatic wheel.

447,247 (August 16). F. Mabraux. Mud guards for automobiles, autobuses and similar vehicles.

447,344 (August 17). P. Lagasse. Protection for pneumatic tires.

447,421 (August 20). Gummiwerk Solle, Munich. Pneumatic tire with mica protection.

447,428 (August 21). W. Langmuir. Continuous tire for rubbered wheels.

447,411 (October 26, 1911). L. Velasquez. Process for making artificial rubber.

[Note.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

257,548 (January 3, 1912). Pneumatic truck tires removable while inflated. Gustav Fischer, Stormstrasse 4, Berlin-Westend.

257,875 (September 17, 1911). Manufacture of leather cloths, waterproof fabrics, etc. Albert Reimann, Andernach A. R.

257,813 (March 24, 1911). Process for preventing artificial rubber from becoming viscous or resinous. Farbenfabriken, vorm, F. Bayer & Co., Leverkusen.

258,151 (April 7, 1910). Products resembling vulcanized rubber. Farbenfabriken, vorm, F. Bayer & Co., Leverkusen.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

250,713 (1913). Amalgamation and agglomeration with rubber of granulated or powdered carborundum. C. Leclercq and M. Bertholomé, Liege.

250,569 (1913). Process for preserving the elasticity of rubber objects. C. Bayer, Alteburgerstrasse 57, Cologne.

250,385 (1913). Coagulation of gelatine and like substances by cold. M. Find, head of 5th st., Camden, N. J., U. S. A.

252,244 (1913). Utilization of rubber waste. O. A. Wheeler, E. D. Loewenthal and B. Loewenthal, 17 North La Salle st., Chicago.

249,979 (1913). Manufacture from animal substances of an elastic product analogous to rubber. Naamlooze Vennootschap Chemische Industrie, Amsterdam.

252,274 (1913). Manufacture of waterproof products. J. H. W. Daw and the Azulay Syndicate, Limited, 8 Laurence Pountney Hill, London.

251,190 (1913). Production of elastic composition. H. Haulot, avenue Louise 49, Brussels.

251,275 (1913). Manufacture of plastic elastic and non-hygroscopic masses. W. Plinatus, Zuffenhausen, near Stuttgart.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of the values of exports of manufactures of india-rubber and gutta-percha for the month of December, 1912, and for the first eleven months of five calendar years:

Months.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	Total.
December, 1912...	$187,105	$113,067	$578,552	$878,724
January-November.	2,342,738	1,245,155	7,305,234	10,893,127
Total, 1912.....	$2,529,843	$1,358,222	$7,883,786	$11,771,851
Total, 1911.....	2,276,511	1,686,092	7,140,140	11,102,743
Total, 1910.....	2,056,944	2,266,137	5,681,486	10,004,567
Total, 1909.....	1,800,300	1,653,466	4,413,626	7,867,392
Total, 1908.....	1,256,490	1,329,170	3,580,685	6,166,345

The above heading, "All Other Rubber," for the month of December, 1912, and for the first eleven months of two calendar years, include the following details relating to tires:

Months.	For Automobile.	All Other.	Total.
December, 1912.....*values*	$187,434	$64,053	$251,484
January-November	3,034,699	544,477	3,579,176
Total, 1912.....	3,222,133	608,530	3,830,663
Total, 1911.....	2,458,177	561,330	3,019,507

AN ASBESTOS MERGER.

The Northwestern Asbestos Mills and the International Asbestos Mills and Power Companies are said to have instructed their directors to proceed with plans for the merging of the two companies into one corporation, with a capital stock of $8,000,000.

1,500,000 BALES OF COTTON FOR TIRES.

Few people have any conception of the tremendous consumption of cotton in the great tire industry in this country. The Government Report shows that last year automobile tires required one and a half million bales of cotton—and, of course, cotton of the very highest grade. It is not surprising, therefore, that the price of cotton remains at a high level.

Report of the Crude Rubber Market.

THE most prominent feature of the London market for fine Pará during the month has been the relatively small extent of fluctuation. In the closing days of February, the price recorded on the 25th of 4*s*. 0½*d*. had slightly dropped, the month of March starting at 4*s*. and touching 3*s*. 11*d*. on March 3, which has practically been about the basis since then, with some fractional changes, and closing on the 26th at 3*s*. 10¾*d*. Plantation rubber pale crepe has been at almost identical prices with fine Pará during the month, the figure on the 26th being 3*s*. 10¼*d*., as compared with 3*s*. 10¾*d*. for fine Pará. Prices have been to some extent supported by the absence of pressure to sell.

On March 11 there were 900 tons plantation offered by auction in London, prices realized showing a decline of ½*d*. to ¾*d*. as compared with those of the previous auction, a fortnight earlier.

Owing to the approaching Easter holidays, there was a small sale of 350 tons on March 18. Notwithstanding the absence of American purchases (owing to the strike), the buying power of the market proved fully equal to the quantity offered, which sold at prices slightly easier than those of the previous week.

In New York the continuance of the Akron strike has continued to depress the market, which is, however, expected to recover with the settlement reported to have been made for March 31. Manufacturers have, as a rule, abstained from purchases, preferring to make further inroads upon their stocks before replenishing them.

Leading plants in the above-named city claim that they have had but little difficulty in working their plants at full capacity during the strike. This estimate is, however, not regarded as general, the proportion of operation to capacity being considered to have averaged 50 per cent. Large tire interests at Akron are reported to have enough stock of crude rubber to last through the summer months.

At the Rotterdam sale of the 14th, the Congos were withdrawn, while the plantation rubber fetched market rates.

The monthly Antwerp auction on the 19th of March, resulted in the sale of the 225 tons of Congos and the 75 tons Plantations, at an average of 3 per cent. below valuations.

In the Amsterdam sale of March 12, were included 33 tons *Hevea* and 15 tons *Ficus*, which sold respectively at 2½ per cent. and 3½ per cent. below valuations.

Hamburg has shown a somewhat better feeling during March. Quotations of March 14 equaled: South Cameroon, 63¼c.; Mollendo Pará, 92½c.; Prima Red Rio Nunez Niggers, 89; Conaky Niggers, 85c.; Maniçoba Crepe, 85c.

With reference to the question of the visible supply of rubber, it is noted with interest that the stock at the end of February has been stated to be 6,960 tons Parás and 2,010 tons Caucho, against 7,930 and 1,700 tons respectively at the end of February, 1912.

New York Quotations.

Following are the quotations at New York for Pará grades, one year ago, one month ago, March 29—the current dates:

Para.	April 1,'12.	Mar. 1,'13.	Mar. 29,'13.
Islands, fine new	117@118	91 @ 92	89@90
Islands, fine, old	119@120	.....	.....
Upriver, fine, new	122@122	96 @ 97	92@93
Upriver, fine, old	124@125	.....	.....
Islands, coarse, new	67@ 68	46½@ 47	43@44
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	98½@ 99	71 @ 72	66@67
Upriver, coarse, old	.....	.....	.....
Cametá	72@ 73	48 @ 49	48@49
Caucho (Peruvian) ball	98@ 99	71½@ 72½	70@71
Caucho (Peruvian) sheet	.....	.....	.....
Plantation Ceylons.			
Fine smoked sheet	139@140	101 @102	97
Fine pale crepe	138@139	97 @ 98	95
Fine sheets and biscuits	136@137	96 @ 97	92
Centrals.			
Esmeralda, sausage	97@ 98	71 @ 72	68
Guayaquil, strip	.....	.....	..
Nicaragua, scrap	96@ 97	69 @ 70	..
Panama	.....	.....	..
Mexican plantation, sheet	95@ 96	.....	..
Mexican, scrap	.....	.....	..
Mexican, slab	.....	.....	..
Mangabeira, sheet	67@ 68	.....	..
Guayule	69@ 70	.....	64
Balata, sheet	90@ 91	82 @ 83	..
Balata, block	62@ 63	52 @ 53	..
African.			
Lopori, ball, prime	122@123	.....	..
Lopori, strip, prime	.....	.....	..
Aruwimi	.....	.....	80
Upper Congo, ball red	.....	97 @ 98	90
Ikelemba	.....	.....	..
Sierra Leone, 1st quality	109@110	.....	..
Massai, red	111@112	88 @ 89	88
Soudan Niggers	.....	.....	..
Cameroon, ball	91@ 92	68 @ 69	63½
Benguela	78@ 79	65 @ 66	63
Madagascar, pinky	.....	.....	..
Accra, flake	28@ 29	25 @ 26	25
East Indian.			
Assam	.....	85 @ 86	83
Pontianak	6¾@ ..	8 @ 8½	8
Borneo	.....	.....	..

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During March the money market has continued quite stringent, with very little demand for paper, the best rubber names ruling at 5½ per cent. @ 6 per cent., principally the latter, and those not so well known 6¼ per cent. @ 6½ per cent., with some as high as 7 per cent."

New York Prices for February (New Rubber).

	1913.	1912.	1911.
Upriver, fine	$.96@1.03	$1.07@1.11	$1.28@1.68
Upriver, coarse	.72@ .78	.92@ .94	.98@1.20
Islands, fine	.92@ .97	1.05@1.08	1.15@1.56
Islands, coarse	.47@ .51	.62@ .65	.65@ .90
Cametá	.48@ .51	.65@ .67	.68@ .95

Rubber Scrap Prices.

Late New York Quotations.—Prices paid by consumers for carload lots, per pound—are practically unchanged.

	March 28,'13.
Old rubber boots and shoes—domestic	10⅝@10¾
Old rubber boots and shoes—foreign	9½@ 9⅝
Pneumatic bicycle tires	6¼@ 6⅜
Automobile tires	10½@10⅝
Solid rubber wagon and carriage tires	9¼@ 9½
White trimmed rubber	11 @11½
Heavy black rubber	4¾@ 5
Air brake hose	6 @ 6½
Garden hose	1⅛@ 1½
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾

STATISTICS PARA INDIA RUBBER (IN TONS).

(Including Caucho).

STATISTICS FOR THE MONTH OF FEBRUARY.

	Pará.	Caucho.	1913. Tons.		1912. Tons.	1911. Tons.	1910. Tons.
Receipts at Pará	3,790	1,190	= 4,980	against	4,840	5,790	4,770
Shipments to Liverpool	1,720	690	= 2,410	"	1,990	2,290	2,180
Shipments to Continental Ports	250	120	= 370	"	500	330	330
Shipments to America	1,570	220	= 1,790	"	2,640	1,500	3,000
American Imports	2,040	280	= 2,320	"	2,670	1,460	2,390
American Deliveries	1,620	290	= 1,910	"	2,790	1,520	2,380
Liverpool Imports	1,356	673	= 2,029	"	1,745	1,586	1,885
Liverpool Deliveries	1,046	393	= 1,439	"	1,625	1,385	1,645
Continental Imports	310	80	= 390	"	520	350	360
Continental Deliveries	310	80	= 390	"	540	320	360

VISIBLE SUPPLY—1st March, 1913.

	1913. Pará.	1913. Caucho.	1912.	1911.	1910.
Stock in England, Pará, 1st hands	585	.....	1,600	2,156	333
Pará, 2nd hands	115	.....		364	180
Caucho	...	480	280	490	307
Stock in Pará, 1st hands	720	290	290	790	60
2nd hands	680	100	910	440	450
Syndicate	810	.....	2,240	2,450	.....
Stock in America	710	110	130	160	150
Stock on Continent	10	10	60	100	20
Afloat—Europe	1,380	560	1,680	1,700	1,710
Afloat—America	660	110	690	590	2,190
	5,670	1,660			
Total Visible Supply, including Caucho.	7,330		7,880	9,240	5,400

CROP STATISTICS—30th June, 1912, 28th February, 1913.

	Pará.	Caucho.	1912/13.	1911/12.	1910/11.	1909/10.
Pará Receipts.. 1912/13	24,200	4,970	29,170	25,710	25,700	26,970
1911/12	22,590	3,120				
Pará Shipments to Europe	12,110	3,440	15,550	13,320	12,690	12,180
Pará Shipments to America	12,380	1,800	14,180	13,470	9,840	14,540
England Landings, net			10,784	9,117	8,961	9,021
England Deliveries, net			10,974	12,337	9,239	9,323
America Landings, net			13,740	15,175	9,670	12,810
America Deliveries, net			13,090	14,945	9,650	13,450
Continental Imports, net			2,990	2,250	2,150	1,600
Continental Deliveries, net			3,070	2,300	2,100	1,610

POSITION—1st March, 1913.

Increase in Receipts during February, 1913, against February, 1912	140
Increase in Receipts—Crop, July/February, 1912/13, against 1911/12	3,460
Decrease in Deliveries—Crop, July/February, 1912/13, England and Continent, against 1911/12	593
Decrease in Deliveries—Crop, July/February, 1912/13, America, against 1911/12	1,855
Decrease in Visible Supply Pará Grades, against 1st March last year	550
Decrease in Stock, England, February 28th, 1913, against February 29th, 1912	700

WM. WRIGHT & CO.

Liverpool, 4th March, 1913.

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA, 1912.

[In Shillings and Pence Per Pound.]

July 5, 1912	4/9	November 15	4/5¼
July 12	4/10	November 22	4/5¼
July 19	4/10	November 29	4/5½
July 26	4/11¾	December 6	4/7
August 2	4/11	December 13	4/7
August 9	5/0½	December 20	4/6½
August 16	5/0½	December 27	4/7½
August 23	5/2	January 3, 1913	4/7¼
August 30	5/1¾	January 10	4/6½
September 6	4/11½	January 17	4/6½
September 13	4/9½	January 24	4/5¼
September 20	4/8	January 31	4/4
September 27	4/7	February 7	4/2¾
October 4	4/7	February 14	4/3
October 11	4/7	February 21	4/0½
October 18	4/6½	February 28	4/0½
October 25	4/6	March 7	3/10¾
November 1	4/4½	March 14	3/11¼
November 8	4/5	March 20	3/11

Liverpool.

William Wright & Co. report [March 3]:

Fine Pará.—Prices remained fairly steady during the first half of the month, but the financial difficulties of an important American house caused a further decline in values, and we close fully 4*d.* per pound lower on the month, with a dull demand and an easy tendency. Closing value: Upriver, spot, 4*s.* [97 cents]; Islands, 3*s.* 11*d.* [95 cents]. Receipts continue ample, but the increase this month is in caucho, rubber being 130 tons less. Total receipts 4,980 tons, including 1,190 tons caucho, against 5,130 tons last month, and 4,840 tons last year, bringing the crop up to date to 29,170 tons, against 25,710 tons last year, showing an increase of 1,610 tons in rubber and 1,850 tons in caucho.

Amsterdam.

Joosten & Janssen report [March 12]:

The result of today's sale, though very irregular, was above expectations, considering the unfavorable position of the market.

Rotterdam.

Havelaar & De Vries report [March 17]:

The sale of 14th included 77 tons Congo, which were mostly bought in, while the 10 tons *Hevea* were sold at market prices.

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

February 26.—By the steamer *Clement,* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	250,600	40,200	179,500	18,300=	488,600
New York Commercial Co	169,000	35,900	44,200	11,100=	260,200
General Rubber Co	58,400	9,600	47,100	2,100=	117,200
Meyer & Brown	96,000	19,600	55,900	2,300=	173,800
Hagemeyer & Brunn	13,200	1,800	11,900	.....=	26,900
De Lagotellerie & Co	.....	.....	7,900	.....=	7,900
Henderson & Korn	107,900	25,200	12,500	15,800=	161,400
H. A. Astlett & Co	8,900	10,400	7,300	.....=	26,600
American Export Co	.....	.....	18,500	2,200=	20,700
	704,000	142,700	384,800	51,800=	1,283,300
MANAOS.					
Arnold & Zeiss	76,200	4,400	27,300	.....=	107,900
New York Commercial Co	195,200	72,800	72,900	20,600=	361,500
Ed. Maurer	11,200	3,400	1,200	55,000=	70,800
General Rubber Co	.....	.....	18,700	.....=	18,700
Meyer & Brown	.....	.....	.....	21,100=	21,100
Henderson & Korn	43,300	11,100	2,900	68,400=	125,700
Robinson & Co	46,000	1,000	17,500	5,800=	70,300
American Export Co	22,200	.....	.....	.....=	22,200
	394,100	92,700	140,500	170,900=	798,200
Total	1,098,100	235,400	525,300	222,700=	2,081,500

March 6.—By the steamer *Pancras* from Pará and Manáos:

Arnold & Zeiss	57,100	.....	160,000	35,400=	252,500
General Rubber Co	133,300	10,000	92,400	2,800=	238,500
Meyer & Brown	94,200	8,700	33,100	.....=	136,000
Henderson & Korn	127,100	37,600	85,300	15,700=	265,700
G. Amsinck & Co	2,400	1,000	2,200	.....=	5,600
Lazard Freres	19,000	.....	900	300=	20,200
	433,100	57,300	373,900	54,200=	918,500
MANAOS.					
New York Commercial Co	134,600	43,300	33,400	21,100=	232,400
Arnold & Zeiss	101,500	2,400	34,100	20,700=	158,700
General Rubber Co	14,800	.....	9,900	.....=	24,700
Meyer & Brown	.....	.....	.....	52,500=	52,500
Henderson & Korn	33,600	3,400	500	46,600=	84,100
Robinson & Co	19,600	12,600	29,600	16,400=	78,200
Ed. Maurer	6,700	5,400	5,000	3,600=	20,700
	310,800	67,100	112,500	160,900=	651,300
Total	743,900	124,400	486,400	215,100=	1,569,800

March 11.—By the steamer *Napo* from Iquitos:

H. A. Astlett & Co	1,100	.....	1,400	13,200=	15,700

March 17.—By the steamer *Basil* from Pará and Manáos:

Arnold & Zeiss	75,500	.....	52,400	40,100=	168,000
General Rubber Co	2,000	.....	15,400	800=	18,200
Meyer & Brown	19,300	4,600	34,700	.....=	58,600
Henderson & Korn	40,300	8,600	57,800	1,700=	108,400
Ed. Maurer	41,300	.....	.....	.....=	41,300
G. Amsinck & Co	6,100	400	3,300	.....=	9,800
	184,500	13,600	163,600	42,600=	404,300
MANAOS.					
Arnold & Zeiss	87,200	300	24,200	200=	111,900
General Rubber Co	43,000	.....	19,100	300=	62,400
Meyer & Brown	.....	.....	.....	50,300=	50,300
Ed. Maurer	1,300	18,700	1,300	1,800=	23,100
American Export Co	22,800	.....	.....	.....=	22,800
Henderson & Korn	74,300	29,000	27,800	800=	131,900
Robinson & Co	59,900	.....	20,300	14,200=	94,400
	288,500	48,000	92,700	67,600=	496,800
Total	473,000	61,600	256,300	110,200=	901,100

PARA RUBBER VIA EUROPE.

Pounds.

February 24.—By the *Advance*=Colon:

W. R. Grace & Co. (Fine)	11,500	
F. Rosenstern & Co. (Fine)	7,000	18,500

February 24.—By the *Carmonia*=Liverpool:

N. Y. Commercial Co. (Fine)	11,500	
Raw Products Co. (Fine)	2,000	
Rubber Trading Co. (Fine)	11,500	25,000

February 28.—By the *Victorian*=Liverpool:

James T. Johnstone (Fine)		9,000

March 3.—By the *Celtic*=Liverpool:

Wallace L. Gough (Fine)	11,500	
Arnold & Zeiss (Fine)	7,000	
General Rubber Co. (Fine)	4,000	
General Rubber Co. (Coarse)	7,000	29,500

March 12.—By the *Kroonland*=Antwerp:

Various (Fine)		10,000

March 15.—By the *Bovic*=Liverpool:

General Rubber Co. (Fine)	5,000	
Various (Fine)	33,500	38,500

March 15.—By the *Chicago*=Havre:

Arnold & Zeiss (Fine)		11,500

March 17.—By the *Baltic*=Liverpool:

N. Y. Commercial Co. (Fine)		11,200

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

February 24.—By the *Metapan*=Colombia:

R. Del Castillo & Co	700	
Heilbron Wolff & Co	300	1,000

February 24.—By the *Morro Castle*=Mexican Ports:

Meyer & Brown	1,000	
Herman Kluge	4,000	
E. Steiger & Co	1,000	
General Export Commission Co.	1,800	
Mecke & Co	500	8,300

February 24.—By the *Advance*=Colon:

G. Amsinck & Co	4,000	
Wessels, Kulenkampff & Co	1,000	
Charles E. Griffin	1,200	
United Export Co	1,000	7,200

February 24.—By the *Carmonia*=Liverpool:

Various		22,500

February 24.—By the *President Grant*=Hamburg:

Meyer & Brown		7,300

February 24.—By *El Dia*=Galveston:

Continental-Mexican Rubber Co		*52,000

February 24.—By the *Allemania*=Colombia:

Kunhardt & Co	600	
Maitland, Coppell & Co	4,000	
A. Helde	3,000	7,600

February 25.—By the *Tivives*=Port Simon:

New York Commercial Co		4,500

February 26.—By the *Antilla*=Tampico:

Arnold & Zeiss	*33,000	
Continental-Mexican Rubber Co.	*142,000	*175,000

February 26.—By the *Togus*=Colombia:

J. S. Sambrada & Co	3,000	
A. M. Capen's Sons	7,000	
Camacho, Roldan & Van Sickle	500	10,500

February 27.—By the *Momus*=New Orleans:

Various		3,500

February 28.—By the *Panama*=Colon:

G. Amsinck & Co	4,000	
Dumarest Bros. & Co	4,000	
Isaac Brandon & Bros	6,000	
Piza, Nephews & Co	3,000	17,000

March 1.—By the *Pretoria*=Hamburg:

Meyer & Brown		3,700

March 1.—By *El Volle*=Galveston:

Continental-Mexican Rubber Co		*55,000

March 1.—By the *Esperonzo*=Mexican Ports:

Harburger & Stack	2,500	
J. W. Wilson & Co	1,500	
Maitland, Coppell & Co	3,000	
H. Marquardt & Co	500	
Charles T. Wilson	12,500	20,000

March 3.—By *El Mundo*=Galveston:

Continental-Mexican Rubber Co		*33,500

March 3.—By the *Westerwald*=Colombia:

Kunhardt & Co		2,500

March 3.—By the *Vestris*=Bahia:

J. H. Rossbach Bros. & Co		11,500

March 4.—By the *Sixaola*=Colon:

Pablo Calvet & Co		3,000

March 5.—By the *Prinz Joachim*=Colombia:

Wessels, Kulenkampff & Co	700	
Isaac Brandon & Bros	600	
W. R. Grace & Co	3,500	4,800

March 5.—By the *Guontanamo*=Tampico:

Arnold & Zeiss	*52,000	
Continental-Mexican Rubber Co.	*50,000	
Ed. Maurer	*17,000	
New York Commercial Co	*66,000	*185,000

March 6.—By the *Antilles*=New Orleans:

Various		700

March 7.—By the *Allianca*=Colon:

G. Amsinck & Co	8,000	
Wessels, Kulenkampff & Co	4,500	
Mecke & Co	1,000	13,500

March 7.—By the *Mexico*=Mexican Ports:

Meyer & Brown	1,000	
G. Amsinck & Co	4,000	
E. Steiger & Co	3,500	
Mecke & Co	500	
Lawrence Johnson & Co	3,000	12,000

March 7.—By the *Almirante*=Colombia:

R. Del Castillo & Co		2,000

March 7.—By *El Rio*=Galveston:

Continental-Mexican Rubber Co		*30,000

March 10.—By the *Albingia*=Colombia:

Maitland, Coppell & Co	2,500	
Pottberg, Ebeling & Co	5,500	
Caballero & Blanco	1,000	9,000

March 10.—By the *Scottish Prince*=Bahia:

Adolph Hirsch & Co		1,500

March 10.—By the *Santiago*=Tampico:

New York Commercial Co		*33,500

March 10.—By *El Alba*=Galveston:

Continental-Mexican Rubber Co		*56,000

March 11.—By the *Creole*=New Orleans:

Various		5,000

March 12.—By the *Kroonlond*=Antwerp:

Meyer & Brown		7,400

March 12.—By the *Oruba*=Colombia:

G. Amsinck & Co	1,000	
Maitland, Coppell & Co	2,000	3,000

March 12.—By the *Colon*=Colon:

W. R. Grace & Co		7,500

March 12.—By the *Prinz Eitel Friedrich*=Colombia:

J. J. Julia & Co	2,000	
A. P. Beers	1,500	3,500

March 12.—By the *Carrillo*=Colombia:

Isaac Brandon & Bros		1,000

March 13.—By *El Oriente*=Galveston:

Continental-Mexican Rubber Co		*4,000

March 14.—By the *Santa Morto*=Colombia:

G. Amsinck & Co	1,700	
R. Del Castillo & Co	1,000	2,700

March 14.—By the *President Lincoln*=Hamburg:

Meyer & Brown		3,500

March 15.—By the *Bovic*=Liverpool:

Adolph Hirsch & Co	33,500	
Various	8,000	41,500

March 15.—By the *Comus*=New Orleans:

A. N. Rotholz		2,500

March 15.—By the *Monterey*=Mexican Ports:

General Export Commission Co.	4,000	
Maldonado & Co	1,000	
E. Steiger & Co	2,500	
J. W. Wilson & Co	1,600	
Harburger & Stack	1,000	
Willard Hawes & Co	1,500	
Charles T. Wilson	18,500	
Laurence Johnson & Co	2,000	32,100

March 17.—By the *Kaiserin Auguste Victoria*=Hamburg:

Ed. Maurer	*22,500	
Various	*11,500	*34,000

March 17.—By the *Baltic*=Liverpool:

James T. Johnstone	2,500	
Arnold & Zeiss	22,500	25,000

March 17.—By the *Altai*=Colombia:

R. Del Castillo & Co	800	
Pottberg, Ebeling & Co	2,500	33,000

March 19.—By the *Prinz August Wilhelm*=Colombia:

G. Amsinck & Co	6,000	
Isaac Brandon & Bros	1,200	
Heilbron Wolff & Co	1,200	
W. R. Grace & Co	2,500	10,900

March 20.—By the *Advance*=Colon:

G. Amsinck & Co	2,000	
Dumarest Bros. & Co	600	
Camacho, Roldan & Van Sickle	1,200	
Piza, Nephews & Co	2,200	6,000

March 22.—By the *Morro Castle*=Mexican Ports:

Meyer & Brown	1,000	
G. Amsinck & Co	800	
General Export Commission Co.	2,000	
E. Steiger & Co	1,700	
W. L. Wadleigh	4,000	
Harburger & Stack	400	
Mecke & Co	800	10,700

AFRICAN.

Pounds.

February 24.—By the *Armenian*=Liverpool:

James T. Johnstone	3,000	
Various	13,500	16,500

February 24.—By the *Carmania*=Liverpool:

Various		11,200

February 24.—By the *President Grant*=Hamburg:

Meyer & Brown	3,500	
Ed. Maurer	38,500	
Various	60,000	102,000

February 26.—By the *Canada*=Lisbon:

Various		15,000

February 28.—By the *Victorian*=Liverpool:

Arnold & Zeiss		33,600

March 1.—By the *Pretoria*=Hamburg:

Ed. Maurer	5,500	
Various	15,000	20,500

March 3.—By the *Celtic*=Liverpool:

James T. Johnstone		3,000

March 4.—By the *Loplond*=Antwerp:

Meyer & Brown	5,000	
Arnold & Zeiss	9,000	
Ed. Maurer	6,000	20,000

March 4.—By the *Rochambeau*=Havre:

Meyer & Brown	13,500	
Raw Products Co	2,000	
Rubber Trading Co	3,500	19,000

March 5.—By the *Minneapolis*=London:

Ed. Maurer		17,000

March 7.—By the *Amerika*=Hamburg:

Various		65,000

March 8.—By the *Pennsylvonia*=Hamburg:

General Rubber Co	11,500	
Rubber Trading Co	700	
Various	22,500	34,700

March 12.—By the *Kroonlond*=Antwerp:

Ed. Maurer	5,000	
Various	22,500	27,500

March 12.—By the *Minnehaha*=London:

Various		11,200

March 14.—By the *President Lincoln*=Hamburg:

Wallace L. Gough	15,000	
Various	10,000	25,000

March 15.—By the *Bovic*=Liverpool:

Arnold & Zeiss	7,500	
James T. Johnstone	11,500	
Various	22,500	41,500

March 15.—By the *Chicago*=Havre:

Arnold & Zeiss	22,500	
Rubber Trading Co	7,500	30,000

March 17.—By the *Kaiserin Auguste Victoria*=Hamburg:

Meyer & Brown	17,800	
Various	5,000	22,800

March 17.—By the *Baltic*=Liverpool:

Meyer & Brown	4,500	
Various	30,000	34,500

March 19.—By the *Zeeland*=Antwerp:

Meyer & Brown		23,500

EAST INDIAN.

[*Denotes Plantation Rubber.]

February 24.—By the *Braunfels*=Colombo:

Meyer & Brown	*31,000	
New York Commercial Co	*87,000	
Ed. Maurer	*46,000	
Various	*11,000	*175,000

February 24.—By the *President Grant*=Hamburg:

Meyer & Brown	*20,500	
Various	*1,500	*22,000

February 25.—By the *Vaderland*=Antwerp:

Meyer & Brown		*29,500

February 25.—By the *Mesaba*=London:

Ed. Maurer	*11,500	
A. W. Brunn	*3,500	
Rubber Trading Co.	*3,000	
Adolph Hirsch & Co.	*3,500	
Raw Products Co.	*2,500	
Various	*60,500	*84,500

February 28.—By the *New York*=Southampton:

Ed. Maurer	*8,000	
Charles T. Wilson	*5,500	
Henderson & Korn	*33,500	*47,000

March 1.—By the *Pretoria*=Hamburg:

Various		*14,000

March 1.—By the *Egremont Castle*=Singapore:

Ed. Maurer	*55,000	
Malaysian Rubber Co.	*11,200	
L. Littlejohn & Co.	*15,000	
Wallace L. Gough Co.	*8,000	
James T. Johnstone	*8,000	
Raw Products Co.	*2,500	
Various	*50,000	
Various	*22,500	*172,200

March 4.—By the *Lapland*=Antwerp:

Meyer & Brown	*102,000	
Arnold & Zeiss	*2,000	
Ed. Maurer	*1,500	*105,500

March 5.—By the *Ryndam*=Amsterdam:

Rubber Trading Co.		*7,000

March 5.—By the *Minneapalis*=London:

Meyer & Brown	*96,500	
Ed. Maurer	*67,000	
General Rubber Co.	*85,000	
Raw Products Co.	*2,200	
Rubber Trading Co.	*2,200	
James T. Johnstone	*35,000	
Adolph Hirsch & Co.	*48,500	
Charles T. Wilson	*80,000	
Arnold & Zeiss	*35,000	
Goodyear Tire & Rubber Co.	*235,000	
William H. Stiles	*11,200	
Henderson & Korn	*30,000	*727,600

March 6.—By the *Oceanic*=Southampton:

Meyer & Brown	*11,200	
New York Commercial Co.	*45,000	
Robinson & Co.	*13,500	
Raw Products Co.	*1,500	
Rubber Trading Co.	*8,000	
Charles T. Wilson	*22,500	
Ed. Maurer	*8,000	
Henderson & Korn	*25,000	*134,700

March 7.—By the *Gutenfels*=Colombo:

Ed. Maurer		*22,500

March 7.—By the *Amerika*=Hamburg:

Various		*13,500

March 8.—By the *Pennsylvania*=Hamburg:

Meyer & Brown	*6,500	
Charles T. Wilson	*4,500	*11,000

March 12.—By the *Kroonland*=Antwerp:

Meyer & Brown		*73,000

March 12.—By the *Rotterdam*=Amsterdam:

Rubber Trading Co.	3,500	
James T. Johnstone	*2,000	5,500

March 12.—By the *Minnehaha*=London:

Meyer & Brown	*66,500	
General Rubber Co.	*80,000	
James T. Johnstone	*12,500	
Robinson & Co.	*4,500	
New York Commercial Co.	*110,000	
Arnold & Zeiss	*8,000	
William H. Stiles	*3,000	
Ed. Maurer	*11,200	
Henderson & Korn	*13,500	
Charles T. Wilson	*45,000	
Rubber Trading Co.	*8,500	*362,700

March 13.—By the *Philadelphia*=Southampton:

Meyer & Brown	*49,500	
New York Commercial Co.	*11,200	
Rubber Trading Co.	*11,200	
Raw Products Co.	*5,000	
Charles T. Wilson	*18,000	
Arnold & Zeiss	*3,500	
Ed. Maurer	*33,500	*131,900

March 13.—By the *Swazi*=Singapore:

Ed. Maurer	*23,500	
James T. Johnstone	*42,000	
L. Littlejohn & Co.	*33,500	
Malaysian Rubber Co.	*17,500	
Various	*50,000	*166,500

March 14.—By the *President Lincoln*=Hamburg:

Charles T. Wilson		*10,500

March 17.—By the *Kaiserin Auguste Victoria*=Hamburg:

Ed. Maurer		*4,500

March 17.—By the *Schuylkill*=Singapore:

Meyer & Brown	*11,200	
Ed. Maurer	*65,000	
Malaysian Rubber Co.	*28,500	
L. Littlejohn & Co.	*12,500	
General Rubber Co.	*5,500	
Various	*23,500	
Various	15,500	161,700

March 18.—By the *Minnewaska*=London:

Meyer & Brown	*90,000	
N. Y. Commercial Co.	*27,000	
Ed. Maurer	*40,000	
Robinson & Co.	*24,500	
James T. Johnstone	*22,000	
Adolph Hirsch & Co.	*18,000	
L. Littlejohn & Co.	*7,500	
Charles T. Wilson	*7,000	
General Rubber Co.	*105,000	
Henderson & Korn	*11,200	
Various	*135,000	*487,700

March 19.—By the *Zeeland*=Antwerp:

Meyer & Brown		*47,000

March 21.—By the *Majestic*=Southampton:

Arnold & Zeiss	*22,500	
Rubber Trading Co.	*17,500	
Raw Products Co.	*4,000	
Various	*22,500	*66,500

March 22.—By the *Indraghi*=Singapore:

Ed. Maurer	*80,000	
James T. Johnstone	*39,000	
Malaysian Rubber Co.	*22,500	
L. Littlejohn & Co.	*23,000	
Various	*38,500	*203,000

BOSTON ARRIVALS.

Imports in February, 1913.

	Pounds.	Values.
Gutta-Jelutong	1,896,574	$92,483
India Rubber	71,193	61,543

CUSTOM HOUSE STATISTICS.

Port of New York, February, 1913.

Imports:	Pounds.	Value.
India rubber	10,398,926	$8,082,581
Balata	153,240	73,746
Guayule	423,172	201,116
Gutta-percha	16,712	12,254
Gutta-jelutong (Pontianak)	724,512	27,845
Total	11,716,562	$8,397,542
Exports:		
India rubber	37,939	$29,303
Balata	2,512	1,884
Guayule	10,610	5,305
Gutta-percha	.....	.....
Reclaimed rubber	.....	.....
Gutta-jelutong (Pontianak)	84,030	14,963
Rubber scrap, imported	1,988,438	$167,255
Rubber scrap, exported	369,215	49,242

EXPORTS OF INDIA-RUBBER FROM PARA, MANAOS AND IQUITOS FOR FEBRUARY, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.	Fine.	Medium.	Coarse.	Caucho.	Total.	Grand Total.
Zarges, Berringer & Co.	146,528	19,164	169,740	26,874	362,306	400,919	115,994	51,912	174,425	743,250	1,105,556
Ad. H. Alden, Ltd.	80,457	17,097	22,082	5,565	125,201	83,266	10,663	16,500	8,986	119,415	244,616
General Rubber Co. of Brazil	131,027	19,679	77,254	3,595	231,555	38,432	10,215	4,026	46,760	99,433	330,988
J. Marques	163,296	36,721	90,528	16,873	307,418	55,225	3,269	7,122	3,311	68,927	376,345
R. O. Ahlers & Co.	9,071	.....	431	173	9,675	49,664	.....	3,720	12,014	65,398	75,073
Suarez Hermanos & Co., Ltd.	.....	.....	.....	.....	.....	181,958	8,822	10,124	82,112	283,016	283,016
De Lagotellerie & Co.	.....	.....	3,960	.....	3,960	.....	.....	.....	.....	.....	3,960
Pires Teixeira & Co.	10,030	2,040	14,190	.....	26,260	11,730	170	.....	.....	11,900	38,160
Sundry exporters	3,535	464	1,073	38	5,110	.....	.....	990	31,080	32,070	37,180
Itacoatiara, direct	.....	.....	.....	.....	.....	12,520	1,450	7,520	6,020	27,510	27,510
	543,944	95,165	379,258	53,118	1,071,485	833,714	150,583	101,914	364,708	1,450,919	2,522,404
Manáos, direct	340,428	76,070	126,538	165,919	708,955	608,281	145,915	137,106	444,517	1,335,819	2,044,774
Iquitos, direct	4,660	.....	691	2,487	7,838	.....	.....	.....	.....	.....	7,838
Total, February, 1913	889,032	171,235	506,487	221,524	1,788,278	1,441,995	296,498	239,020	809,225	2,786,738	4,575,016
Total, January, 1913	890,963	147,800	747,191	315,644	2,101,598	1,295,806	190,907	223,030	744,224	2,453,967	4,555,565

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR FEBRUARY, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.	Fine.	Medium.	Coarse.	Caucho.	Total.	Grand Total.
Zarges, Ohliger & Ca.	126,139	3,355	42,846	10,474	182,814	279,328	57,814	45,775	229,152	612,069	794,883
Adelbert H. Alden, Ltd.	157,030	55,307	53,154	20,885	286,376	18,770	3,910	2,641	27,083	52,404	338,780
General Rubber Co. of Brazil	27,479	21	23,883	62,096	113,479	63,433	21,367	10,947	65,133	160,880	274,359
Ahlers & Ca.	147,238	27,205	49,313	75,937	299,693	121,403	27,198	31,956	58,798	239,355	539,048
De Lagotellerie & Co.	10,880	.....	.....	.....	10,880	97,862	29,463	30,516	36,355	194,196	205,076
Semper & Co.	.....	.....	.....	.....	.....	7,840	1,120	1,940	.....	10,900	10,900
Sociedade Anonyma (Armazens Andresen)	.....	.....	.....	.....	.....	16,000	4,960	7,260	150	28,370	28,370
W. Peters & Co.	9,167	13,094	3,706	30,180	56,147	.....	.....	2,430	150	2,580	58,727
Sundry	.....	.....	.....	.....	.....	3,485	243	3,641	27,746	35,115	35,115
	477,933	98,982	172,902	199,572	949,389	608,121	146,075	137,106	444,567	1,335,869	2,285,258
Iquitos, direct	4,660	.....	691	2,487	7,838	.....	.....	.....	.....	.....	7,838
Total, February, 1913	482,593	98,982	173,593	202,059	957,227	608,121	146,075	137,106	444,567	1,335,869	2,293,096
Total, January, 1913	472,818	77,126	217,249	166,875	934,068	658,309	126,008	137,093	481,836	1,403,246	2,337,314

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Antwerp.

RUBBER STATISTICS FOR FEBRUARY.

Details.	1913.	1912.	1911.	1910.	1909.
Stocks, Jan. 1.....*kilos*	463,752	586,056	645,419	482,162	597,777
Arrivals in February—					
Congo sorts	197,713	331,775	172,078	454,116	184,360
Other sorts	5,818	16,781	18,621	43,047	98,260
Plantation sorts	145,907	117,747	45,617	17,461	17,391
Aggregating	813,190	1,052,359	881,735	996,786	897,788
Sales in February.....	251,901	530,403	342,528	480,252	566,355
Stocks, February 28....	561,289	521,956	539,207	516,534	331,433
Arrivals since Jan. 1—					
Congo sorts	519,320	558,023	575,499	656,663	370,549
Other sorts	18,463	22,976	100,835	48,703	164,419
Plantation sorts	284,212	206,737	109,938	71,125	48,998
Aggregating	821,995	787,736	786,272	776,491	583,966
Sales since January 1..	771,766	940,518	835,277	801,469	848,268

RUBBER ARRIVALS FROM THE CONGO.

MARCH 12.—By the steamer *Leopoldville:*

Bunge & Co.	(Société Générale Africaine) *kilos*	33,500	
do	(Chemins de fer Grande Lacs)	800	
do	(Belgika)	2,900	
do	(Alberta)	2,900	
do	(Cie du Kasai)	93,000	
do	(Forminière)	3,600	
do		500	
Société Coloniale Anversoise	(Haut Congo)	950	
do	(Lomami)	6,260	
L. & W. Van de Velde	(Comfina)	20,700	
do	(Velde)	4,760	
do		1,900	
Charles Dethier	(American Congo Co.)	2,000	
do	(Comminiere)	4,600	
Willaert Freres		5,000	
Divers		13,500	196,870

Plantation Rubber From the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

[From January 1 to February 24, 1913. Compiled by the Ceylon Chamber of Commerce.]

	1912.	1913.
To Great Britain .....*pounds*	1,051,839	1,597,373
To United States	653,869	1,084,023
To Belgium	284,483	271,934
To Australia	11,681	47,839
To Japan	2,181	27,764
To Germany	14,096	16,232
To Austria	2,392	12,860
To Italy	.....	8,108
To Canada	10,482	.....
To Norway and Sweden.....	39	.....
Total	2,031,062	3,066,133

The export Figures of Rubber for 1913 given in the above table include the imports re-exported. (These amount to 382,419 lbs.—263,778 lbs. from the Straits and 118,641 lbs. from India.) To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date deduct the quantity of imports from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to December 31, 1912, corrected. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To	Singapore.	Penang	Port Swettenham.	Total
Great Britain, pounds	10,620,830	9,401,608	17,037,067	37,059,505
Continent	365,343	26,663	2,311,717	2,703,723
Japan	522,058	.....	.....	522,058
Australia	89,139	.....	.....	89,139
Ceylon	2,217	255,627	903,404	1,161,248
United States	3,050,120	933	2,081	3,053,134
Total, 1912.....	14,649,707	9,684,831	20,254,269	44,588,807
Total, 1911.....	6,589,425	5,254,931	12,109,788	23,954,144
Total, 1910.....	3,764,877	2,454,907	8,349,523	14,569,307
Total, 1909.....	2,412,617	2,088,133	2,960,320	7,461,070

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OFFICIAL REPORT ON AKRON RUBBER STRIKE.

THE rubber strike at Akron, after an acute case of what the doctors call progressive anemia, finally dwindled down to nothing and expired of exhaustion, the last of March. Two weeks later the "Probe" Committee, appointed by the senate of the Ohio legislature, to investigate the cause of the strike, brought in its report. The essential features of this report are reproduced in the letter from our Akron correspondent, to be found on another page in this issue. The committee found that there were no conditions existing in the rubber plants of Akron that could of themselves have occasioned the labor demonstration that began in February, and for a short time assumed rather threatening proportions. They report that the strike was almost entirely the work of professional agitators, connected with the I. W. W., who went to Akron solely for the purpose of making trouble. The conditions in the rubber factories are reported to have been in the main most excellent. The operatives are abundantly supplied with light and ventilation, and surrounded by the best conditions that modern sanitation has been able to devise. Nor did they have any ground for complaint in regard to the rate of wages, which in some departments, particularly the tire making departments, are reported as exceptionally high. The wages of the men employed in these factories range from 17 cents an hour for unskilled labor to 60 cents an hour for skilled labor. The wages paid the women range from 10 cents an hour for beginners to 30 cents an hour for experienced operatives.

There are practically but two paragraphs in the report which savor of criticism of the employers. One refers to the incident which was seized upon as an excuse to start the strike, where a new wage scale was put into force in a certain department of one of the factories. The committee reports that a greater length of time should have been allowed to intervene, for purposes of discussion, between the date of the announcement and the date when the new scale was to go into effect. The other point of criticism refers to the "speeding up" system, which the committee deprecates.

The majority of the committee could not refrain from an attempt to make a little political capital out of their investigation, by bringing in a supplementary report containing certain tariff suggestions—which were quite out of place, as being entirely foreign to the purpose for which the committee was appointed; but the main report on the whole seems to be the result of painstaking and intelligent work. To the employer, it will emphasize the necessity of always keeping an open ear to any properly expressed request the employes may make; while to the workers in the Akron factories, the lesson of the report must certainly be a salutary one, as it shows them that compared with factory operatives generally they are exceptionally favored. This report ought certainly to serve as a strong deterrent to any further labor demonstrations in that city, as long as the present conditions continue.

THE DROP IN TIRE PRICES AND WHY.

ON the 31st of March The B. F. Goodrich Co. announced the reduction of price to the consumer of five per cent. in its general line of automobile tires, to take place on the first of April. Practically all the other important tire manufacturing companies followed with a similar reduction, although in some cases it did not apply to the entire line; some specialties being excepted. It is hardly necessary to state that this reduction in the price of automobile tires was extremely welcome to the car owners, particularly in view of the ascending tendency noticeable of late in the price of gasoline.

But that this reduction should have been decided upon so soon after the six weeks' strike in Akron, and when, because of that strike, there would naturally be a much smaller stock of tires on hand than would be the case under normal conditions, came as a surprise to the trade.

Two reasons are assigned by those who inaugurated this reduction, both sound and substantial; first, the marked drop in the cost of crude rubber during the last few months; and, second, the constant improvement in the manufacturing facilities.

It requires only a glance at crude rubber prices during recent years to see how steadily they have gone down.

The price of Upriver Pará on the first day of April, 1910, was $2.70; in 1911, $1.39; 1912, $1.22, and 1913, 87 cents. In other words, the best crude rubber costs today less than one-third of its cost three years ago.

In addition to the two causes assigned for the reduction, there is a third not officially referred to, but probably quite as potent as either of the others; namely, the increasing competition among tire makers. It is estimated that for the present year the consumption of automobile tires will reach 5,000,000. To supply that demand will require an average daily output of about 17,000 tires. There are two companies which have a combined daily capacity equal to this number; and besides these two leading companies there are between forty and fifty other tire manufacturers, some of them of no mean importance. So it is obvious that the present capacity has outstripped the present demand, and is likely to exceed it for some time to come. This inevitably means that tire prices cannot be kept very much above the figure at which the best equipped companies can afford to market them.

AN UN-AMERICAN WORD WITH A SINISTER MEANING.

THERE is nothing particularly repugnant to the American mind in a fight *per se*. The average American (whether creditable or otherwise) has rather a soft spot in his heart for a good fight; but it must be a fair fight, in the open and altogether square.

In the fight that labor has been waging against capital for a number of years—where the means employed have been manly, open and decent—the laboring man has received sympathetic consideration, not only from the disinterested public (as far as the public can be disinterested in such a dispute) but from the employer himself. It has been generally recognized that where the workman had a grievance he was entitled to state it, and to be heard, and to take any proper means for redressing that grievance.

But with the advent into our American labor situation of this new alien organization, the Industrial Workers of the World, methods have been introduced that do not appeal to the American public, and there has come into quite general use a new word, with a significance that is altogether abhorrent to everybody who has any appreciation of fair play and decent dealings in every contest. This word is "sabotage." In the recent strike among the rubber workers of Akron, this word appeared quite frequently. It is so new to our American vocabulary that it does not appear in even the most recent editions of the dictionaries. It comes from the French word "sabot," a wooden shoe with the secondary meaning of an iron drag placed under the carriage wheel to prevent it from turning. Thus "sabotage" is the stopping of the wheels. As used in labor discussions, "sabotage" is the doctrine of premeditated inefficiency or maliciously doing the wrong thing, or let us say, of doing your best to do your worst. It appears to be taught quite consistently by the leaders of the I. W. W., and it means that their members, where they cannot effect their ends by open opposition, are to retain their positions in the factory; apparently doing the work for which they are paid, but in reality doing it as badly as they can—wasting their time, damaging the machinery, injuring fabrics, or any other material that may be used, and in every way open to them making it impossible for their employer—whose money they are living on—to produce satisfactory and marketable goods. It is, in short, a process of poisoning the whole industrial system.

Such a method as this is so contemptible, that no organization that employs it can expect to have any standing before the bar of American public opinion. Unfortunately, it does not operate simply to the injury of the organization that practises it, but must inevitably operate to the injury of other organizations, which may be seeking by perfectly proper and legitimate means to better the working man's condition.

From the manufacturers' standpoint, this new doctrine is one that must be guarded against most vigilantly; but it is hardly probable that any important employer is not fully alive to the seriousness of this new phase of the labor problem, and is not taking all necessary steps to nullify its malignant possibilities.

CLEAN RUBBER IN BRAZIL.

RUBBER washing in such centers as Manáos and Pará, in spite of the laws passed for the *Defesa da Borracha*, is not yet an accomplished fact. As the matter stands, the successful bidders may at once erect their factories and may wash such rubber as they can get. There has as yet, however, been no law passed making the washing of all rubber compulsory. Nor has there been any arrangement looking toward a government supervision and stamping of various lots. In other words, the government is feeling its way, with a view of doing only what will make the Brazilian product both better and cheaper.

It has always seemed to us that the place to clean the rubber is at the *seringal*. These seems to be no good reason why clean latex, smoked in a clean manner, should not produce clean *pelles*. Caucho, even if it were brought into camp in wet, dirty masses, can be cut into strips, then washed and stretched in any nearby rivulet, and allowed to dry out to a degree. This was successfully practiced on Panama rubber, which sold for 15 cents a pound more than in its usual form.

If the government would lower its export tax on clean rubber and raise it on dirty rubber, the gatherers would do the cleaning and reap the benefit.

THE COST OF AUTO. SHOWS.

THE Automobile Show held in Boston appears to have been exceptionally successful, viewed both from the standpoint of the exhibitor and of the visiting public. This exhibition, being the last of the large auto-

mobile shows for the present season, was the object of a good deal of attention, because of the question which has recently been discussed among manufacturers of automobiles, tires and other accessories, whether or not these big auto shows really pay. Their cost to the exhibitor is undoubtedly large, and the contention that they interrupt the regular and orderly work of the manufacturer, and demoralize his staff generally, is unquestionably well founded. But, on the other hand, there are many obvious advantages in this annual exploitation of the automobile and allied industries, and, while probably the greater part of those who are personally interested in them acknowledge that their cost is excessive, so far the number of those who advocate the discontinuance of these shows is far smaller than the number of those who are disposed to go on with them.

Without going into the subject as a whole, one phase might be pointed out where undoubtedly there has been a large element of waste, and where economy could be practised without the slightest detriment to the industry, or to the success of the exhibits. The element of waste referred to lies in the lavish and indiscriminate distribution of expensive advertising literature. Many companies have been accustomed in the past to printing a large number of different catalogs and booklets—sometimes as many as fifteen or twenty—many of them generous in size and expensive in character. These literary offerings have often been piled up on stands at the front of the booth, where whosoever would could help himself, the only limit being how many he was willing to carry away.

If all visitors represented paid admissions, and came to the exhibition with a serious desire for automobile and tire information, it would be a different matter; but, in view of the fact that many thousands—and in some cases the large majority—of the visitors enter through complimentary channels, and attend the show simply because it costs them nothing, it is quite obvious that in the throngs that crowd the aisles there is a large percentage of people—boys, girls and those in indifferent financial circumstances—who could by no stretch of imagination be classed among possible automobile buyers; and yet these are the people often who carry away the greatest weight of expensive literature.

Assume, for instance—and it is a conservative assumption—that during a week's exhibit 5,000 finely-printed and attractive booklets, costing ten cents each to produce, are carried away from a single booth by the visitors to the show, and that only 20 per cent. of the literature so distributed falls into the hands of those seriously interested in the books they take. That leaves a waste of 80 per cent., or $400, on the week's distribution.

Of course, it is not possible in distributing advertising to eliminate all waste, but it is possible to reduce this waste to a minimum. Elaborate catalogs and other expensive booklets can be kept where they are easily available for distribution to visitors who by their manner and inquiries, appear to belong to the class of possible purchasers, while inexpensive offerings will often serve just as well—and sometimes very much better—to appease the general crowd that surges up and down the aisle.

As an illustration of matter suited for the general visitor, a map, issued by one of the tire companies at the New York Automobile Show, might be cited. It was a leaflet showing an excellent map of the center of New York—sometimes referred to as "The Tenderloin"—and giving the location of all the principal hotels and theatres. This was something that not only interested the visitor from out-of-town, but also appealed to the seasoned New Yorker, as even the city man who has spent his life in the metropolis often finds himself ignorant as to the exact location of some new hotel or recently erected theatre.

To distribute advertising with nice discrimination is very much of an art, but it is one worth cultivating, as it often means the difference between the success or failure of an expensive exhibit.

That the drastic Underwood Tariff bill, as far as it relates to rubber manufacture, will hurt, is patent. Any appeal seems a waste of effort, however, and the trade is grimly taking its medicine and looking to the future—perhaps two, certainly four years hence.

That the firm of George A. Alden & Co. may emerge from its troubles and again occupy its former position of influence and helpfulness, is the sincere wish of the rubber trade of the world. It is within the memory of many now in active business, when every rubber manufacturer in the United States was dependent upon both banks and rubber importers for credit. Geo. A. Alden & Co. did their part to the extent of millions of dollars. Their history embraces the "carrying" of scores of companies until conditions became better. The assistance that they unostentatiously gave to others should in full measure be given in turn to them.

The election of George B. Hodgman to the presidency of the Rubber Club of America is an event upon which the association is to be congratulated. Mr. Hodgman, a former president of the Rubber Sundries Manufacturers' Association, an active member of the New York Chamber of Commerce and director in the Rubber Manufacturers' Mutual Insurance Co., has had valuable experience in commercial bodies. He is a dignified and competent presiding officer, and represents in his capacity as president of the Hodgman Co. the best traditions of the trade. Under his leadership the growth and usefulness of the club are sure to be enhanced.

A further showing of Brazil's purpose to be up to date in methods of rubber production is now evident in Rio. It consists in lessons in rubber tapping, the teacher being Dr. J. C. Willis, the director of the Botanic Gardens, who illustrates the methods followed in Ceylon and the Malay States on *Hevea* trees, in the Botanic Gardens. A series of cinematograph views have also been taken of this work, which will be shown up the Amazon.

Rubber in Southern Brazil—I.

By the Editor of The India Rubber World.

FIRST LETTER.

Southern Brazil the Center of Rubber Interest—Three Weeks to Rio—Rubber News En Route—Cape Frio—Summer in January—A Marvellous Climate—The Most Picturesque City in the World—The Minister of Agriculture—The Defesa da Borracha—Rubber Washing Laws—Old and New Friends—Corcovado—The Sugar Loaf—The Botanic Gardens.

MANY rubber men have visited Northern Brazil, are familiar with Pará and Manáos, and perhaps with Ceara and Pernambuco, but do not know Rio de Janeiro. Yet an acquaintance with the greatest and most progressive of South American cities is necessary, if one is to adequately understand Brazil, particularly in its attitude to the rubber industry.

In the valley of the Amazon nearly all of the commercial activity centers in its rubber. But in the great southern country coffee, cattle, hides, sugar and cotton, together with the beginnings of many lines of manufacture, all have their effect in determining the governmental attitude toward rubber production, protection and taxation.

The Ancient Aqueduct, Rio.

The early part of 1913 promised to be a period of exceptional activity in rubber legislation in Brazil, with the center of interest at Rio. The distinguished Brazilians who were present at the New York Rubber Exposition, made no secret of the fact that they felt that the situation in Brazil was nearing a crisis, and that the Federal and State Governments were preparing to do everything possible to preserve their great industry, and to put it in a position to compete with Eastern plantation rubber.

Rio de Janeiro is three weeks distant from New York by steamer, and correspondence is slow and inadequate. These and other considerations led me, therefore, to journey down to the Brazilian capital to see for myself, at least in part, what was doing or about to be done.

There are three ways commonly employed by those who take this journey,—by the cargo boats that ply regularly between New York and the River Plate; by the excursion steamers that intermittently visit the islands of the Caribbean and the eastern coast of South America; and by the fine passenger boats that ply between Europe and Rio. The cargo boats have been uniformly bad, as far as bed and board go, although the constant and emphatic protests of traveling Americans are taking effect in an attempt at better service and more courteous treatment. By taking a Dutch boat to Barbados, and a big excursion boat from there, I got to Rio speedily and comfortably.

It is a curious fact, but the smoking room of any steamer bound for a rubber port yields an amount of information credible and otherwise, relating to gum elastic that one could not get easily anywhere else in the world. On the two boats named, for example, I was informed of a new balata concession in Venezuela; of a great chicle concession in the same country; of a

Entrance to Harbor, Rio.

One of the Magnificent Boulevards, Rio.

great annual crop experiment in rubber in another South American country; of rubber planting in Trinidad, in the Guianas and the Colombias, etc., etc. One who knew the Amazon country well told at length of Commodore Benedict's enterprise for connecting Pará and Manáos by wireless; of the money and effort expended; and then when success was attained, of the decision of the Federal government that the states of Pará and Amazonas had no right to give telegraph concessions, such being the property of the Federal government. Another told of the rubber concession of the Commodore's twenty miles from Pará at Mojú, with a wealth of detail that proved that he had never visited it. That Brazil should treat the enterprising American generously, and appreciate the value of his undertaking all were agreed.

The monotony of the voyage was also broken by deck sports, fancy dress balls, the Captain's Dinner and a visit from Neptune as we crossed the Equator. The "King of the Sea" was a big German-American drummer who secured the position chiefly because of his size. It transpired at the last moment that he never had crossed the line, and as a finish to the ceremonies he was ducked in the same tank to which he had condemned his victims, and this in spite of his wrathful protests.

Dr. Lauro Muller,
Minister of Foreign Affairs.

Finally we sighted Cape Frio,—picturesque, forest clad, with its lighthouse perched far up on a shelf of rock. Then followed a rocky shore, beautiful in its array of mountain tops, steep ravines and wooded slopes, and a little later we sighted the "Sugar Loaf," "Corcovado," and other peaks that mark the entrance to the greatest harbor on the South American coast. We steamed into port just as night fell and dropped anchor far out from shore. At once two swift police boats, showing no lights, and moving without sound were circling our boat, keeping a score of noisy launches at a distance, until the doctor and the customs had taken possession. After a long wait the launches that had come for passengers were allowed alongside, and one of them proved to have been secured by a friend, who bade us welcome to Rio. He, in the first place, advised that we have our luggage examined on board, thus avoiding two or three days' delay at the customs. A few milreis properly placed quickly accomplished this, and we were off. Personally I should have enjoyed staying where I was a bit longer and taken my fill of the beautiful shore view. For night though it was, the great semi-circle of lights that marked the long boulevards that follow the sweep of the shore was fascinatingly beautiful. So also were the mountain peaks, shadowy, to be sure, but rising in, around, and back of the city, some with lights far up on their wooded sides, some dark, cloud-capped and forbidding.

Did I mention that although it was the month of February, it was midsummer and quite like a July night at home? Not oppressively hot, not nearly as hot as New York or Boston can be, but comfortably warm.

We went first to the Estrangeiros, an excellent downtown hotel, but as the Carnival season was near at hand, there was no choice of rooms, so we changed to the International, situated 2,000 feet above the city in the forest reserve that is within the city limits, and were most comfortably housed. The first thought of the Anglo-Saxon visitor to Rio is the supposed danger from yellow fever. This is due to the time, now happily long past, when the city was more or less a pest hole. The scourge has, however, been stamped out forever, in all probability, and there has not been a single case, so it is said, for the last ten years. Americans and English do not seem to appreciate this fact, and those who for business or professional reasons are slated to live in Rio for a period of months or years, are likely to have forebodings. For example, one scholarly gentleman told me that before accepting his billet he had carefully specified that he should be required to be in the city only during the day, that his nights should be spent at Petropolis, a mountain resort a few miles distant. On his arrival in Rio, however, upon learning of the true

J. Simao da Costa.

Dr. Pedro de Toledo,
Minister of Agriculture.

Dr. J. C. Willis,
Director of the Botanic Gardens.

state of affairs, he promptly took a house there, and has been perfectly healthy and contented ever since.

Speaking of climate, Rio possesses one of the most equable in the world. The hot season of January and February is not oppressive, and as for the rest of the year it is enchantingly spring-like. The rainfall is evenly distributed and torrential tropical downpours are unknown. The nights are characterized by heavy dews, so that from one year's end to the other flowers bloom, and grasses and leaves are always green. Almost anything tropical or sub-tropical thrives there, and the result is an exceedingly varied flora.

No city in the world possesses so picturesque a setting. The original site was a tiny plain bordering on the bay, backed by a maze of mountains big and little, most picturesquely disposed, and covered to their tops with jungle. As the city grew it climbed the slopes, went up the valleys, skirted the shores and covered other little plains until today it extends some fifteen miles, with suburbs so unevenly and remotely disposed, that were it not for the excellent electric car service, the fine boulevards and the automobile, it would be a metropolis of magnificent distances but of residential isolations.

The "bonds," this is, the street cars, are controlled by a company that also does the electric lighting. It is a foreign corporation, partly European and partly American, the moving spirit in which is Percy Farquhar, an American, who has financed many other great undertakings, such as railroads, the Port Works at Pará and Rio; and according to the Brazilian papers he and his are a cruel monopoly. However that may be, they give wonderful service, and have added much wealth to the country.

The man to whom Brazilians have naturally looked to assist them to maintain their supremacy in rubber is Senhor Pedro de Toledo, Minister of Agriculture. He is an able head of his department, but it must be remembered that all of the agricultural interests must be considered by him, and that perforce he has been obliged to move slowly. No doubt the recommendations put forward by the Rubber Congress in Manáos in 1910 had their effect; for shortly after that an investigation of the present and the future of rubber planting in the Middle East was fully made by Dr. Jacques Huber of Pará. Unfortunately at the same time an investigation by certain corporate interests was also made, the report of which tended to minimize the danger of the plantation rubber in competition to wild. It therefore came about that the great governmental planting of *Hevea* that was projected came to nought. The Minister of Agriculture, however, was able to put through his "Defesa da Borracha" plan. This consists in a central bureau situated at Rio, the head of it being Senhor Pereira Da Silva. Under him are sub-heads located at various centers throughout the rubber areas. At once commissions were sent out in all directions to collect and prepare facts about gathering, costs, notes on transportation, etc., all of which will be passed upon at the head office in Rio. It is also said that the government has charge of the Cerqueira Pinto process for coagulating the latex of the *Hevea* and *Castilloa Ulei*. This process, it will be recalled was exhibited at the International Rubber Exposition in New York. For the Manihots the Hess process is also government property. The most interesting project for the reduction of the first cost of rubber, however, was the plan to wash it all before it left the country. As already chronicled (see India Rubber World, April, 1913) this was to be done by laws that gave bonuses for washing plants in the various centers such as Manáos, Pará, etc. This would mean that instead of some 40,000 tons of rubber wet and dirty, Brazil would ship say 30,000 tons clean and approximately dry. It was further planned to have lots kept separately, and to fix a government stamp upon each lot—a guarantee of quality.

The Monroe Building, Rio.

The Guaranteira-Amazonia Bldg., Rio.

The washing of rubber is to the man in the rubber mill a very simple operation. But to one in Brazil, familiar only with crude rubber and with at best only a book knowledge of its handling in the factory, it is very much of an unknown art. One alert Brazilian, J. Simão da Costa, however, went to Europe and spent some months in England, France and Italy in the great rubber mills, learning to wash rubber. On his return to Rio he placed his knowledge at the disposal of the government. In the meantime a law had been passed designed to encourage the manufacture of rubber goods in Brazil, and the Goodyear Tire and Rubber Co. of South America had been formed to put up a factory, draw the bonus and manufacture goods. It was right in the midst of this interesting state of affairs that I arrived at Rio.

The head of the Botanical Gardens at Rio, Dr. J. C. Willis,

was formerly head of the Royal Department of Agriculture in Ceylon. He gave me much assistance in securing facts and figures on *Hevea* planting in the Middle East when in 1904 I visited that part of the world, and so I naturally sought him first. If I may digress a bit, Dr. Willis was the discoverer of "Wound Response" in *Hevea*, and his experiments, observations and notes were a determining factor in the uniform success that

Avenue of Mangoes.

Avenue of Palms, Botanic Gardens.

The Heights Above Rio, Sylvestre.

attended rubber planting in Ceylon and the Malay States. This is no reflection upon the many able men attached to that Agricultural department, but it happened that he was in the right place at the right time to be useful.

I found Dr. Willis deeply engrossed in the work of making of the somewhat neglected Rio gardens "the most complete and beautiful tropical botanic gardens in the world." And that is undoubtedly what he will accomplish within the next ten years. Thus it was that his immediate interest was not in rubber or rubber washing. He did, however, put me in touch with the men who were vitally interested. The first thing was a visiting membership to the "Club Central," where all the English and Americans to the number of seven hundred belong. Then came a dinner at which I met George Morgan, the American Ambassador; Mr. Ellis, of the Geological Survey, and Sr. Rodrigues, owner of the "Jornal do Commercio," the "London Times of Brazil." He took me to call upon the Minister of Agriculture, Sr. Toledo, and the head of the *Defesa da Borracha*, Sr. Da Silva, and arranged visits to the many points of interest round and about the city.

Then J. H. MacFadyean, the head of the Goodyear Tire and Rubber Co. of South America, looked me up. His story of the decision to start a factory in Rio, of the opposition of local rival concerns and of his persistent diplomatic work was interesting and enlightening. At the time I saw him his bid for a manufacturing plant had not been accepted. He had also put in a bid for a washing plant at Manáos, not to make money, as he explained, but to do the work at a fair price, and to keep other bids down to a reasonable figure.

Directly after my chat with MacFadyean I met J. Simão Da Costa on the Avenida. I had thought of him as being at his home in Pará, and was delighted to find him in Rio. He took me to the Guarantea Amazonia building, where his offices are situated, and gave me the full story of the *Defesa da Borracha* from the Brazilian point of view. He also secured for me documents, books, maps and photos; all of which helped to throw light on the Brazilian situation.

Sr. Da Costa delivered two scholarly lectures last winter before the Club De Engenharia at Rio, on rubber in Brazil from the plantation standpoint, and again from a commercial and industrial standpoint. At both of these gatherings the most distinguished men in the city were present, and the lectures did much to give them a clear view of the world's rubber situation.

Boat Landing, Rio.

Water View, Botanic Gardens.

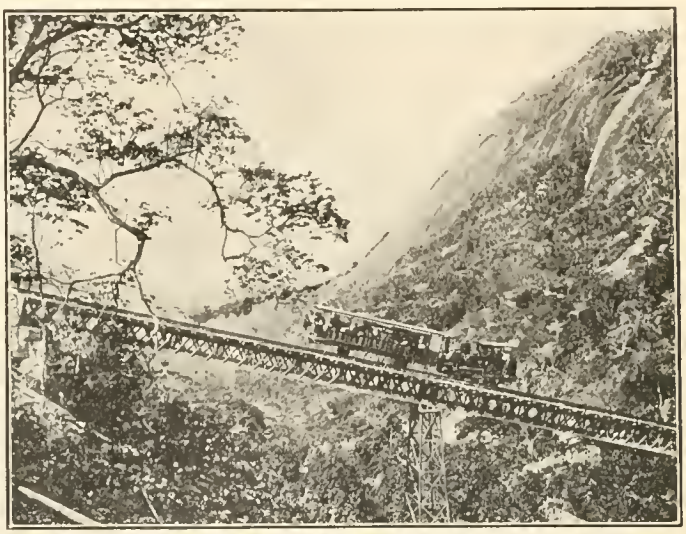
Through the courtesy of Sr. Roderigues I also breakfasted with the Minister of Foreign Affairs, Sr. Müller, who is shortly to visit the United States to return the visits of Secretaries Root and Knox. He is very much the type of man that Root is, and is one of Brazil's leading statesmen.

To make the story complete, I should describe in detail the Carnival season with its joyous and orderly crowds, its magnificent procession of "floats" and its three days of confetti throwing and perfume spraying—for the Carnival came when I was there. Or perhaps I should tell of the trip to the mountaintop, "Corcovada," first, by trolley that circles and climbs half way up, then by cog-railway to the summit, where one has an incomparable view; or of the basket cage, slung on a cable, that takes one to the top of "Sugar Loaf," the lone granite peak that stands sentinel at the harbor's mouth. I certainly should be derelict if I did not chronicle a delightful visit to the Botanic Gardens, or the afternoon tea with the Director and his charming wife, and then the visit to the gardens themselves. One

J. H. MacFadyean.

feature is particularly striking in these gardens—the palms. Of the many other beautiful palms there, none are so striking as a group of travelers palms, the like of which I certainly have never seen elsewhere. There is some rubber, for the *Hevea* will grow here, but its growth is slow, and it could not be profitably cultivated.

To go back to my visit to the Minister of Agriculture, I found him exceedingly interested in the problem of rubber washing and quite ready to listen to any suggestions. I made it clear to him that I represented neither rubber manufacturers nor importers, and that moreover I was wholly in favor of the complete standardization of crude rubber sorts. At the same time I pointed out that the rubber manufacturers of the world had hundreds of thousands of dollars' worth of machinery already installed for rubber washing and could probably do it cheaper than it could be done in Brazil. They were also familiar with the various grades of Brazilian rubber as they now exist, and that washing in Brazil would result in an entirely new series of grades which it would take time to learn. In addition I pointed out that the biscuits of Fine Pará that were acknowledged to have the most nerve of any sort of Pará rubber probably got their extra quality because they were kept in that shape, each film stretched and wet, for months before sheeting. That sheeting soon after coagulation would probably result in a product of less strength. My suggestion was that the rubber manufacturers be sent small washed lots at first, and be asked to report upon them before the attempt to wash all of Brazil's rubber.



Inclined Railway to Corcovado.

My arguments were received with the most cordial expressions of interest, and after my departure Sr. Toledo wrote me upon the subject as follows: "I express my cordial thanks for your courtesy. Your remarks on the question of rubber washing were much appreciated—being founded on long experience and study, and being for that reason especially valuable. I shall consider these observations, and shall endeavor in the solution of this highly important problem to proceed step by step and with the greatest caution."

Rest House at Summit of Corcovado.

(To be continued.)

The Proposed New Tariff.

In two important points the rubber industry has reason to be satisfied with the proposed new tariff. The idea which had been put forward of a duty on crude rubber did not find favor with the authors of the new measure, as according to its provisions, rubber continues on the free list, where it remains in spite of efforts made since the introduction of the bill to impose a 10 per cent. duty. The waste trade has succeeded in getting the objectionable clause withdrawn, which has in the past limited free entry to waste rubber worn out by use.

A much more serious point, in which the industry is deeply interested, is that of the sweeping reduction made by the new tariff upon the rates hitherto in force on rubber manufactures.

From the 35 per cent. to which manufactures of rubber are subject under the Payne bill, a reduction has been proposed to 10 per cent. on manufactures of rubber not specially provided for; the rate of hard rubber being, however, placed at 25 per cent.

On goods not strictly manufactures of rubber, but into the composition of which rubber enters, radical changes are proposed. Thus cables would, under the proposed tariff, pay 20 per cent., as against about 52 per cent. at present under a composite rate. Belting of cotton and rubber is reduced from 30 per cent. to 15 per cent.

With the view of offsetting these reductions in duties on manufactures of rubber, cuts have been made in various semi-manufactured and other articles used by rubber manufacturers, with the object of lowering the cost of production. The "basket" clause under which machinery has paid 45 per cent. has been replaced by one on a 25 per cent. basis. In the chemical schedule important reductions have been proposed in ground chalk, fuller's earth, calcined magnesia, castor oil, barytes, litharge, oxide of zinc, lithopone and other articles. Sulphuric acid, which now pays a duty of ¼ cent per pound (equalling 8.63 per cent.) would be on the free list. The changes affecting rubber chemicals are dealt with in another column.

Owing to the extent to which cotton goods are used by rubber manufacturers, their requirements are represented under various paragraphs, but the general character of the changes proposed may be inferred from the duty on cotton goods not specially provided for (now standing at 45 per cent.) being placed in the new measure at 30 per cent. Waterproof cotton cloth, which has paid a compound duty equalling a fraction over 50 per cent., is prospectively reduced to 25 per cent., while tire fabrics would be reduced from 45 per cent. to 25 per cent.

While finished automobiles are retained at 45 per cent., finished parts (not including tires) are reduced from 45 per cent. to 20 per cent. There being no special provision for tires, they would apparently come under the "basket" clause at 10 per cent.

The new tariff has still to be subjected to much discussion, and rubber goods, coming under section N, are near to the close of the dutiable portion.

Two tables are subjoined. One gives the principal changes proposed affecting the rubber trade, and another deals with the rates on rubber chemicals. The first includes extracts from the latest statistics of imports and exports, of which an advance copy was published in the March issue of the India Rubber World (page 316), showing the distribution of imports and exports among the various countries of origin and consumption. From the table it will be seen that in the fiscal year, 1912, the imports of unmanufactured rubber represented $105,034,556, against which there were exports to the value of $6,646,950; the net consumption having thus represented slightly under $100,000,000.

The imports of manufactures, strictly classified as being "chief value rubber," amounted to $998,722, while the exports under the same category represented $11,167,289. The imports as recorded do not include such goods as cables and cotton belting, which are shown separately; nor waterproof cloth and tire fabrics; while any exports under the last three heads are included in the "all other" classification.

It is thus difficult to indicate the proportion of manufactures containing more or less rubber, which are included in the statistical returns of imports and exports.

No finality is to be expected until the new tariff is signed, but the details on the subject published in this issue may facilitate its provisions being understood by those whom it affects.

ASBESTOS IN THE NEW TARIFF.

From the table published in another column, it will be seen that it is proposed to reduce the duties on both woven asbestos fabrics and other manufactures of the article. Under the present tariff woven fabrics, wholly or in chief value, of asbestos, pay 40 per cent.; that rate being prospectively reduced to 20 per cent. Other manufactures of asbestos now paying 25 per cent., it is proposed to reduce to 10 per cent.

At the hearings before the Committee on Ways and Means arguments were adduced by Mr. R. G. Rhett, of the General Asbestos and Rubber Co., Charleston, S. C., in favor of making the duty on asbestos manufactures generally 40 per cent., thus covering both yarns and cloths. Testimony was also given by other representatives of asbestos manufacturing interests. From the measure as introduced it would seem that reductions are proposed in both cases dealt with at the hearings.

THE WASTE TRADE WINS AT WASHINGTON.

Since the new tariff has been in preparation the waste rubber trade has been active in efforts to get the final clause of par. 591 in the tariff of 1909 struck out. This clause limits the free importation of rubber scrap to such as has been worn out by use.

The official report of the hearings before the Committee on Ways and Means with respect to this clause, contains on page 5863 the testimony of Mr. Herman Muehlstein, of New York, as representing the American dealers in waste rubber. He presented the brief of the scrap rubber dealers asking the withdrawal from clause 591 of the words "which has been worn out by use." Useless ends and clippings of factory waste have been paying a duty of 10 per cent., although not available for any purpose other than scrap. In his testimony, Mr. Muehlstein emphasized the arguments of the brief.

Letters on the subject were addressed to the Committee by the Philadelphia Rubber Works Co., Trenton Scrap Supply Co. and United States Rubber Co., of Naugatuck, Conn., which are embodied in the official records of the hearings.

The clause appears in the proposed new tariff with the omission of the objectionable words.

NO DUTY ON CRUDE RUBBER.

Since the rubber industry has every reason to be congratulated at the failure of the attempt to impose a duty on crude rubber, it may be appropriate to recall the efforts made with a view to that result. One of the principal features of this opposition was the brief of the Rubber Club of America, addressed to the Committee on Ways and Means, on March 28, 1912, and supported by telegrams from many men prominent in the trade.

These efforts were reinforced by renewed representations during the past winter on the part of various rubber companies and their officials, made not only to the members of the Ways and Means Committee, but to the representatives in Congress of the rubber manufacturing centers.

TABLE SHOWING COMPARATIVE TARIFF ON CRUDE AND MANUFACTURED RUBBER AND ASBESTOS.

	Tariff 1909. Paragraph	Rate	Proposed Tariff. Paragraph	Rate
Asbestos—				
Crude	507	free	415	free
Manufactured	462	40%	378	20%
	462	25%	378	10%
Rubber—				
Crude	591	free	518	free
Balata	do		do	
Guayule	do		do	
Gutta Jelutong	do		do	
Gutta Percha	do		do	
Scrap	do		do	
Rubber manufactures	463	35%	379	10%
Elasticon, &c.	480	20%	396	15%
Hard Rubber	463	35%	380	25%
Rubber Sponges	463	40%	379	10%
Gutta Percha manufactures	464	35%	379	10%
Cables	135	52%	116	20%
Cotton and Rubber Belting	330	30%	267	15%
Waterproof Cotton Cloth	347	50½%	259	25%
Tire-fabric	330	45%	267	25%
Machinery	199	45%	169	25%
Chemicals		Special List.		
Cotton Ducks		According to Quality.		

TABLE SHOWING VALUE OF IMPORTS AND EXPORTS FOR 1912 OF CRUDE AND MANUFACTURED RUBBER AND ASBESTOS.

Imports, 1912.	Amounts.	Total.	Exports, 1912.	Amounts.	Total.
Asbestos—					
Crude	$1,378,821	$1,378,821	Crude	$16,891	$16,891
Manufactured	96,488		Manufactured	520,894	$520,894
	241,064	$337,552			
Rubber—					
Crude	92,956,013		Crude	4,890,905	
Balata	986,124		Balata	38,423	
Guayule	6,538,723		Guayule	98,517	
Gutta Jelutong	2,252,444		Gutta Jelutong	6,079	
Gutta Percha	210,314		Gutta Percha	945	
Scrap	2,090,938		Scrap	736,580	
			Reclaimed	875,501	
Total unmanufactured imports		$105,034,556	Total unmanufactured exports		$6,646,950
Manufactured	722,381		Belting-Hose, etc.	2,315,484	
Elasticon	87,399		Boston Shoes	1,502,890	
Hard Rubber	141,247		Tires	3,204,642	
Rubber Sponges	11,668		All other manufactures	4,144,273	
Gutta Percha manufactured	36,027				
Total manufactured imports		$998,722	Total manufactured exports		$11,167,289
Cables	580				
Cotton and Rubber Belting	173,185				
Waterproof Cloth.	43,965				

Tire Fabrics not specified.

DUTIES ON MATERIALS USED IN RUBBER MANUFACTURE.

In July, 1911 (page 380), the India Rubber World published a table showing the duties on the principal rubber chemicals under the Dingley and Payne tariffs. Following up this table the subjoined comparison of the Payne duties with those proposed under the new tariff, will be found of interest at the present juncture. By using the two tables the incidence of duty on any article of importance can be traced over 16 years.

The *ad valorem* equivalents under the Payne tariff are those recorded in the official statistics, while those under the proposed new rates are estimates, based on the assumption that present prices will be maintained.

COMPARATIVE TABLE OF DUTIES ON CHEMICALS USED IN RUBBER MANUFACTURE UNDER THE PRESENT TARIFF AND THE NEW PROPOSED TARIFF.

Acids—	Tariff 1909.	Equal to.	Rates Proposed.	Estimated ad valorem equivalent.
Carbolic	free	free	free	free
Hydrochloric or Muriatic	free	free	free	free
Sulphuric pound	¼c.	8.63%	free	free
Ammonia—				
Carbonate pound	1½c.	27.73%	¾c.	13.86%
Antimony—				
Ore, Crude Sulphide of (antimony contents) pound	1c.	28.90%	10%	10%
Oxide of Antimony pound	1½c. and 25%	57.38%	25%	25%
Asphaltum or Bitumen—				
Crude ton	$1.50	35.28%	50c.	11.76%
Dried or Advanced ton	3.00	29.63%	50c.	4.94%
Burgundy Pitch	free	free	free	free
Chalk—				
Unmanufactured	free	free	free	free
Ground, Bolted, etc pound	1c.	39.37%	1/10c. lb	4%

	Tariff 1909.	Equal to.	Rates Proposed.	Estimated ad valorem equivalent.
Balsams—				
Canada (crude)	free	free	10c. lb.	....
Storax	free	free		
Tolu	free	free		
Cadmium	free	free	free	free
Chloride of Calcium	25%	25%	free	free
Coal Tar—				
Crude and Pitch	free	free	free	free
Non-Medicinal Products	free	free	5%	5%
Emery and Corundum (Emery Ore)	free	free	free	free
Crude Artificial Abrasives	10%	10%	10%	10%
Grains and Ground (Corundum) pound	1c.	16.98%	20%	20%
(Emery) pound	1c.	22.56%	1c.	22.56%
Fuller's Earth—				
Unwrought and Unmanufactured ton	$1.50	19.32%	75c.	9.66%
Wrought and Manufactured ton	$3.00	32.65%	1.50	16.32%
Glycerine—				
Crude pound	1c.	11.29%	1c.	11.29%
Refined pound	3c.	10.63%	2c.	7.09%
Gums—				
Copal, Kauri and Damar	free	free	free	free
Lanolin	25%	25%	1c. lb.	....
Wool Grease—				
Crude pound	¼c.	14.53%	¼c.	14.53%
Refined pound	½c.	15.15%	½c.	15.15%
Magnesia—				
Calcined pound	7c.	43.27%	3½c.	21.63%
Mica and Manufactures pound	5c. & 20%	36.31%	30%	30%
Oils—				
Castor gallon	35c.	34.94%	15c.	14.96%
Cottonseed	free	free	free	free
Linseed gallon	15c.	27.11%	12c.	21.69%
Palm	free	free	free	free
Rapeseed gallon	10c.	23.06%	6c.	13.83%
Baryta—Sulphate of or Barytes—				
Unmanufactured ton	$1.50	59.11%	15%	15%
Manufactured ton	5.25	52.11%	20%	20%
Black—From Bone, Ivory or Vegetable Substances	25%	25%	15%	15%
Blues—Prussian pound	8c.	44.23%	20%	20%
Cobalt and Ore	free	free	free	free
Ultramarine pound	3c.	32.22%	15%	15%
Oxide of Cobalt pound	25c.	24.14%	10c.	9.93%
Green—Chrome Green pound	4⅜c.	25.98%	20%	20%
Lead—Litharge pound	2½c.	53.32%	25%	25%
Red—Vermilion Red, containing Quicksilver pound	10c.	17.53%	15%	15%
Without Quicksilver etc pound	4⅞c.	29.41%	25%	25%
Venetian Red	30%	30%	10%	10%
Whiting—Whiting and Paris White Dry pound	¼c.	43.98%	1/10c.	17.50%
Zinc—Oxide Dry pound	1c.	17.47%	....	....
White Sulphide or Sulphide, Lithopone, etc pound	1¼c.	41.85%	....	....
Ground Dry	....	....	10%	10%
Mixed with Oil or Water	....	....	15%	15%
Plumbago	free	free	free	free
Potash—Bichromate pound	2¼c.	45.86%	½c.	11%
Caustic, not refined	free	free	free	free
Refined pound	1c.	12.75%	free	free
Pumice Stone—Unmanufactured $15 or less	30%	30%	5%	5%
Unmanufactured over $15 ton	$5	7.70%	....	....
Wholly or partly manufactured pound	⅜c.	67.57%	1/6c. lb.	30%
Rotten Stone	free	free	free	free
Soda—Caustic pound	½c.	15.39%	¼c.	7.68%
Sulphur (flowers of) ton	$4	13.73%	free	free
Talc—Ground, powdered or prepared	35%	35%	15%	15%
Turpentine—Venice	free	free	free	free
Wax—Mineral	free	free	free	free
Vegetable	free	free	free	free

The Rubber Sundries Manufacturers Dine.

OF the many successful annual dinners enjoyed by the Rubber Sundries Manufacturers' Association, none have been better than that held April 10 at the Waldorf-Astoria. On the afternoon of that day the usual business meeting was held. The officers elected were: Alexander M. Paul, president; Frederick H. Jones, vice-president; and E. E. Huber, secretary and treasurer.

ALEXANDER M. PAUL, PRESIDENT.

The dinner served at seven had the accompaniments of fine music, a wealth of flowers, and a menu that would tempt the most fastidious epicure. The souvenir was what at first glance looked like a cork tipped cigarette, but which turned out to be in reality a very ingenious self-contained cigar lighter.

As the newly-elected president was unavoidedly absent, Mr. George B. Hodgman, the retiring president, acted as master of ceremonies. With the coffee and cigars he first introduced the editor of THE INDIA RUBBER WORLD. In a five minute speech the speaker sketched the beginnings of the rubber sundries trade, with which he had been as a boy personally identified, described its present wonderful expansion, and semi-humorously pictured its future "forty years hence."

Mr. Howard E. Raymond, vice-president of the B. F. Goodrich Co., was the next speaker. After touching on a variety of topics of interest, he described the great floods in Akron, and the shifts to which the great rubber companies were put to continue running. The story was most graphic, and gave one a new view of the resource and alertness of the industrial chieftains of the rubber city.

Then followed an excellent vaudeville entertainment, the most startling feature of which was an Oriental mind reader who bewildered all by his accurate reading of unspoken questions, to which he returned answers often witty, always appropriate.

It was unanimously conceded that Messrs. Hodgman and Huber, the Committee of Arrangements, had again scored an unqualified success in the 1913 dinner.

BANQUET OF THE RUBBER SUNDRIES MANUFACTURERS' ASSOCIATION.

The Thirteenth Annual Meeting of the Rubber Club of America.

THE thirteenth annual meeting of The Rubber Club of America was held at the American House, Boston, on the evening of April 21. It opened with the usual business meeting and election of officers for 1913, which was followed by a meeting of the Board of Directors. After the meeting a very enjoyable supper was served, which as usual brought forth the undeniable musical talent for which the Club has always been noted, and which naturally added to the joy of the occasion.

GEORGE B. HODGMAN, PRESIDENT.

FREDERICK H. JONES, VICE-PRESIDENT.

The feature of the evening was an illustrated talk by Mr. Henry C. Pearson, the editor of THE INDIA RUBBER WORLD, which dealt with the experiences of his recent South American trip. Mr. Pearson's description of various places and conditions in South America were effectively illustrated by colored pictures, and certainly justified his opinion that "Rio Janeiro is the most beautiful city in the world."

Mr. Pearson showed some seventy beautifully colored views of Rio de Janeiro, sketch maps of the wild rubber areas showing the distribution of *Hevea, Hancornia* and *Manihot*, and views of *Manihot* plantations in the vicinity of the Rio San Francisco. The speaker described in detail Brazil's laws for the "Protection of Rubber," the projected washing plants and the great factory at Rio to be erected by the Goodyear Tire and Rubber Co. of South America.

PRESIDENT HOOD'S ADDRESS.

President Hood's address at the annual meeting was as follows:

"We have come to another milestone in the history of this Club. Tonight we elect a new president, a new vice-president, and new members of our Board of Directors. The Board of Directors will appoint a new Executive Committee. It is hoped that the board will see fit to re-appoint most of the members of the present Executive Committee.

"My first privilege is to express my personal thanks and the thanks of every member of this Club to the members of the Executive Committee.

"You will doubtless remember that prior to the 1912 annual meeting, the Executive Committee was larger than the Board of Directors, and the by-laws were changed a year ago to create a small Executive Committee. The wisdom of that change has been very apparent. The Executive Committee has regular quarterly meetings, elects the members, spends the money, and generally manages the business of the club.

HAROLD P. FULLER, SECRETARY.

J. FRANK DUNBAR, TREASURER.

HENRY C. PEARSON.

It has had several other meetings during the year.

"While a small Executive Committee is wise for the execution of business, we all feel that it would be advisable to have more frequent meetings of the Board of Directors, so that they would also feel the responsibilities of the club and more fully understand its problems.

"Two years ago the club was a social organization. There has been added to the sociability a large number of business duties, and these two years have been practically a period of transition from a purely social into a live club, for the purpose of profitably solving our common problems.

"The paper read by your president at the annual dinner last January mentioned several topics that should be properly discussed here—the tariff, the nomenclature of rubber, the clarifying of crude rubber dealings, the stopping of stealings of crude rubber (which really should be included in the last subject, as the way to stop stealings of crude rubber is to stop the market for it and to catch the purchaser of it.) What other agency is there to undertake the solving of any of these problems except this Rubber Club?

"Within two months we expect to have a firm membership of eighty. We are already assured of sixty firm members, which, with the dues from the active and associate memberships, will give the club an income of over three thousand dollars. What this money will be used for is a question several members have asked. There is the cost of the meetings of the Executive Committee, without railroad fares; there is the postage and stationery, and printing; the clerical work; and there is an attorney's bill for tariff and other briefs. But to my mind the most important expenditure that can be made is the expenditure for a paid secretary.

"The old adage, 'If you want a thing done, get a man who has all he can do,' applies to an executive in the sense of making decisions, but the lesson that has been learned this last year is that no president can find the time to give to the detail work of the club. And the pioneer work requires a man of ability and discretion.

"At this time I desire to formally thank the members of the Executive Committee and the members of this club for the many considerations and kindnesses shown me during my term as president."

THE TREASURER'S REPORT.

Statement—Rubber Club of America, as of April 1, 1913:

Receipts.

Bank balance as of April 1, 1912	$405.44	
Received for dues to April 1, 1913, from members	1,396.25	
Received for initiations—new members	165.00	
Received from members for banquets, outings, etc.	2,351.61	
		$4,318.30

Payments.

Expenses for banquets, outings, etc.	$3,012.43	
Sundry printing	142.05	
Sundry postage	33.98	
Bank collections	2.10	
Death resolutions and flowers—H. C. Morse, F. D. Balderston	36.00	
Clerical work	100.00	
Expenses a/c. meeting Executive Committee.	76.17	
Telephone calls	16.75	
Legal expenses, S. S. Meyers, "Tariff Brief"	300.00	
Expenses a/c. Messrs. G. B. Hodgman and F. C. Hood's trip to Washington in connection with tariff matter	67.85	
Bank balance, April 1, 1913	530.97	
		$4,318.30

THE SECRETARY'S REPORT.

Boston, Mass., April 1, 1913.

On the above date we completed our thirteenth year, and I believe that the work inaugurated during the period just closed, if properly followed up, will accomplish much good to the rubber trade as a whole.

Under the new classification, our membership today stands as follows: 59 Firm, 216 Active, 63 Associate, and 5 Honorary, a total of 343, or a net gain of 43 during the year. This membership will insure us an approximate income of $2,700, with which your Executive Committee can start systematic work.

This committee has deemed the club business of sufficient importance to hold regular quarterly meetings in New York, and these meetings have been well attended.

During the year we have lost four members by death—Messrs. F. D. Balderston, S. Lewis Gillette, E. R. Rice, and D. S. Pratt; 12 have resigned, and 7 have been dropped for non-payment of dues.

Your committee thought it wise on September 24 last to resign from the Massachusetts State Board of Trade, as they could see no benefit to be derived from membership in a purely local organization.

The summer outing was attended by 148 enthusiastic members and guests, who were united in their praise of the Rhode Island clambake and other attractions. The annual dinner in New York was of the usual high standard, and seemed to be thoroughly enjoyed by those fortunate enough to attend.

The following is a list of the officers, honorary vice-presidents, board of directors, and committees of the club for the year 1913:

OFFICERS.

George B. Hodgman, president, 806 Broadway, New York City.
Frederick H. Jones, vice-president, Andover, Massachusetts.
J. Frank Dunbar, treasurer, Geo. A. Alden & Co., Boston.
Harold P. Fuller, secretary, 49 Federal street, Boston.
John P. Lyons, assistant secretary, 15 West 38th street, New York.

HONORARY VICE-PRESIDENTS.

L. Dewart Apsley, Augustus O. Bourn, John M. Flint, Alexander M. Paul, Henry C. Pearson, Arthur W. Stedman, Frederic C. Hood.

BOARD OF DIRECTORS.

Henry Spadone, Gutta Percha & Rubber Co., New York.
George B. Hodgman, Hodgman Rubber Co., New York.
J. Frank Dunbar, Geo. A. Alden & Co., Boston.
Harold P. Fuller, E. H. Clapp Rubber Co., Boston.
L. Dewart Apsley, Apsley Rubber Co., Hudson, Massachusetts.
Augustus O. Bourn, Bourn Rubber Co., Providence.
John H. Flint, Tyer Rubber Co., Andover, Massachusetts.
Frederic C. Hood, Hood Rubber Co., Watertown.
Alexander M. Paul, Davidson Rubber Co., Charlestown.
Henry C. Pearson, India Rubber World, New York.
Arthur W. Stedman, New York Commercial Co., New York.
Homer E. Sawyer, United States Rubber Co., New York.
Elisha S. Williams, Rubber Goods Mfg. Co., New York.
H. E. Raymond, B. F. Goodrich Co., Akron.
Francis H. Appleton, F. H. Appleton & Son, Boston.
Frederick H. Jones, Tyer Rubber Co., Andover.
George E. Hall, Boston Woven Hose & Rubber Co., Cambridgeport.
Allen L. Comstock, American Rubber Co., Cambridgeport.
Albert Zeiss, Arnold & Zeiss, New York.
H. S. Firestone, Firestone Tire & Rubber Co., Akron.

EXECUTIVE COMMITTEE.

Frederick H. Jones, Tyer Rubber Co., Andover (chairman).
Henry C. Pearson, India Rubber World, New York.
Homer E. Sawyer, United States Rubber Co., New York.
Frederic C. Hood, Hood Rubber Co., Watertown.
Albert Zeiss, Arnold & Zeiss, New York.

NOMINATING COMMITTEE.

Alexander M. Paul, Davidson Rubber Co., Charlestown (chairman).
L. Dewart Apsley, Apsley Rubber Co., Hudson.
Homer E. Sawyer, United States Rubber Co., New York.
Robert L. Rice, Hood Rubber Co., Watertown.
Charles T. Wilson, Chas. T. Wilson, New York.

AUDITING COMMITTEE.

J. Everett Stone, Plymouth Rubber Co., Canton (chairman).
E. F. Dewing, Boston Rubber Shoe Co., Malden.

ENTERTAINMENT COMMITTEE.

William L. Proctor, Enterprise Rubber Co., Boston (chairman).
James H. Learned, Revere Rubber Co., Chelsea.
A. T. Baldwin, Walpole Tire & Rubber Co., Walpole.
Ira F. Burnham, Stoughton Rubber Co., Boston.
E. H. Kidder, United States Rubber Co., Boston.

SPORTS COMMITTEE.

Frank R. McKenna, Bourn Rubber Co., Providence (chairman).
Edwin L. Phipps, United States Rubber Co., Boston.
William L. Pitcher, Easthampton Rubber Thread Co., Easthampton.
Francis H. Appleton, Jr., F. H. Appleton & Son, Franklin.
William J. Kelley, Arnold & Zeiss, New York.

DINNER COMMITTEE.

Charles A. Coe, United States Rubber Co., Boston (chairman).
William E. Barker, United States Rubber Co., New York.
Robert L. Rice, Hood Rubber Co., Watertown.
Robert B. Baird, Rubber Trading Co., New York.
Theodore W. Bassett, United States Rubber Reclaiming Co., New York.

VALORIZATION IN JOLIET.

According to a Joliet paper, there is now being stored in that city, waiting for a rise in the rubber market, a total of 2,500 pounds of rubber—the first commercial product from the Mexican plantation of the Joliet Tropical Plantation Co., which has been operating for a few years, and has among its chief stockholders some of the substantial citizens of Joliet. The statement is made that had it not been for the revolutionary activities in Mexico during the last year or two, the plantation's output this year would have been 20,000 pounds, valued at about 80 cents a pound.

BRAZIL WITHDRAWING PREFERENTIAL DUTIES ON AMERICAN GOODS.

ACCORDING to a cable from Ambassador Edwin V. Morgan, received by the Department of State on April 10, 1913, the Brazilian Cabinet, at a meeting on April 9, decided upon the immediate withdrawal of the preferential duties hitherto applied to certain American goods. A preference of 30 per cent. has been enjoyed by American wheat-flour, and a rebate of 20 per cent. by some fifteen other articles, including manufactures of India rubber.

The whole value of the American exports to Brazil affected by this change is less than $5,000,000, of which rubber manufactures represent about $150,000. The withdrawal of this preference does not affect more than about one seventh of the total United States exports to Brazil.

As shown in table A, American imports from Brazil for the fiscal year 1912 represented about $124,000,000, while United States exports to that market were only about $35,000,000.

In table B is shown the movement of exports of American rubber manufactures to Brazil since 1907.

With the erection of the new factories in Brazil and with the loss of the preference, it would seem likely that a portion of this trade would be lost to United States manufacturers. They have been supplying about 75 per cent. of the total Brazilian imports of rubber goods.

The abolition of the preference in favor of the United States seems to have given satisfaction to the German rubber industry. The measure is said to be retroactive, and applying to the whole of 1913; so that the Brazilian importers of the goods affected, will have to pay the difference of duty on their imports of this year.

(A)—United States Trade With Brazil.

	Imports from Brazil. Free of Duty.	Dutiable.	Total of Imports.	Exports to Brazil.
1907.....	$96,601,490	$1,279,668	$97,881,158	$18,594,838
1908.....	74,462,813	115,051	74,577,864	19,364,238
1909.....	97,261,855	791,374	98,053,229	17,444,759
1910.....	107,599,155	555,336	108,154,491	22,764,183
1911.....	100,457,075	410,109	100,867,184	27,240,146
1912.....	.....	.....	123,881,644	34,678,081

(B)—Exports of Rubber Manufactures to Brazil.

Fiscal Years	1907.	1908.	1909.	1910.	1911.	1912.
Belting, hose and packing	$15,221	$11,861	$25,310	$17,470	$34,442	$40,777
Boots and shoes	12,983	18,962	23,746	20,785	35,548	41,036
Automobile tires	.....	.....	.....	.....	10,112	24,952
Other tires	.....	.....	.....	.....	7,767	11,273
Other goods	27,808	29,044	35,406	66,890	62,596	81,201
Totals	$56,012	$59,867	$84,462	$105,145	$150,465	$199,239

(Tires were included with other goods until 1911.)

When the preferential was first applied, this country made no special concession to Brazil, beyond that embodied in the general tariff treatment of Brazilian products; under which more than 99 per cent. of these products come into the United States free of duty. This liberal tariff treatment of Brazilian articles was the consideration for the preference given by Brazil to a limited number of articles from the United States.

INDIA RUBBER LIFEBOAT.

A collapsible lifeboat has recently been patented by an English inventor. It is composed of thin sheets of india-rubber, reinforced with a thin layer of canvas, which does not perish or get hardened with repeated coats of paint. The resiliency of the boat diminishes the risk of injury from collision.

THE FUTURE OF RUBBER IN BRAZIL.

AMONG the features of the present movement for the development of rubber cultivation in Brazil, are the two interesting lectures delivered at Rio de Janeiro on December 26, 1912, and January 16, 1913, by Senhor J. Simão da Costa, industrial engineer. The lectures dealt respectively with the agricultural and commercial or industrial aspects of the question.

With relation to the cultivation of rubber, the lecturer referred with approval to the efforts in that direction of Drs. Lauro Sodré, Paes de Carvalho and Firmo Braga, natives of the State of Pará. They recognized the enormous advance in store for the rubber industry if the Federal government took the least interest in its development. Had their efforts been duly seconded, Brazil would have been in a position to control the world's market for rubber.

FORESTS OF NORTHERN BRAZIL.

No one who has not traversed the forests which mark the extended course of the River Amazon, can form an idea of the virgin forests in that region. It would be a mistake to judge from the forests of Southern Brazil; there being no comparison between the two. An opinion exists that a *seringal* is a forest almost exclusively composed of rubber trees. Nothing would be more erroneous, said the lecturer. Out of an average of 40 to 80 different species of trees per acre, only an average of 6 would be rubber trees under the more favorable circumstances.

TROUBLES OF THE SERINGUEIRO.

Doomed to live isolated from civilization in the virgin forest, the *seringueiro* is forced during seven months of the year to rise before daybreak, while the most expert of them cannot tap more than 120 trees a day. Were it possible to provide the *seringueiros* with moderately comfortable dwellings, and sufficient food, two of the greatest difficulties in the exploitation of the native *seringaes* would be overcome.

YIELD OF *HEVEA* TREES.

That the cultivation of rubber trees is profitable has been demonstrated in the East, as *Hevea* trees there commence to bear at the end of the fourth year; while the combination of *Hevea* with bananas would cover the whole expense of cultivation in the basin of the Amazon. M. Paul Le Cointe, the French agronomic expert, has demonstrated the correctness of this last assertion, in the course of his lectures.

REASONS AGAINST CULTIVATION OF RUBBER TREES.

Two reasons might apparently exercise a deterrent effect upon the development of rubber cultivation—the discovery of a laboratory substitute and the possibility of over production. With regard to the first, the lecturer expressed the conviction that synthetic rubber would never emerge from an academic stage. As to the second, he considered that even were the production of rubber quadrupled, it would still be absorbed in various industries.

CONSUMPTION OF RUBBER.

The constantly increasing demand for rubber in connection with telegraphy, telephony, lighting, power transmission, etc., insures the consumption of rubber in enormous quantities. On the basis of an estimated American yearly production of 300,000 automobiles, 18,000 tons of rubber would be wanted for the tires. Almost all mechanical industries require rubber. It is, moreover, an indispensable requisite of many popular games and sports, while it is used in footwear throughout the world.

THREE OBJECTS TO BE KEPT IN VIEW.

The three objects to be kept in view in any measures of reform, were thus summarized by the lecturer:

1. To supply fine *Hevea* rubber in sufficient quantity to prevent manufacturers from having to use substitutes and inferior products.

2. To keep in view an increase of production in order to satisfy the continued increased consumption.

3. To endeavor to reduce the cost of production, so as to permit the creation of new industries and to stimulate the development of those already existing. In this way raw material will be available in the sufficiently increased quantities needed, at reasonable prices.

PROPORTION OF RUBBER IN GOODS.

In support of his recommendation to produce enough fine rubber to meet the legitimate requirements of consumption, the lecturer stated that with 75,000 tons of rubber manufacturers produced 400,000 tons of rubber goods.

HOME MANUFACTURES FOR BRAZIL.

The lecturer expressed the opinion that any programme for the "Protection of Rubber" would be incomplete, which did not include measures for preventing Brazil being still inundated with foreign goods under the designation of rubber manufactures, which do not contain the smallest particle of that raw material. It would be possible by legislation to insist upon incontestable proofs that Brazilian rubber had been used in goods passing through the custom houses of the Republic. Such an arrangement would, however, only be possible when Brazil is able to supply the home market for rubber goods.

BRAZILIAN RUBBER MANUFACTURING PLANTS.

IN the April number of The India Rubber World the fact is reported of the awards for the proposed Brazilian manufacturing plants having been made. The Goodyear Tire & Rubber Co., of South America, obtained the award for the Rio de Janeiro plant; a summary of its proposal having appeared in the last issue of this journal.

The award for Pernambuco (Recife) was made to the Companhia Norte Brazil. According to that company's proposal, reproduced in the "Diario Official" of February 13, it offers to erect a large factory at the side of the Great Western Railway of Brazil, besides acquiring an extensive site in the vicinity. Among the principal articles manufactured will be machine belting, cables, waterproof goods of all descriptions, cotton fabrics for use in automobile tires and for other purposes. Rubber pneumatic and solid vehicle tires of all kinds, rubber carpets and mats, rubber hose, rubber heels and other rubber goods will likewise be made. The company expects to work up annually 700 tons of crude rubber.

Special attention will be paid to the manufacture of electric wire, for which purpose bar copper will be imported direct from Chile. It is expected to secure the orders of the various Brazilian States and municipalities for the above-named wire. The Companhia Norte Brazil was established in March, 1911, and claims to have a paid up capital equalling $400,000.

Subjoined are the equivalents of the items shown in general estimate of cost:

RECIFE MANUFACTURING PLANT.

	Brazilian Currency.	American Currency.
Buildings	2,350:000$000	$783,330
Machinery (including spinning and weaving plants)	2,700:000$000	900,000
Site, water supply	200:000$000	66,670
Total	5,250:000$000	$1,750,000

As the estimate of the Goodyear company for the Rio plant equals $1,757,804, or practically the same as that of Companhia Norte Brazil for Recife, the two companies are evidently in a position for close competition.

THE NEW BRAZILIAN WASHING PLANTS.

As recorded in the April issue of The India Rubber World (page 348) the awards for the Brazilian washing plants were made for Manaos to the Goodyear Tire and Rubber Co., of South America; for Pará to Gabriel Chouffour of Paris, and for Minas Geraes to Luiz Cantanhede de Carvalho Almeida and Arthur Haas. The estimates and proposed installation of machinery of the Manaos plant were reported last month.

THE PARA PLANT.

The proposal of Gabriel Chouffour for Pará, as published in the "Diario Official," states that he is acting in combination with the Banque Credit Française of Paris, and with the Compagnie de Caoutchouc Etablissements Hutchinson of the same city. It is proposed to establish a plant capable of washing and purifying 4,000 tons of scrappy Manaos in six months. The total annual production of scrappy Manaos is stated to be about 8,000 tons, of which 4,000 tons come into Manaos and 4,000 tons into Pará. It is the latter quantity to which the proposal applies, and which would have to be treated at the rate of about 27 tons a day for 150 days. The installation of machinery would be in groups composed as follows:

(a) One grinder (three cylinders); (b) Two washing machines, Werner & Pfleiderer type; (c) Three washing and compressing machines (two cylinders).

As each group could wash about 3,500 pounds in a day of ten hours, there would be 17 groups needed. Adding two groups for use in case of necessity, 19 groups would be required. It is estimated that these machines would cost and weigh for each group:

	Cost Equalling.	Weight (tons).
(a) (one machine)	$2,000	10
(b) (two machines)	4,000	12
(c) (three machines)	3,600	18
Transmissions	600	3
Foundations	1,000	—
		—
Total	$11,200	43

(Total cost of 19 groups, $212,800.)

On this basis the total estimate would amount to $587,500, composed as follows: (The original figures are in francs, but have been converted into American currency).

(1)—Machinery	$212,800	
Drying equipment	14,000	
Installation, etc.	28,000	
Pumps, water service	19,000	
Washing appliances	6,000	$279,800
(2)—Motive force		126,200
(3)—Buildings		109,500
		$515,500
Surveys and superintendence		20,000
Contingencies, 10 per cent		52,000
Estimate francs, 2,937,500 =		$587,500

To this amount will have to be added freight on material, estimated at $40,000. A site will also have to be provided for, with an area of about 110,000 square feet.

The total estimates, it is stated, after making allowance for variations in cost of labor and freight, would represent in Brazilian currency 1,932:500$000; thus equalling in American money, $644,166.

The charge of washing or purifying rubber would be 200 reis per kilo (equalling about 3 cents per pound).

THE MINAS GERAES PLANT.

The proposal which has been accepted from Luiz Cantanhedo de Carvalho Almeida, civil engineer, and Arthur Haas, industrial proprietor, covers the construction on the bank of the river San Francisco, near the city of Pirapóra, in the State of Minas Geraes, of a plant for washing and purifying Maniçoba and Mangabeira rubber. The capacity of the plant is estimated at about 1,500 pounds a day.

WERNER & PFLEIDERER'S WASHING MACHINES FOR BRAZIL.

It is of interest to note that the proposal accepted by the Brazilian government for the Pará washing plant specifies the washing machines of Werner & Pfleiderer. As the installation would include 38 of such machines, the order will be of importance.

DAVID BRIDGES' RUBBER MACHINERY FOR BRAZIL.

The proposal of the Companhia Norte Brazil for two rubber manufacturing plants, one of which was awarded that company, states:

"The plans for both factories of rubber goods were drawn up by David Bridge & Co., Limited, of Manchester, one of the most noted English engineering firms."

BRAZILIAN IMMIGRATION.

One of the difficulties in the way of Brazilian development is being removed. The Federal Government recently signed a contract with the Companhia Rural de Commercio e Industria to introduce and settle 10,000 families of European immigrants.

DYNAMITE IN BRAZILIAN AGRICULTURE.

The Secretary of Agriculture of the State of Sao Paulo has asked the Minister of Finances to reduce the duties on dynamite in order to facilitate its employment in agriculture. As there is a dynamite factory in Brazil, the State Treasury has expressed disapproval of the proposed reduction.

PUERTO CABELLO RUBBER EXPORTS.

A consular report from Puerto Cabello shows the value of rubber shipped from the port in 1912 as $5,593 as compared with $10,683 in 1911.

MALAYAN PLANTERS FOR BRAZIL.

The need of capable superintendents is one of the admitted difficulties of the present Brazilian situation. The "Malay Mail" reports that large fees had been offered to Malayan planters, to induce them to take up work in Brazil. A case is likewise referred to in which a planter from Malaya, spending a holiday in England, had been offered and had accepted, a two years' agreement to go out to Brazil to supervise tapping methods. The salary attached to the post is $4,250 the first year and $5,000 the second, with all expenses paid—an important item, since the work involves a great deal of traveling from one property to another.

THE PERUVIAN AMAZON CO.

The Peruvian Amazon Co., which has owned the rubber concession in the Putumayo District in Peru where the atrocities have been committed on the Indian rubber gatherers—the disclosure of which has shocked the civilized world—was ordered into compulsory liquidation on March 19, by the Chancery Court of London. By the action of the Court, J. C. Arana was removed from the position of liquidator of the company.

Notes on Tension Tests of Rubber.

By P. L. Wormeley, United States Bureau of Standards.

A PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912.

THE wonderful development in the rubber industry and the enormous demand for rubber products with their constantly multiplying and broadening fields of application, make it evident that the time is now ripe for the heartiest co-operation between manufacturers and consumers, with a view to establishing uniform methods of testing and, as far as possible, uniform specifications for goods intended for the same purpose. Uniformity of methods is absolutely essential to an intelligent comparison of the work of different laboratories, and a more general interest in the standardization of specifications and

P. L. Wormeley.

methods of testing would result in a substantial benefit not only to the reputable manufacturer and large consumer, but also to the public at large.

In testing materials in general, the refinement of the methods used should be determined in each case by the nature of the material tested, and in the speaker's opinion there is no reason why rubber should be an exception to the rule.

Now as regards testing machines and apparatus used in determining the physical properties of rubber, a most interesting field is presented, in which there is room for many improvements. However, when one considers the rather large and apparently unavoidable inherent variation in the physical properties of rubber, it seems that in the present state of our knowledge, uniformity of methods is more to be desired in testing than extreme accuracy and refinement in the matter of taking measurements. This of course is particularly true in the case of commercial or routine testing where the goods have been manufactured to meet the requirements of specifications. Unfortunately specifications are not always as definite as might be desired, nevertheless, the adoption by both parties concerned of uniform methods of testing, would remove the cause of numerous misunderstandings between manufacturer and consumer.

To discuss in a comprehensive way the various methods that have been proposed for testing the physical properties of rubber would require a more thorough knowledge of the subject than I possess, and far more time than is at my disposal today. There are, however, certain points in connection with methods and machines used in testing the tensile properties to which I should like to ask your attention, with the hope that sufficient interest may be aroused to bring out a discussion and an exchange of ideas and opinions on the subject.

In regard to the most desirable form of test piece, the ring and the straight specimen, each has its particular advantages, and considerable difference of opinion is being expressed as to the relative merits of the two. The method which is usually followed in preparing rings involves several distinct operations which, if carefully carried out, consume quite a good deal of time. On the other hand the straight specimen may be cut out by a single stroke of the die, the operation requiring only an instant. Rings, when accurately cut, undoubtedly show uniform results, but on account of the varying stress over the cross-section, this method does not give the true value for tensile strength. An analysis of the distribution of stress in a ring shows that near the breaking point the tension decreases at an approximately uniform rate from the inside to the outside surface. If this variation in stress were the same for all rubbers, the ring method might be accepted as giving a true relative measure of strength, but tension curves plotted for different rubber compounds show that this is not the case.

The ring lends itself very rapidly to the automatic measurement of elongation, and in this respect its advantage over the straight specimen is apparent. It may be noted, however, that since the strength of rubber is not the same in all directions, being greatest in the direction in which the sheet has been rolled, the ring gives a smaller ultimate elongation than is shown by a straight specimen. This difference in strength and elongation by the two methods is not always found, but the results of tests which I have made on twenty different compounds show a general tendency toward higher values for straight specimens, particularly in the case of high-grade compounds.

Objection to the straight test piece is often raised on the ground that specimens fail by tearing at or near the grips. This difficulty may be overcome by gradually increasing the width of the test piece at the ends, and by using a grip that will not bruise or injure the rubber by excessive pressure. A form of grip which the writer has found to be exceedingly convenient and perfectly satisfactory consists of a series of circular discs mounted eccentrically, and in such a way that each disc acts independently in pressing against the test piece. By this means the gripping pressure holding the specimen is automatically increased in proportion to the applied tension, and furthermore, the pressure is uniform over the entire width of the grip even in cases where the thickness of the rubber varies.

For measuring the applied load it would appear that preference is usually given to some form of dead weight or pendulum machine, the spring balance or dynamometer being often looked upon with disfavor.

It is the policy of the Bureau of Standards to encourage as much as possible the testing of rubber goods and for this reason our testing machines have been constructed with a view to the greatest simplicity consistent with a reasonable degree of accuracy. For determining tensile strength and elongation we use an ordinary twin spring dynamometer attached to the upper end of a metal column. This column is slotted to receive a rack which carries the movable grip and which may be operated either by hand or by motor, with stepped pulleys for different speeds to meet the requirements of experimental work.

It is necessary, of course, to provide means for cushioning or preventing the recoil of the springs when a specimen breaks.

For this purpose we at first employed a dash pot, but later it was found more satisfactory to use a device which prevents recoil by holding the springs under the maximum tension. We realize that this method of measuring the load is in a way open to criticism, but at the same time we are gratified to find that after more than two years of continuous service the corrections for the dynamometers are so small as to be negligible, being well within the limits of variation of the materials tested. We have provided a set of weights with which the machines are calibrated from time to time, and should the dynamometers become inaccurate it will be a simple and very inexpensive matter to have the old springs replaced by new ones.

As already mentioned the measurement of elongation at rupture is a less simple matter in the case of a straight test piece than with a ring, the reason being that the rubber has a tendency to creep to a greater or less extent through the gripping surfaces, thus making it inaccurate to take measurements between fixed points on the grips. A little practice however enables one to observe the extension between gauge marks on the test piece with a fair degree of precision by pressing the end of a measuring scale gently against one of the marks and taking the scale reading just opposite the other mark as the specimen breaks. The dynamometer automatically registers the breaking load.

In my own experience the large amount of time consumed in testing the elasticity or what is commonly termed "set" or "recovery" after extension, has prompted me to devise means for expediting the work, with the result that a piece of apparatus has been constructed in which six specimens may be tested at once.

Of the tensile machines that I have had an opportunity to see in operation, or to study from illustrations, some appear to be rather better adapted to experimental or research work than to the requirements of routine testing. This is due partly to delicate or expensive construction, and also to the fact that more time is required in their operation than is desirable in ordinary routine work, for which, simplicity of construction, ease and rapidity of operation, would seem to be very desirable to say the least. For reasons already stated it would be difficult to obtain by autographic means, tension or hysteresis curves for straight test pieces. A rather slow but otherwise satisfactory method of securing curves may be carried out in the following way:

A narrow flexible scale either of paper or tracing cloth is attached to the test piece at the upper gauge mark by means of a small spring wire clip. From this scale one operator reads and announces the elongation at convenient intervals of 25 to 50 per cent., to a second operator who observes and records the corresponding tension. With a little practice this process becomes exceedingly simple and the points when plotted are found to give very smooth curves which clearly show the characteristics of different rubbers. Such curves offer a convenient means of studying the tensile properties of rubber when cut in different directions; and when compared with similar curves obtained with ring specimens the influence of the form of test piece is clearly apparent. In testing twenty or more different compounds I have found that specimens cut longitudinally or in the direction in which the sheet has been rolled through the calender give curves that lie well above the corresponding curves for specimens cut in the opposite or transverse direction. Ring test pieces produce curves which lie below those for longitudinal specimens and which sometimes coincide very nearly with the curves for transverse specimens.

The tension test is generally considered to be the most satisfactory and most widely applicable test for soft rubber products. In its various modified forms it is used to determine the more important physical properties such as strength, ultimate elongation and elasticity of recovery after a definite extension or a definite load. The methods followed in making these determinations vary according to the judgment of different persons, and since the results obtained are thereby influenced to a marked extent, the importance of uniformity of methods is not open to question. Of the influences that appreciably affect the results of tests may be mentioned the following, which being familiar to those interested in rubber testing would make an interesting subject for open discussion:

1. Shape and size test pieces.
2. Method of preparing and measuring test pieces.
3. Design of grip.
4. Direction in which test pieces are cut (when straight specimens are used).
5. Temperature.
6. Previous stretching.
7. Time allowed after extension and release, before measuring set.
8. Speed at which rubber is stretched.

Reference has already been made to the influence of the form of test piece, and as regards the area of cross-section it appears that in the case of rubber, as in the case of other materials, there is a tendency for small test pieces to develop higher unit values for strength and ultimate elongation, than larger ones.

2. The preparation of test pieces and the measurement of cross-section is generally conceded to be of the greatest importance, and unless this part of the work is carefully and accurately performed, it is useless to expect uniform results to follow. When one considers that the width of ring as commonly used is only 4 mm it is seen that a very slight eccentricity of say ½ mm introduces an error of 12½ per cent. in strength. In the case of straight specimens this particular difficulty does not present itself, but here also it is necessary to make sure that the cutting edges of the die are parallel and sharp. The usual method of cutting straight specimens I believe, is to strike the die a sharp blow with a mallet, but when used in this way, unless the blow is well directed, there is a tendency for the die to drift to one side, thus producing a specimen whose cross-section is not rectangular. It would therefore seem worth while to employ mechanical means to insure that all specimens are cut alike. In our work we have found that an arbor press is perfectly satisfactory, and we use a piece of leather under the rubber to prevent injury to the cutting edges of the die.

For measuring the thickness, a spring micrometer is probably the most convenient and accurate instrument available.

3. The design of grip is of importance in that excessive local pressure often causes failure at that point. For this reason it would seem desirable to use a form of grip which closes automatically as the tension is increased, and produces a uniform pressure across the end of the test piece.

4. As is generally known the tensile properties of a straight test piece are influenced by the direction in which it is cut and it is unfortunate that specifications sometimes fail to take this fact into consideration. For example, a common specification for water hose in this country limits the set after 300 per cent. extension, to 25 per cent. and a rubber compound used for such hose might show a set measured in the longitudinal and transverse directions of, say, 28 and 22 per cent., respectively. Unless this point were definitely covered therefore the hose might be accepted or rejected according to direction in which the test pieces were cut. The same is also true though to a less extent, in the case of tensile strength and ultimate elongation. This of course does not apply to ring specimens in which tension is exerted equally in all directions.

5. The influence of temperature on set, strength and ultimate elongation, though often disregarded, is undoubtedly great enough at times to justify consideration. When one considers that the temperature in a testing laboratory may easily vary twenty degrees or more between summer and winter it is not difficult to account for variations in results which might otherwise be overlooked.

6. The influence of previous stretching on strength and elongation is often so marked that it should be taken into consideration.

In testing for set and strength it is convenient to use the same test pieces for both determinations, but by so doing, the stretching which a specimen receives in connection with the measurement for set, has a tendency to increase not only its ultimate elongation but also its strength. This increase in strength appears to be more pronounced in high grade rubbers than in compounds of low quality. It is rather surprising that specifications do not always state the methods to be followed in this case.

7. There appears to be a marked difference in the methods followed in determining "set." Although it is well known that the recovery of rubber immediately after release is very rapid, it is not unusual to see specifications that require the set to be measured "at once" and the specimen remarked in preparation for a second stretch and measurement for set. Now since the straight specimen does not lend itself readily to the usual methods of taking autographic records and since it is very difficult to measure the set immediately after the release except by autographic means, much more uniform results could be secured by measuring the first set after a definite number of seconds, say fifteen or twenty, have been allowed to elapse.

A further objection to the practice of attempting to measure and remark the specimens immediately after release, is that a variation of only a few seconds in the time of remarking is sufficient to influence the second set very materially. So great is this influence in fact, that if the specified limits for set were insisted upon, material would often be accepted or rejected according to the quickness with which the operator was able to remark the test pieces after the first set.

8. A variation within reasonable limits of the speed at which rubber is stretched does not affect the strength and ultimate elongation to a very great extent, still its influence is generally considered to be sufficient to justify uniformity in the rate of stretching. Whether it is more desirable to maintain a uniform speed, or to increase the load at a uniform rate, is a point on which there are differences of opinion. I believe that stretching at uniform speed is the method usually adopted in this country.

In conclusion I would state that my aim has been to deal principally with those points which are most essential to the development of uniform methods of testing, no attempt having been made to treat the general subject of physical testing in anything like an exhaustive manner.

Lithopone and Oxide of Zinc in the Rubber Industry.

By G. C. Stone and Gilbert Rigg, of the New Jersey Zinc Company.

A PAPER PREPARED FOR THE THIRD INTERNATIONAL RUBBER CONFERENCE, BUT NOT READ.

THE zinc oxide of commerce is a white amorphous powder, the purity of which depends entirely on the character of the ore from which it is produced. Zinc ores, with the exception of those from Franklin Furnace, New Jersey, contain considerable lead and usually cadmium. For the production of a white oxide, suitable for rubber compounds, the presence of these constituents except in very small quantities is inadmissible, especially when the object is to make as white a product as possible. The necessity of avoiding the presence of lead and cadmium, which are the only volatile constituents of the ores other than zinc, insures unusual regularity in the composition of oxide of good color. For example, the oxide made by the New Jersey Zinc Co. contains upward of 99 per cent. of zinc oxide. The principal impurities are small quantities of carbon-dioxide and sulphur trioxide.

Zinc oxide is made by two processes, known respectively as the direct, or American, and the indirect, or French. In the direct process the zinc is driven off from the ore by the reducing action of carbon at a high temperature, and the zinc vapor burned direct to oxide. In the indirect process the ore is first smelted to produce metallic zinc, or spelter, and this metal is then burned to oxide. The latter process is naturally more costly than the former, and the products made by the two differ in certain material points.

Direct Process Oxide: The grades used in rubber compounding are "XX" (red brand) and "Special" (red brand). The difference between the two is mainly one of color, the Special being more desirable when the whiteness of the compound is important.

Indirect Process Oxide: These are graded as "Red Seal," "Green Seal" and "White Seal." They are of a purer and brighter white than direct process oxides. The Green Seal oxide is smoother and of a more perfect white than the Red Seal. The white Seal is a comparatively new product, and is characterized by its remarkable lightness and bulkiness. While Green Seal and Red Seal oxides are packed 300 pounds to the barrel, White Seal can only be packed 150 pounds to the barrel. The exact meaning of this difference will be discussed later in this paper.

Chemical and Physical Properties of Oxide of Zinc: In general, the first essential of a zinc oxide for rubber purposes is, as indicated above, purity. The presence of serious amounts of metals that yield colored sulphides is entirely inadmissible, as during the process of vulcanization these sulphides are formed and discolor the product. Further, in rubber compounds it is in the first degree desirable that the compounder should know exactly what he is using if he is to get good results. Uniformity of composition, therefore, is very desirable.

The determination of zinc is a rather difficult matter, and the analytical error involved is frequently of such magnitude in comparison with the amount of impurity present as to make the determination valueless. Even in experienced hands the error is rarely less than 0.25 per cent., which, taken in connection with a zinc oxide content of over 99 per cent., obviously vitiates any attempt to determine the amount of impurity present by difference.

We believe that users of oxide will be well advised to confine their analytical work to simply testing for adulteration and to ascertaining the suitability of an oxide for a particular purpose by a practical compounding test in the laboratory, rather than to spend much time and effort in attempting to determine the zinc contents of the oxide. This mode of procedure we understand is in vogue in the majority of rubber laboratories.

Zinc oxide should dissolve in dilute hydrochloric acid without effervescence and without smell, and should leave no appreciable residue. On the addition of ammonium chloride to the solution and then an excess of ammonium hydrate and ammonium carbonate, the liquid should remain perfectly clear, or show at most a slight cloudiness. Care is needed in carrying out this test, as a considerable excess of ammonia and ammonium carbonate is necessary to dissolve the carbonate of zinc first formed. If the solution in hydrochloric acid has been performed in a test tube, it is desirable to transfer the liquid to a beaker before proceeding with the addition of ammonium chloride, etc.

Having regard to the nature of the process by which zinc oxide is made, positive results, as for example, a residue insoluble in hydrochloric acid, indicate either a leaded oxide, which is unsuitable for rubber purposes, or wilful adulteration.

Commercial zinc oxide consists of extremely small particles, so small in fact, that it is doubtful if they can be seen under the ordinary microscope. These small particles always form more or less coherent aggregates, which are apparently somewhat of the nature of a slightly elastic sponge entangling considerable air. These aggregates are what we see and speak of as the particles of zinc oxide. The tendency of an oxide to cohere in this way can be to a considerable extent regulated during the manufacture. In White Seal oxide, for example, the coherence is much slighter than in any of the other brands, which makes it necessary to pack only 150 pounds to the barrel. By forcing in a larger quantity this property can be partially destroyed.

It is necessary to distinguish clearly between the degree of coherence of an oxide and the true specific gravity, because the two properties are not infrequently confounded under the term "density." Broadly speaking, all amorphous oxides have the same specific gravity, the variation being fractional and the mean figure in the neighborhood of 5.6. This means that the zinc oxide itself, disregarding altogether its state of aggregation, is 5.6 times heavier than an equal volume of water. If, however, we take a box having a capacity of 1 cubic foot and weigh it full of White Seal oxide, and afterwards full of Red Seal Oxide, being careful not to compress the oxide in the box, we shall obtain a greater weight in the latter case than in the former. This means merely that there is more air entangled in the White Seal than in the Red Seal. It must be borne in mind that this property of entangling and holding a larger quantity of air is associated with the character of aggregation and compactness of the oxide groups, and that this latter condition has a decided bearing in the application of the oxide for some purposes.

It is possible to make a series of zinc oxides varying from solid crystals large enough for the form to be clearly visible to the naked eye, and which sink in water like stones, to the very light form known as "philosophers' wool," which floats in the air like thistle-down. All, so far as tested, have the same specific gravity, but the great variations in the amount of entangled air causes an enormous variation in the apparent densities.

The determination of the actual specific gravity is not an easy matter, and considerable care is necessary. The oxide tends to retain its entangled air very obstinately, and the use of a good vacuum pump is necessary to insure that the air has been completely expelled.

Owing to its extreme fineness it is useless to attempt to size oxide of zinc by any system of screens. Screening is, however, often useful to break up the aggregates formed. This can best be done in a bolting-machine of the type known as a centrifugal reel, in which a set of beaters revolve at a high speed inside a cylindrical screen which revolves more slowly. The beaters throw the oxide against the screen and force it through the meshes, which do not need to be finer than 20 to the inch. Shaking screens are unsuitable, as they tend to make the oxide cohere in small balls. Revolving screens without beaters tend to form balls, and also to coat themselves with an impervious layer of oxide, and if brushes are used to clean the screen they only make this coating harder. At intervals the coating drops off the screens and, with the balls, is discharged as rejections. This makes the operation of such screens very slow and wasteful.

Oxide of zinc is one of the most important ingredients of manufactured rubber, and its use is increasing very rapidly. Fortunately for the user it is remarkably constant in chemical composition and physical properties. The latter vary in the different grades, but the makers use every endeavor to keep them as nearly uniform as possible in each. Luckily, also for the user, it is rarely adulterated, and the adulterations are easily detected. The price, too, is stable, and any one who is misled by false ideas of economy into buying material as oxide of zinc at much less than the market price can hardly blame any one but himself if it proves unsatisfactory. If purchased from a reputable manufacturer and properly applied, it is certain to give satisfaction.

Lithopone: Lithopone is an amorphous white pigment made by mixing solutions of barium sulphide and zinc sulphate, which causes a transfer of the acids and produces an intimate mixture of zinc sulphide and barium sulphate. The properties of the mixture so formed are quite different from those of a mixture of the two dry salts. Barium sulphate has very little opacity, or hiding power, while zinc sulphide has a great deal. A mixture of the two dry has a hiding power intermediate between the two, and it varies almost directly with the proportion of zinc sulphide present. In properly made lithopone every particle of the barium sulphate appears to be coated with zinc sulphide and the opacity is much higher than that of a mixture of the dry salts in the same proportion.

The process of manufacture is complicated. The carefully purified solutions of the two salts are mixed; the crude lithopone filtered out, dried, heated to redness and plunged in water. The mixture of lithopone and water is then ground, filtered, dried and re-ground; it is then ready for packing. Every step of the process requires great care and careful regulation of conditions. If properly carried out it gives an excellent white pigment of great "strength," or hiding power. It is largely used in the manufacture of rubber goods, but the general opinion is that it does not give as strong, or resilient, a product as oxide of zinc. Care must be taken that no lead is present in the compound or it will darken seriously.

A good sample of lithopone should contain not less than 28 per cent. of zinc sulphide. It should be a good white, be smooth and free from coarse particles and have good hiding power. For use in rubber manufacture, however, probably the most useful test is to make up a small quantity of the compound.

NEW YORK FIRE RECORD FOR 1912.

The report of Fire Commissioner Joseph Johnson for 1912, recently issued, is an unusually interesting one, as it shows a marked increase in the efficiency of the New York Fire Department; the particularly interesting feature being that this increase of efficiency occurs simultaneously with the increased use of motor vehicles in the place of horse-drawn vehicles in the department.

The number of fires during 1912 was over 1,000 greater than during the preceding year, being 15,633 against 14,547 for 1911; but the fire loss was not only less per fire, but was over $3,000,000 less for the total number of fires. The total fire loss for 1911 was $12,470,806, or an average loss of $855, while the aggregate loss for 1912 was $9,069,580, or an average loss of $580, the loss of each fire being nearly one-third less than during the preceding year. The commissioner has contracted for 75 more motor vehicles for the department, as follows:

2	hose wagons	$8,326
16	combination chemical and hose wagons	105,170
3	high-pressure hose wagons	13,875
28	second-size steam fire engines	248,920
1	ladder wagon with 85-foot ladder	8,210
8	ladder wagons with 75-foot ladders	63,152
17	ladder wagons with 65-foot ladders	125,716
	Total	$573,369

The high winds that prevailed during the early part of April had the effect of taking the roof off the plant of the New York Rubber Co., at Matteawan, New York, but no very serious harm was done.

Railroad Air Brake Hose.

By J. S. Sheafe, Engineer of Tests, Illinois Central Railroad.

A PAPER PREPARED FOR THE THIRD INTERNATIONAL RUBBER CONFERENCE, BUT NOT READ.

THE requirements of air brake hose are prescribed by the Master Car Builders' Association so that hose applied to all railroad equipment shall be uniform and up to a certain standard. But air brake hose, as now being manufactured, does not comply with the M. C. B. requirements in other than the physical tests.

For instance, M. C. B. specifications prohibit the use of rubber substitutes. Pure rubber certainly cannot be used at the price paid. Neither can a fair grade of rubber. In calling for a "hand made tube composed of three calenders of rubber," the requirement is not met as hand made tubes and those consisting of three calenders of rubber are only made on special order and at an advance in price. The great bulk of air hose tubes today are single calender and machine made, or "squirted."

In calling for swelled ends more difficulty is met with in the manufacture and a less perfect hose results. The inside and outside diameters should be the same throughout the entire length of the hose.

Air brake hose today is poorer than formerly and both the railroads and manufacturers may be blamed; the former for continually hammering down the price asked for an honest article, and the latter for consenting to attempt the manufacture of an article at a price below that which they know can be fairly met. The quality of air hose of necessity must be improved and both the manufacturer and consumer must work together, making concessions where necessary, for the ultimate mutual good.

Air hose today is sold as low as 30 cents and as high as 50 cents per foot, a difference of 66 per cent. How much can be expected of air hose costing the minimum?

This is a splendid illustration of false economy as the extra number of poor hose lengths necessarily purchased overbalances the increased cost of better hose; this too, when only the relative service is considered. In addition, and directly attributable to cost, should be considered the labor of collecting, shipping, dismounting and fitting up, each of which would not be necessary so frequently to be done with better hose.

The M. C. B. Association, allow a cap from 1/16 inch to ⅛ inch in thickness. A cap of 1/16 inch is better than one of ⅛ inch thickness. Even less than 1/16 inch would be preferable. If the cap is made only thick enough to protect the exposed end of the fabric during the process of vulcanization the clamp used will not overlap the fabric, thus increasing the possibility of hose pulling off of nipple.

Some claim has been made that air hose is quite generally porous. The percentage of porous hose, i. e., those pieces which have leaked and which, on examination, have no evident defect, may be fairly placed at not over 5 per cent. This appears to be a reasonable maximum.

The cause of the largest number of failures appears to be the result of outside injury. Such failures are entirely apart from any inherent weakness of the hose. The "Railway Age Gazette" of April 19, 1912, places the number of such failures at from 65 to 70 per cent. There is good evidence at hand in hose shops to corroborate this statement.

The use of power machines for inserting nipples and couplings into air hose should be discouraged. The inner tube will be cut if there is any roughness to the shank of the nipple or coupling, or if they are out of line in entering. Mounting can be almost as rapidly done by hand and with the certainty that no damage to the inner tube results.

One of the M. C. B. requirements is that the friction between layers of duck shall be such that a 20-pound weight attached to the free end shall, in ten minutes, unwind less than 8 inches, the section being 1 inch in width. Just how far a "high friction" hose is advantageous is a question. Tests made by a large railroad, wherein a machine was used for kinking the hose while under pressure, resulted in a better showing for hose made with little friction than that made to meet the M. C. B. requirement. While this may not prove anything it at least opens up a very interesting point in the subject of air hose. In the same tests, hose with poor friction, gave better results in the bruise test. This bruise test was made by fastening the hose, under air pressure, to an anvil, and causing a 20-pound weight to fall upon it at the nipple end.

There can be no doubt of the deterioration of the average air hose within six months of manufacture. The making of hose to wear well is quite the important part of the manufacturer's problem. No matter how good the hose is at the start if it becomes useless after a few months, the loss to the consumer is immense.

Some rubber manufacturers say that a good stretch test of the tube and cover, combined with a tensile strength requirement, will do more than any other one thing to increase the life of the hose. Tensile strength proposed by these manufacturers varies from 650 to 1,200 lbs. per square inch. As hose in service does not stretch the 200 or 300 per cent., is the stretch test practical? A rubber band will stretch many hundred per cent. and yet its deterioration is rapid.

It would appear that the rubber manufacturers could make a more lasting hose by compounding a tube and cover with just as much or as little flexibility as would be necessary for long life. The minimum amount of flexibility would have to be sufficient to allow bending, without kinking, in coupling up.

It would also appear that the amount of damage caused by pulling hose apart, without uncoupling, is exaggerated. It is probably the universal practice in yards for switchmen and trainmen to thus neglect uncoupling. If an observation will be made in a yard, it will be found, on examining hose so treated, that failure is evident in none of them, provided the coupling has not been jammed and that a wedge has not been made use of to take up leakage in the gasket. As proof of this we have the strength of our air hose, versus the resiliency of the gaskets; the former is much greater.

In considering defective hose, and from which follows a leaky train line blamed on the hose, leaky angle cocks, nipples and couplings must not be lost sight of. They contribute their fair share of the extra burden on the air pump. A more careful inspection of air hose by car inspectors may save damage, as a hose ready to fail may be sometimes removed in time to avoid failures.

Some attention has been given to the question of making air hose with one or more ply woven. This appears likely to be the best hose of the future.

If the manufacturers will produce a hose with an inner tube hard enough to protect itself from the nipple, and a cover hard enough to protect itself from the clamp, both of ability to withstand the action of time and weather for approximately 36 months, and will demand a price commensurate with the ingredients entering into the manufacture, the whole situation will be greatly improved.

WANT AMERICAN LAMPBLACK.

An American consul states that a firm in his district desires to hear from American manufacturers of lampblack, with the object of representing them in Europe. The consular report is No. 10,771.

The Akers Rubber Commission.

WHILE the rubber growing industries of various countries have been the subject of separate investigations, there was felt to be the need of such an inquiry as would contrast the situation in the East and the West, as they appeared to the same observers.

Hence the Akers Commission was appointed by a group of financiers, identified with the Port of Pará and with the Amazon Valley. Prominent among these was the Booth Steamship Co., so intimately connected with the distribution of Amazon rubber.

As briefly stated in the April issue of this journal, the objects of this commission included the detailed investigation of conditions in both the Orient and the Amazon Valley. During about 10 months the commissioners pursued their researches, first in Asia and afterwards in Brazil. The members of the commission were as follows:

ORIENT COMMISSION: Mr. C. E. Akers, Dr. Jacques Huber, Mr. A. Ufenast and Mr. F. Lugones.

AMAZON COMMISSION: Mr. C. E. Akers, Mr. H. C. Rendle and Mr. F. Lugones.

The Orient Commission reached Colombo on December 29, 1911, and arrived back in Europe about the end of May, 1912. Leaving Europe again early in July they reached Pará August 8, and completed their work on October 25.

In two volumes, of respectively 90 and 164 pages, they have reported on their labors in the two principal centers of the world's rubber supply, the Orient and the Amazon valley.

As summarized by the commissioners the objects of their labors were as follows:

1. To give a clear and exact description of the characteristic features of the Lower and Upper Amazon and its tributary rivers as far as the ground could be covered.

2. To investigate the general condition of agricultural industry, and suggest practical means for its development in the immediate future.

3. To report upon the Amazon rubber industry, and to endeavor to find improved methods of administration, collection and preparation, to enable the Brazilian product to compete with that from the Orient.

4. To make a comparison between methods in Brazil and the Orient.

5. To consider the question of labor in the Amazon Valley, and suggest practical means to place it on a cheaper and more effective basis.

6. To formulate practical ideas for the colonization of waste lands.

7. To investigate the cost of establishing one or more experimental plantations or farms.

8. To bear in mind that all work undertaken for development purposes has for its object the creation of additional traffic for the steamship company, docks and other enterprises in which capital is interested.

THE WORLD'S PRODUCTION AND CONSUMPTION OF RUBBER.

Before dealing with the present report under its separate heads of the Orient and the Amazon Valley, it may be of interest to glance at the figures of the world's actual production and consumption of rubber, as estimated by the commission:

The chief interest of these estimates lies in the fact that the predominance of the United States in the consumption of rubber is clearly shown as being nearly 50 per cent. of the total.

According to the following estimate, the western hemisphere at present contributes about one-half of the world's production of crude rubber, and the eastern hemisphere the other half. This position of equality will, however, be gradually altered, through the largely increased yields anticipated from the East within the next few years.

ESTIMATE OF WORLD'S PRODUCTION OF CRUDE RUBBER, 1912.

Country of Origin.	Quantity in tons.	
1. Amazon Valley	42,000	
2. Bahia, Ceara, &c.	4,000	
3. Matto-Grosso, via routes other than the Amazon	600	
4. Peru, Colombia, Ecuador and Venezuela	2,000	
5. Mexico and Central America	3,000	51,600
6. Oriental Plantations in Malaya, Ceylon, India, Burmah, Java, Sumatra, Borneo and Sargon		31,000
7. Africa, West	15,500	
8. Africa, East	6,000	
9. All other sources	900	22,400
Total tons		105,000

(The above figures include all qualities of rubber and caucho, but not gutta percha from India, the Malay Peninsula, Java or Sumatra.)

ESTIMATE OF WORLD'S CONSUMPTION FOR 1912.

	Tons.
1. Europe	48,670
2. United States	47,300
3. All other countries, including Japan and China	2,080
Total	98,000

THE ORIENT.

Based on this general statement, the two separate volumes handle successively the rubber industries of the Orient and the Amazon Valley.

Taking up the Orient, which formed the object of the commission's first attention, it is shown that these 31,000 tons represented the product of 1,530,000 acres; divided as follows:

	Acreage 1912.	Yield tons 1912.
(a) Malay Peninsula	650,000	21,000
(b) Ceylon	225,000	6,000
(c) Southern India	60,000	600
(d) Burmah	40,000	400
(e) British North Borneo and Sarawak	60,000	500
(f) Java and the Javanese Archipelago	230,000	500
(g) Sumatra	220,000	1,700
(h) Dutch Borneo and the Celebes	10,000	.....
(i) Saigon	25,000	300
(j) New Guinea, Philippine and other islands	10,000	.....
Total	acres 1,530,000	tons 31,000

LOCALITY.

From the annexed table it will be seen that nearly 90 per cent. of the acreage under rubber in the Orient is in the Malay Peninsula, Ceylon, Java and Sumatra (1,325,000 acres out of 1,530,000).

In the first two cases, the yield is about 65 and 53 pounds per acre, while in Java it represents on the average 4½ pounds and in Sumatra 15 pounds per acre. From both the last named sources a large increase is looked for in 1914.

ESTIMATE OF PROSPECTIVE YIELDS OF PLANTATION RUBBER.

	Malaya Tons.	Ceylon Tons.	India Tons.	Burmah Tons.	Sarawak Tons.	Java Tons.	Sumatra Tons.	Saigon Tons.	Total Tons.
1912.....	21,000	6,000	600	400	500	500	1,700	300	31,000
1913.....	36,000	10,000	1,000	700	900	1,750	3,500	700	54,550
1914.....	43,000	15,000	2,600	2,000	1,800	10,650	8,000	1,200	84,250
1915.....	63,000	25,000	5,000	3,500	2,500	18,300	12,000	2,000	131,300
1916.....	80,000	30,000	7,000	5,500	5,500	26,550	16,000	3,000	173,550
1917.....	97,500	35,000	8,000	7,000	8,000	32,300	22,000	4,000	213,800
1918.....	113,750	40,000	10,000	7,500	10,000	38,250	33,000	4,750	257,250
1919.....	130,000	45,000	13,000	8,000	13,300	43,650	44,000	5,500	302,450
	584,250	206,000	47,200	34,600	42,500	171,950	140,200	21,450	1,248,150

FUTURE YIELDS.

Since Sir John Anderson, late Governor of the Straits Settlements, made the startling estimate of 75,000 tons as the Malayan yield for 1915, the possibilities of future rubber supplies from the East have commanded the attention of the rubber industry. In this connection the annexed estimate is of particular interest; showing, as it does, a prospective ten-fold growth of plantation rubber supplies within 8 years—from 31,000 tons in 1912 to 302,450 tons in 1919.

COST OF RUBBER PRODUCTION.

The cost of producing a pound of rubber in the Orient is not uniform, but varies with the price of labor, and the facilities for transport. Owing to the fact that many plantations are in a transition stage, it is anticipated that in two years' time, when yields have increased, costs will be materially lower than at present.

Owing to the detailed subdivision of the report, it is possible to compare the estimated cost of producing rubber f. o. b. in four principal quarters in the East:

	English pence.	American cents.
Ceylon	8	16
Malay Peninsula	14½	29
Sumatra	11½	23
Java	14	28

In comparison with these figures is that shown in the other section for Brazilian rubber, of 32½ pence (65 cents American) f. o. b. per pound.

The following general summary deals with the salient features already reported in detail:

"At present Ceylon is the cheapest producer, and in many cases the cost f. o. b. is 6½*d.* (13 cents American) per pound. In view of all existing circumstances, a fair average price f. o. b. for Oriental rubber may be taken at 1*s.* (24 cents American), from the year 1914 to 1919. During the same period the costs from port of shipment to date of sale may be calculated at 3*d.* (6 cents) per pound, making the average aggregate cost on the market 1*s.* 3*d.* (30 cents American) per pound.

VARIETIES OF RUBBER TREES.

The investigations of the commissioners have been confined practically to the cultivation and growth of *Hevea Brasiliensisi*, the production of other varieties, such as *Castilloa*, Ceará *Ficus Elastica*, jelutong and other rubber-bearing trees and vines, being described as insignificant in quantity and value as far as the present or future supply of the European and American markets is concerned.

CLIMATE.

Pará rubber demands a hot moist temperature, with an even distribution of rainfall and an equable climate both night and day throughout the year. These conditions, it is remarked, prevail to a marked extent in the Malay Peninsula, Sumatra, Java, and to a somewhat lesser extent in Ceylon, Borneo, Saigon and various great islands of Oceania. In Southern India and Burmah, marked divisions of the seasons take place, and the distinctive periods of dry and wet weather are less favorable than the more equable distribution of rainfall in the former countries.

PROSPECTS OF CONSUMPTION.

In commenting on the statistics already quoted, showing the world's present annual consumption as 98,000 tons, the report states that the commission understands a fall of 40 per cent. in present values will bring into the market purchasers for an additional 100,000 tons of raw material distributed over the ensuing quinquennial period; this amount being required for street paving and other purposes impracticable while the price exceeds 2*s.* 6*d.* (60 cents) per pound for spot and forward contracts. Therefore, the rapid increase of production which must inevitably come in the five years, 1913 to 1918, will be to a certain extent offset by a great expansion in demand, which, it is added, should prove an important factor in reference to market values in the near future.

SYNTHETIC RUBBER.

In its calculations the commission has only dealt with the natural product, and will not venture to make any prediction whatever as to the part synthetic rubber will take in the development of the situation. However, it is added, the most effective method of fighting this danger is the reduction in the cost of producing natural rubber to the lowest possible figure.

RECLAIMED RUBBER.

With reference to statements made to a member of the commission that the loss of weight in process of recovery should not exceed 5 per cent., and that practically all the sulphur can be extracted at trifling expense—it is remarked that if these statements are correct, the effect on the crude rubber market must be felt severely within a very few years. The anticipation is expressed that the accumulation of old material will be extremely rapid, now that the production from the plantation industry has reached its present stage of development. It is added that if this recovered rubber can be utilized equally well for the manufacture of low grade articles, it will be a decided check to expansion in the consumption of crude rubber, as however cheap the latter may become, the cost of the discarded material will be substantially lower, so long as the price leaves a margin of profit over the manufacturing charges.

THE AMAZON VALLEY.

In the report on the Orient, the Commission has had to deal with facts of a statistical nature already recorded in various forms but not hitherto presented in such a comprehensive way. Within the space of four months this little band of investigators carried on its researches in the various rubber-growing countries of the Orient; the uniform way in which the results have been presented materially adding to their clearness and intelligibility. After a short breathing time in Europe, the Commission took up the work in the Amazon Valley, as recorded in the second volume of the report. In doing so they had the advantage of their previous researches in the East, so as to be in a position to draw comparisons. This second division of the Commission's investigations will be dealt with in the next issue of this journal.

THE COMMERCIAL NOMENCLATURE OF CRUDE RUBBER VARIETIES.

SUGGESTIONS MADE BY THE COMMITTEES APPOINTED BY THE RUBBER CLUB OF AMERICA AND THE RUBBER CONFERENCE.

ONE of the most important topics discussed during the Rubber Conference held in New York last fall was the simplification of crude rubber nomenclature. A committee was appointed, consisting of three members named by the Rubber Club of America and eight members named by the Rubber Conference, to consider this matter and make suggestions. The members of this committee were as follows:

From the Rubber Club of America.—Albert Zeiss of Arnold & Zeiss, crude rubber brokers, of New York City; Arthur W. Stedman, of New York Commercial Co., New York City, and William F. Bass, of the General Rubber Co., Sumatra and New York.

From the Third International Rubber Conference.—Leonard Wray, commissioner for the Governments of British Malaya and Straits Settlements; F. Crosbie-Roles, Ceylon; Cyril E. S. Baxendale, Federated Malay States; Dr. Jacques Huber, of Museu Goeldi, Pará, Brazil; Wilbur A. Anderson, official commissioner from Hawaii; Henry C. Pearson, editor of THE INDIA RUBBER WORLD, New York; Dr. J. C. Argollo, State of Bahia, and Noel Trotter, of the Rubber Growers' Association, Federated Malay States..

Several meetings of the committee were held during the conference week, and tentative lists covering both Plantation and Amazon sorts were submitted. Those lists were not published in these columns at the time, as it was hoped that further action would soon be taken upon them, but as the lists, owing to the fact that the members of the committee are at present so widely scattered, have not yet been revised, it may be of interest to many in the trade to see them, though still in tentative form. They are as follows:

MIDDLE EAST PLANTATION SORTS.

Scientific Names.	Trade Names.
Malay Hevea Sheet (or biscuit)	Rambong—Sheet
" Smoked Sheet	" Crepe
" Block	" Ball
" 1st grade Crepe or blanket	" Lumps
" 2nd grade Crepe (Mottled)	" Scrap
" 3rd grade Crepe (Brown)	Manihot—Sheet
" 4th grade Crepe (Black)	" Crepe
" Scrap (untreated)	" Scrap

(Or Ceylon, Java, Sumatra, Burma, India, etc.)

The following list of names for Amazonian rubbers was submitted:

AMAZONIAN RUBBERS.

Scientific Names.	Trade Names.
(A.) AMAZONIAN HEVEA RUBBER.	
1. Amazonian Hevea Brasiliensis rubber.	
Amazonian smoked Hevea Brasiliensis rubber	Amazonian fine Hevea
Upriver Sorts:	Upriver
Bolivian smoked Hevea Brasiliensis rubber	Bolivian fine
Peruvian " " " "	Peruvian fine
Acre " " " "	Acre fine
Matto Grosso " " "	Matto Grosso fine
Amazonas { Javary " " "	Amazonas fine
Amazonas { Jurua " " "	(Javary, Purus, Jurua,
Amazonas { Madeira, etc. " "	Madeira, etc.)
Middle River Sorts:	
Tapajos { upper / lower smoked Hevea Brasiliensis rubber	Tapajos fine
Xingu { upper / lower " " " "	Xingu fine
Islands Sorts:	
Pará Islands smoked Hevea Brasiliensis rubber	Islands fine (extra dry common)
Badly smoked Amazonian Hevea " "	Medium or extra fine
Coagulated Sorts:	
Matto Grosso alum coagulated H. Bras. rubber	Matto Grosso Virgin
Pará spontaneously coagulated " " "	Cameta
H. Bras. rubber, prepared by the process of Cerqueira Pinto	Cerqueira Pinto's extra fine Hevea
Air Dried Sorts:	
Upriver air dried Hevea Brasiliensis rubber	Upriver coarse
Pará " " "	Islands coarse (Scrap and Negrohead)
AMAZONIAN HEVEA RUBBER FROM OTHER SPECIES THAN HEVEA BRASILIENSIS.	
Smoked Sorts:	Weak fine Hevea
Rio Negro smoked weak Hevea rubber (different species)	Rio Negro weak fine (different grades)
Peruvian smoked weak Hevea rubber	Peruvian weak fine (Mollendo Peruvian dibil)
Bolivian (Sorata) (H. Peruvian 1st grade)	Bolivian weak fine
Purus smoked weak Hevea rubber	Purus weak fine
Pará " " " " (from H. Guayanensis)	Pará weak fine

SCIENTIFIC NAMES.	TRADE NAMES.
Coagulated Sorts: None.	
Air Dried Sorts:	
Rio Negro air dried Weak Hevea rubber	Rio Negro weak coarse
Pará " " " " "	Pará " "
Putumayo " " " " " (from Hevea Foxii)	Peruvian tails
(B.) AMAZONIAN CASTILLOA RUBBER—CAUCHO.	
Air Dried Sorts:	
Bolivian air dried Castilloa rubber	Bolivian caucho
Peruvian " " " "	Peruvian caucho
Matto Grosso air dried Castilloa rubber	Matto Grosso caucho
Acre " " " "	Acre caucho
Amazonas (Javary, Jurua, Purus, Madeira, etc.)	Amazonas crude
Pará (Xingu, Tapajos, Araguaya)	Pará caucho
Coagulated Sorts: caucho slabs.	
Caucho prepared with Cerqueira Pinto's process	Cerqueira Pinto's caucho
(C.)—BRAZILIAN MANIHOT RUBBER	Manisoba rubber (sheet crepe scrap)

Produced in the States of Ceará, Piauhy, Pernambuco, Bahia, Minas Geraes. If desired, the name of the producing state can precede the name of the grade instead of the name of the country.

1. Brazilian Manihot Glaziovii rubber	Ceará rubber
Brazilian {alum coagulated / acid coagulated} Manihot Glaziovii sheet	Ceará sheet
Brazilian {alum coagulated / acid coagulated} Manihot Glaziovii crepe	Ceará crepe
The alum or acid coagulated varieties would of course be specified in the contract.	
Brazilian crude or naturally coagulated Manihot Glaziovii	Ceará scrap
Brazilian naturally coagulated Manihot Glaziovii, washed	Washed Ceará scrap
2. Brazilian Manihot dichotoma rubber	Jequié rubber
Brazilian Manihot dichotoma sheet	Jequié sheet
" " " crepe	Jequié crepe
" crude or naturally coagulated Manihot dichotoma	Jequié scrap
" naturally coagulated and washed " "	Washed Jequié scrap
3. Brazilian Manihot Piauhyensis (and heptaphylla) rubber	Piauhy rubber
(D.) HANCORNIA RUBBER. (MANGEBEIRA.)	
This is the usual variety	
Alum coagulated Hancornia rubber	Mangabeira slabs
" " " " crepe	Mangabeira crepe

The lists given above were offered simply as suggestions and as basis for discussion. It is quite possible that these names may be materially changed before they are finally accepted by the people most interested in this subject, but this action taken by these members of the committee constitutes at least a substantial beginning in an undertaking of prime importance. A commercial nomenclature for crude rubber varieties that shall be generally accepted and used will certainly prove of vast convenience to the rubber industry.

At one of the committee meetings it was also suggested that it was the sense of the committee that all plantation sorts should be branded with the name of the estate on every piece and delivered to the manufacturers in the original cases. The claim that chips were often found in plantation rubber was thoroughly discussed, the suggestion being made that the cases be lined with cloth or paper treated with something analogous to paraffine. No decision was reached, as it was the thought of practical planters present that such lining would exclude air and cause stickiness. It seemed to be the sense of the planting interest present that the chips came not from the original cases in which plantation rubber was shipped, but from the sorting and shipping in larger and rougher cases in which the rubber is delivered to the American rubber market.

STATEMENT OF THE INDIA RUBBER WORLD.

Statement of the ownership, management, circulation, etc., of THE INDIA RUBBER WORLD, published monthly at New York, required by the Act of August 24, 1912.

Editor, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Managing editor, John P. Lyons, 150 West Ninety-first street, New York City.

Business manager, Edward F. Pfaff, 94 Hawthorne street, Brooklyn, New York.

Publisher, The India Rubber Publishing Co., 15 West Thirty-eighth street, New York.

Owner, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

(Signed) EDWARD F. PFAFF, Business Manager

Sworn to and subscribed before me this 28th day of March, 1913. (Signed) HELEN HEROLD, Notary Public,

(Seal) Kings County No. 162.

Certificate filed in New York County. Term expires March 30, 1913.

Kings County Registers Certificate No. 882, New York County Registers Certificate No. 3082. (Commission continuous.)

The Obituary Record.

FRANK E. HALL.

IN the April issue of THE INDIA RUBBER WORLD there appeared a brief notice of the death of Frank E. Hall, which occurred in March. It is possible now to give a more adequate account of his active and interesting life.

Frank E. Hall, for many years prominently identified with the rubber industry, was born in Boston, May 20, 1852, the eldest son of Henry A. and Amelia W. Hall. His father was one of the pioneer retail rubber merchants, and from his business grew the Hall Rubber Co., for many years among the leaders in the trade.

The son, Frank, early in life showed marked mechanical and inventive genius, and during his sixty years of life was responsible for many improvements and inventions of more or less value. Entering the business world at the age of 19, he almost immediately established a retail store at Portland, Maine, which he continued to run until his father's death in 1879, which compelled him to take charge of his father's affairs, and his own store soon became a branch of the larger firm, and the name of the latter was changed to the Hall Rubber Co.

About two years later he established a factory at Bemis, Mass., and for the next ten years devoted much of his time to the manufacture of the highest grade of clothing. He retired from the rubber business in 1890, selling out to the Stoughton Rubber Co. From then until 1898 his interests varied until again he entered the rubber field with the Newton Rubber Works Co., in the tire business.

His ingenuity was responsible, among other things, for the first hose nozzle capable of various streams from one pipe, the first dull finished rubber boots, the rubber lined rubber boots, the first mackintosh goods of American manufacture, the block, or sectional tire so prominent on motor trucks and several improvements on ball and socket buttons to make them practical on heavy clothing.

He was married in 1874 to Lucy A. Sprague, of Bridgewater, Mass., and they are survived by three children, Stanley F., associated with the Kelly-Springfield Tire Co.; Harry B., with the Boston Belting Co., at Portland, Oregon, and Amelia F. Pillsbury, of Prince Rupert, British Columbia.

The last few years of his life were spent in Wollaston, where he purchased the old Quincy homestead, and where he died, March 14, 1913, just two years after the death of his wife.

ISAAC B. KLEINERT.

Isaac B. Kleinert, president of the I. B. Kleinert Rubber Co., died at his home, 31 West 87th street, New York City, on April 18th in his 84th year. Mr. Kleinert was born in Borek, Prussia. He came to this country in 1850 and soon became interested in manufacturing enterprises. About thirty-three years ago he took up the manufacture of dress shields. At that time the articles of this description most used in this country came from France, and there was at first considerable prejudice against any other kind; but Mr. Kleinert rapidly overcame this prejudice and built up a large business in this particular article. About twenty years ago, the I. B. Kleinert Rubber Co. was incorporated, with its principal factory at College Point, Long Island. The company soon established branches and selling agencies, not only in Europe, but in various other parts of the world.

Mr. Kleinert was not only a successful manufacturer, but he was a philanthropist, and took a deep interest in the welfare of all his employees. Their regard for him was shown on his 75th birthday, which occurred on August 19, 1905, when he was presented with a massive silver loving cup, to which 1,200 of his employees had contributed.

FRANK E. HALL.

ISAAC B. KLEINERT.

ADOLF PRINZHORN.

ADOLF PRINZHORN.

On March 28 Adolf Prinzhorn died at Stuttgart, Germany. Having been for thirty years a member of the board of the Hanover corporation, the "Continental-Caoutchouc und Gutta-Percha-Compagnie" he was one of the leaders of the industry. His death constitutes an irreparable loss for the company towards the development of which his remarkable technical and commercial capacity had largely contributed.

After retiring from the board, his experience continued at the service of the company as a member of the committee of inspection. He was beloved alike by his colleagues and by the working staff of the concern.

Adolf Prinzhorn will long be honored, as intimately connected,

not only with the growth of his company, but with that of the entire rubber industry.

WILLIAM J. CABLE.

The death in announced of William J. Cable, who passed away in Seattle, Washington. He was the son of Wheeler Cable, who founded the Cable Rubber Co. and who died in 1899, William J. succeeding to the presidency of the Cable Rubber Co. This company failed in 1905, since when Mr. Cable had various rubber connections, chiefly in the West. He is survived by a widow and two daughters.

JOHN BROWN.

John Brown, who was associated with the Boston Rubber Shoe Co. for 32 years, during the last few years being connected with its New York warehouse, on Thomas street, died in New York about the 15th of April.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

THE directors of the B. F. Goodrich Co. met on April 23, for their regular quarterly session. According to their earlier plans, as announced at the annual meeting, the dividend on the common stock was passed. Mr. Work, president of the company, says that the general condition, so far as the Goodrich company is concerned, is much improved, and that the Akron plant is running closer to capacity than six months ago, and that the outlook is excellent.

In connection with the cut in prices of tires, Mr. Work says: "All the larger manufacturers have followed our lead, although I understand that one of the smaller companies has announced that it will not order any cut. It should be borne in mind in the talk of slashing tire prices that the price of crude rubber to-day is much lower than it was a year ago. High grade Pará is now selling close to eighty cents a pound, and a year ago it was one dollar a pound." Mr. Work expressed the opinion that as a result of the lower price of crude rubber, a 5 per cent. tire price cut ordered the first of the month will leave practically the same margin of profit to the manufacturer as obtained a year ago. The actual consolidation of the Diamond and Goodrich plants did not become operative until April 1, 1912. Mr. Work did not wish to commit himself as to the length of time he thought the common dividend would be suspended, although he is inclined to be optimistic. He made it very plain among the Board of Directors as to the advisability of passing the common dividend, it being the common desire of the Board that a good-sized surplus be built up before resuming payments on the common stock.

At a meeting of the directors of The Miller Rubber Co., held in Akron, April 17, the $200,000 treasury stock was placed on the market, present stockholders of Miller stock being allowed to subscribe for 25 per cent. of their present holdings at par. It was also decided to submit at an early meeting of the stockholders the question of doubling the capital of the company, thus increasing the present one million capital to two million; said increase of stock to consist of 5,000 shares of common stock at the par value of $100 each, and 5,000 shares of preferred stock at the par value of $100 each.

The company is just completing buildings which will practically double the floor space of the factory, and with the machinery already delivered or ordered, the company will be in a position to manufacture approximately 1,000 automobile tires per day, and also to increase the output of other departments.

The following is a summary of the report made by the Probe Committee selected by the Ohio State Senate about April 15:

That the Industrial Workers of the World teach among other things the following doctrines:

All employes shall belong to one general union.

No contract providing for wages or conditions of employment shall be entered into for a definite length of time between employer and employe.

That the doctrine of sabotage is a matter of grave public concern, not only to the state of Ohio but to the nation at large, and that the line of distinction between this doctrine and anarchy is so indistinct as to be almost imperceptible.

That the leaders of the I. W. W. instead of helping the striking employes of the rubber factories of Akron, did them much injury, and are largely responsible for their failure to secure a redress for any wrongs which may have existed and the adjustment of any grievances.

That the testimony of the employers and employes shows that the wages paid by the rubber companies generally compare favorably with those paid in other industries, and that the wages paid in the tire building and tire finishing departments are higher than the amount paid in other industries where like skill and effort are required.

That the strike which originated in the tire department of the Firestone Tire & Rubber Co. and spread to other companies, could have been averted had there been a reasonable amount of time between the date on which the notice for readjustment of prices was posted and that fixed when it would take effect, so as to insure due deliberation and conference.

That analysis of the conflicting testimony concerning the so-called "speeding-up" system would seem to justify the conclusion that it could be wisely dispensed with, because it is fraught with danger both to employers and employes.

That few violations of the state law regulating the hours for women employes were developed in testimony taken; but that in view of the general tendency toward shorter hours of employment in all industries, the complaints regarding the long hours of employment at night are justifiable.

That as the most striking feature of the evidence was the fact that the employes refrained from submitting grievances for adjustment, because of fear of discharge, the committee suggests that notices be posted in the factories advising employes that they may submit any complaint with the assurance that they will not be discriminated against.

That no evidence was adduced showing that a list was kept by the factories for "blacklist" purposes.

That the evidence taken showed that the earnings of the rubber manufacturers have been and are such as to justify the payment of high wages to employes and the maintenance of good conditions in their factories.

That the buildings of the rubber companies are practically fireproof, well lighted and so constructed as to provide for good ventilation. In closing, the committee reports that the investigation has proven of great value to the rubber manufacturers, the employes and the general public.

"The publicity," observes the report, "attending the investigation and the facts collected are of great value to the general public. In addition, the data collected will prove to be of incalculable value to the industrial committee and also the Legislature and succeeding ones which may give consideration to questions affecting the relations of capital and labor."

The committee acknowledges the co-operation and courteous treatment accorded it by the rubber manufacturers, the representatives of the companies and the people of Akron as a whole.

* * *

Dr. C. M. Knight, who has spent much time in rubber research and in building up the rubber chemical department of Buchtel College, has resigned as Professor of Chemistry in that institution. Professor Knight has been actively engaged in chemical research for the last thirty-eight years. He will continue with the college in an advisory position, but will retire from active labor. Prof. H. E. Simmons has been elected by the trustees to fill the vacancy.

Dr. Knight was born in Dummerston, Vermont, in 1848. He graduated from Tufts College with the degree of A. B. in 1873, and received his master's degree in '78. He also took graduate work at Harvard and the Massachusetts Institute of Technology.

In 1875 he came to Buchtel and was the instructor in natural science until 1883, when he was transferred to the work of the physical science department, which position he held until his recent resignation.

For a number of years Dr. Knight has been dean of Buchtel, and for one year, '96-'97, he was acting president of the college. About two months ago, the trustees conferred upon him the degree of Professor Emeritus of chemistry and dean emeritus of the faculty.

Professor Simmons, who will take Dr. Knight's place as the head of physical science department, was graduated from Buchtel in 1908, with B. S. degree, and for four years was a student under Dr. Knight.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

GENERALLY speaking, business is hardly up to normal for this season. Various causes are suggested, but the principal one seems to be that the rubber business is in few respects different from others, and that all lines are marked by conservatism in buying. To be sure, the tire business is the exception. With thousands of new automobiles going into commission, and tens of thousands being put in order for summer service there is necessarily a pressing demand for tires, and the factories are working overtime in their endeavors to catch up with their orders.

But even in the tire business there are some signs of a letting-up in the demand, and this is not unwelcome to the over-taxed factories. The marked decline in crude rubber prices has been quite thoroughly published, and one effect has been that many users of cars are delaying the purchase of extra tires, hoping that the less cost will reduce the selling prices still further. The views of manufacturers' agents here, however, are to the effect that as the rubber now being put into tires was bought at higher prices, it is not at all probable that any saving will be available to the retail purchaser for some months to come.

There is a little better business doing in mechanicals, and druggists' goods are going well. Garment manufacturers are busy, but there is not quite the usual activity of the spring season. In footwear the tennis demand is good, but rubber boots and shoes are dull. Retail stocks were carried over, and therefore these will be available for next season's trade, while those who have had only moderate stocks, and have cleaned them well up, seem to realize the risk of ordering early, and fewer than usual are expected to take the advantage of the extra five per cent. by placing heavy orders previous to the time limit for securing this discount.

* * *

The trade extension trip of the Boston Chamber of Commerce has not met the wide and hearty enthusiasm which was hoped. Originally it was expected that there would be at least eighty who would participate. Instead, less than half that number were listed for the tour, which started on the "Metapan" on Thursday, the 24th ultimo. Among the reasons given for this falling off from the expected number were mainly the expense of the trip, the long-required absence from business and the uncertainty of commercial conditions, owing to changes in the tariff, trust prosecutions, etc. Several prominent business men who had at first signified their intention of making the trip, later decided it inadvisable to do so. The rubber business is represented by Edward T. Smith, of the Iroquois Rubber Co. of Buffalo, who goes as the accredited representative of the United States Rubber Co.

* * *

Ira F. Burnham, president and treasurer of the Stoughton Rubber Co., with Mrs. Burnham, started April 9 on a trip to the Pacific Coast. While this is essentially a pleasure trip for Mr. Burnham, he will probably call on several of the principal jobbers of rubber goods with whom the company does business.

Back of Mr. Burnham's desk at the office is a framed motto, or axiom, or proverb, or maxim—call it what you will—which is so self-evident and suggestive that your correspondent copied it for reprinting here, simply as missionary work. It says: "No one ever got a dividend out of a quarrel."

* * *

The Marlboro Rubber Store at Marlboro, has been purchased from Mrs. Barnard by William G. Riecke of Southboro, who will hereafter run the business. M. W. Weeks, who has been managing the store for some time, will, for the present, continue at the store. He is showing his friends a handsome gold watch, a present from Mrs. Barnard in appreciation of his faithful conduct of the business.

* * *

The case of Geo. A. Alden & Co., which would seemingly be in the jurisdiction of James Munroe Olmstead, referee in bankruptcy for Suffolk County, because the firm's business headquarters were in Boston, has been transferred elsewhere, because of the residences of the members of that firm. The proceedings will be heard in Norfolk County, because George E. Alden lives in Wellesley, in that county. Arthur W. Stedman lives in West Roxbury, Adelbert H. Alden in New York, Fred W. Dunbar in Montclair, N. J., and J. Frank Dunbar in Wakefield, Mass.

* * *

Mrs. Robert Dawson Evans, widow of the well-known rubber man, who gave $500,000 in 1911 to pay for a memorial building for her husband, the same to be an extension of the Boston Museum of Fine Arts, has increased her generous gift to $825,000, in order that the memorial may be handsomer and more complete in its appointments, and enlarged by an additional building, 53 feet wide and 109 feet long. This will be a lasting and imposing memorial to the late Mr. Evans.

* * *

The Springfield (Mass.) Rubber Co. had a fine exhibit at the Industrial Exposition in that city early last month, its booth being a center of attraction from the opening to the closing hours. Rubber in all states, from the Pará biscuit to the finished products, was exhibited, and a working demonstration of making rubber boots and shoes kept people interested. The demonstration was in charge of John J. Hawkins, of the United States Rubber Co., who was busy showing, explaining and answering questions, as the boots and shoes were being made up from the various parts which were cut out at the mill of the Boston Rubber Co. of Malden.

* * *

The Monatiquot Rubber Works Co., of South Braintree, Mass., celebrated their third anniversary on April 19, and invited the town people to be present in order that the progress of the concern might be noted. The large number of guests who attended and the intelligent interest shown was very gratifying to the company officials. The mills were kept in operation and the visitors had an opportunity to see a batch of "Squantum" going through process. Those who had attended were shown the additions of the year, namely, three new brick buildings and a reinforced cement dam, besides alterations in the older buildings which have brought them up to modern efficiency. In addition there is under construction a brick storehouse. At the conclusion of the inspection, souvenirs were presented to the ladies and their escorts. In the evening the company gave a dinner and a theater party to the various officers and department heads.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

THE tariff is not seriously disturbing the rubber trade in Chicago. Rubber men here, as a rule, are too busy to think about what effect the tariff will have.

Rubber hose is about the only line that is not flourishing; but this is not worrying the dealers any. The sun is becoming hot and almost every day commuters may be seen loaded up with seed catalogues, or gardening implements and packages of seeds, and this means that the garden is in the making, and that the garden will have to have water, and the owner of that garden will have to have hose. A feature which should have a bearing on this trade was a story published in one of the Chicago dailies. This was to the effect that Hull House, a social settlement, had arranged with owners of vacant real estate to have the free use of this space for the use of the working people of this city. This vacant property is to be tilled and cultivated, and there is no doubt that rubber hose will be wanted for the irrigation of those lots. Of course this is a minor matter, but it will help the hose trade in local circles.

The weather has been decidedly favorable for makers of rubber garments and rubber shoes. For almost a week it has rained and there has been a great demand for rubber coats and rubber shoes. The demand for rubber garments has been much increased this spring. The public at large is taking to the new rubberized coats, and a good many economical young men—and young women, too—who cannot afford a spring coat are buying these coats and making them do double duty.

The demand for automobile tires has fallen off considerably of late, strange to say. One would think with the spring of the year approaching, and with the autos all on the road, the demand for these goods would increase. Jobbers, however, say they find a noticeable let-up in the buying. This is attributed a good deal to the recent cut made in prices. Buyers noting that prices had been cut are rather nervous about laying in supplies for future needs, fearing a further cut in values, and this has made the demand of a "hand-to-mouth" character, so to speak.

Your correspondent in his tour among the dealers found them almost uniformly taking a cheerful view of the situation. The Chicago Rubber Co. said: "Trade has been good in all lines. The wet weather has been a boon to our trade of late. Rubber coats met with a surprisingly good demand. The demand for automobile tires has slowed up somewhat. The recent cut in prices has made buyers cautious and they have been limiting their purchases to immediate requirements. They probably anticipate a further cut, and for this reason they do not care to be caught with a lot of high priced goods on their hands."

R. D. Evans, of the Picher Lead Co., was enthusiastic in his reports on business conditions. He said: "As far as we are concerned business is booming. The only trouble I can find is that our trade is bothering the life out of us for shipments. The situation in Akron, Ohio, is clearing up and factories there are running normal." The representative of the Chicago Rubber Works said that the demand for all lines was good and trade conditions were greatly improved. Mr. Simons, of the W. D. Allen Co., said: "Trade is good. We have had and are still having a good call for all brass hose accessories."

E. F. Lindley, representative of the Raven Mining Co., with offices in the Marquette building, is now in Utah visiting the mines of his company. He is expected back in a week or two.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

WHILE the flood which prevailed in this section tied up business in all commercial lines, the rubber footwear and rubber clothing jobbers and manufacturers experienced the busiest season of the year. The extensive stocks carried by local concerns have been depleted, and rush orders have been placed for complete inventories. With the flood situation about over and business returning to a normal condition, the local tire houses are facing a demand for goods in excess of the supply. All orders are "rush," and in consequence there are busy scenes around the local tire houses, as the extra demand for goods to replace those which were destroyed or lost by reason of the flood, coupled with the opening of spring weather and active buying of automobiles, has increased business beyond expectations.

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Though long rumored and looked for, the formal announcement of a reduction in price of automobile tires came unexpectedly at this critical time from the Diamond Rubber Co. and the Goodrich Rubber Co., on April 1. Automobile tire users could not believe the big announcements, appearing in the local newspapers, that the price had been cut, and throughout the day it was treated locally as an "April Fool" joke. For the greater part of the first day after the announcement appeared, Manager C. W. Simpson of the Diamond and B. M. Lovell, manager of the Goodrich, were kept busy assuring customers that the announcement was *bona fide*. As a result of the unexpected cut the telegraph wires were kept hot by managers of other tire factories, wiring headquarters of the announcement, and inquiring if they intended to follow. As a result of the cut, competition in the tire business in this section has been very keen, and local tire men are closely watching the result, and many make the statement that the announcement of the two big tire factories of a cut in price is the forerunner of a price-cutting war.

While the Firestone Tire and Rubber Co. did not advertise a cut in the price of their tires, managers and agents of the company were instructed that the price had been cut to meet that of the Diamond and Goodrich.

* * *

Rubber footwear manufacturers have joined hands with the leather shoe manufacturers to assist dealers in the flood zone in rebuilding their business by extending credit for practically an indefinite period. An agreement has been secured from the manufacturers by the Ohio Retail Dealers' Association which has a committee working with the manufacturers. The flood has wiped out shoe stores from the upper end of the Ohio to the Mississippi. It means that the customer for years must have credit and long time credit at that.

Perhaps one of the heaviest losses caused by the Dayton flood will be the Barney & Smith Car Works. The mammoth plant of this concern was completely inundated, and while the exact loss has not been fixed, it is estimated that it will reach half a million. Thousands of dollars' worth of air brake hose, packing, rubber springs, rubber treads, and tiling which are used in the manufacture of railroad coaches was destroyed, and on account of the terrific current during the flood period most of the supplies on hand were carried off by the water.

The Atlas Rubber and Belting Co., at 212 Walnut street, while located in the flood zone, enjoyed a rushing business during the high water. With water swirling around the front door of the building where the company is located, it was supplying the needs of flood-visited business houses with washout hose and other rubber goods that are most essential in high water times.

With but one or two exceptions the recent flood through Ohio cost the various rubber companies vast sums, as most of the companies operating branch houses in this city operated supply stations in Hamilton, Dayton and other smaller cities that were located in the flood zone. Notwithstanding the heavy losses suffered by the rubber companies, these same companies were the first to respond to the call for help that came from the stricken cities. Among the first company to come to the aid of the flood sufferers in Dayton was The B. F. Goodrich Co., which promptly sent a full car load of rubber boots and tires.

One of the "hard hit" concerns in the Dayton flood was the I. J. Cooper Rubber Co., whose headquarters are located here. A large stock of the company's Racine and Motz tires floated away and were given up as permanently lost. Now, however, these tires are "floating" back in a unique way. One of the tires had taken a swim clear to Miamisburg, 12 miles from Dayton, and had been lodged there for days in the top of a tree. It was returned later with the compliments of the owner of the tree. Two other tires were restored by a young woman who found them in her sitting room in the second story of the Knecht House, at Dayton.

The Ohio Rubber Co., of Cleveland, having a large retail house here and a sub-office at Dayton, suffered a heavy loss as the entire office of the company was submerged and for a time it was feared that the employees of the office had lost their lives in an effort to save the stock. Later, however, it was found that the employees escaped, but not until they were compelled to use boats to get to dry land.

Captain J. F. Ellison, formerly of this city, and now operating head of the Amazon Navigation Co. (Companhia Navegacao do Amazonas), with headquarters at Pará, has written a letter to President Draper of the Cincinnati Chamber of Commerce, stating that business conditions are not so good on account of the declining price of rubber. Captain Ellison's letter in part is as follows: "I note that you have established a foreign trade department and now don't consider that which follows as a kick, but only as a suggestion, inspired by personal knowledge of conditions, and the usual practice carried out by the merchants and manufacturers in the States. Almost invariably letters and circulars reach this country with only the ordinary domestic postage thereon, and while in my particular case I am always delighted to pay anything within reason to get a letter from home, you can appreciate that to a merchant whose business is being solicited, it is not pleasant, nor does it give him a good idea of the ability of a particular firm that sends him communications without proper postage being placed thereon. The practical amalgamation of the Amazon Steam Navigation Co., and the Amazon Navigation Co., has now been consumated, the former company being the operating company and the Ca. Navegacao do Amazonas the holding company. General business conditions in North Brazil are none too good. The steadily declining price of rubber, which is practically the sole output of the Amazonas, is having an effect. This effect is not temporary, but due to the amount of cultivated rubber coming into the markets of the world from the Far East, and is a permanent condition which North Brazil has made no preparation to meet. It is the opinion of men who should and do have vastly more weight than the writer, that Amazonas is facing a rather serious crisis. Cost of living is excessive here, which naturally means high wages for every one; and living expenses cannot be reduced until this particular part of Brazil puts itself in position to produce its own food supply. The climate here from my viewpoint is wonderful. In over a year I have never seen the temperature above 92 degrees in the shade, or lower than 75 degrees, the usual range being from 80 to 85 degrees."

* * *

The suggestions contained in an editorial published in THE INDIA RUBBER WORLD several months ago on the question of a revision of the United States patent laws, and the better protection of inventors with reference to their inventions being bought up only to be put in the "discard," have local illustration in the incorporation in this city of the "National Society For the Promotion of Invention and the Useful Arts." The incorporators are Drs. William P. Murray, C. N. Bradford and Arthur Ewald. The purpose of the company is the protection and advancement of the interests of inventors, through the organization of a society of inventors. The company is incorporated for the nominal capitalization of $1,000 and will not attempt at the outset to finance inventions, but will attempt to prevent valuable ideas being taken from their originators or being purchased but never manufactured.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

OLIVER H. BLAISDELL, master mechanic at the factory of the National India Rubber Co., in Bristol, is one of the few men who have served upwards of a quarter of a century with the corporation. Mr. Blaisdell has been with the National India Rubber Co. for almost 28 years, going there in 1885 as chief engineer. Ten years ago he was promoted to master mechanic.

Mr. Blaisdell was born in Alton Bay, New Hampshire, in 1843, but a few years later his parents moved to Portsmouth. Finishing his schooling when he was 13 years old, he went to work in a shovel factory, remaining there until the war broke out in 1861. At the age of 18 he enlisted in the Fourth Massachusetts Infantry, serving three months. He returned home and at once enlisted in the United States Navy. He was assigned to the United States gunboat "Sunflower" and served nearly two years on board that vessel. Mr. Blaisdell was a first-class fireman in the navy, which is equivalent to assistant engineer ashore.

After the war he was employed as engineer in several different manufacturing plants. He moved to Bristol in 1885 and since then has had charge of all the steam engines, machinery shops and pumping outfits for the National company. His son, Fred G. Blaisdell, is one of the engineers at the company's factory.

* * *

Another employee who has been long in the service of the National India Rubber Co. is Capt. Patrick H. McGovern, who is rounding out his 40th year with that corporation. He worked his way from an assistant in the store-house of the company—when it was known as the National Rubber Co.—to yardmaster, a position which he has held for the last 20 years.

Capt. McGovern is an expert in moving large pieces of machinery and buildings and has an original way of rigging purchases which for many years has proved successful. He has a diversity of duties in his position as yardmaster. The livestock, moving gear, tools and the care of the fire-fighting apparatus come under the yardmaster's care. When any machinery needs to be shifted from one part of the big factory to another Capt. McGovern takes it in charge. Last year when a portion of the appurtenances of the Bristol factory were moved to Cleveland and other places, the yardmaster moved the great vulcanizers and other machinery to the railroad yards, and directed the loading of them in freight cars. Capt. McGovern acquired his title by reason of his having served as commanding officer of former Company C of the Second Regiment of Infantry of Bristol.

* * *

James Taylor, formerly employed in the National India Rubber Co., died of pneumonia, March 28, at the home of his daughter in East Providence. Mr. Taylor was 58 years old and had been employed by the company 35 years, retiring a few years ago.

* * *

Operations were resumed at the factory of the National India Rubber Co., April 14, after a shut-down of two weeks, for the purpose of taking the annual inventory. More than 1,200 hands went to work. While the factory was closed many improvements were made in the buildings, including painting, carpentering and masonry. An addition is being built to the wire-drawing room. The company is shipping large quantities of insulated wire to Dallas, Texas, and other parts of the South.

* * *

Work was resumed in the Alice and Millville mills of the Woonsocket Rubber Co., April 8, after a week's shut-down.

* * *

The Goodyear Tire Co. has acquired control of the Killingly Manufacturing Co., at Killingly, Conn., and they plan to manufacture 1,000,000 yards of tire duck at the plant each year. The company is reported as using 8,000,000 yards annually. They are to equip the mill with new machinery.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

CONSIDERING the time of the year business with the rubber establishments is fairly good. Everyone is hoping for rain; there have been four comparatively dry years, and a series of big rains would do wonders for the State.

R. H. Pease and wife are now in New York, where they will remain for a month. R. H. Pease, Jr., sailed on April 19 on the liner *George Washington* for Europe, and contemplates making a two months' stay visiting European cities.

The Ralphs-Pugh Co., of 502 Mission street, has taken on the

Beacon Falls Rubber Shoe Co.'s line and will carry a complete stock. They have also made arrangements to act as Pacific coast agents for the Hodgman Rubber Co., of New York, and will carry a complete line of their druggists' sundries in San Francisco.

The Pennsylvania Rubber Co. is now making provisions for handling the Pennsylvania V. C. truck tires on this coast from its branch here, and George Muther, who has been chief clerk for the past three years is to be manager of the new truck department. This truck tire with its patent demountable construction makes it possible to change tires as easily as the ordinary tire, and is an innovation in truck tires, so that Mr. French, the manager, believes that the new department will be a big success from the start. Mr. Muther is a reliable and efficient rubber man with long business experience.

The Asbestos Rubber & Supply Co. has consolidated with the Plant Rubber & Supply Co., and the business will be conducted under the name of the Plant Rubber & Supply Co.

Mr. Nat Dodge, the new vice-president and general manager of the American Rubber Manufacturing Co., whose offices are in San Francisco, reports that an additional brick building will be constructed adjacent to the two big brick buildings which now constitute the factory at Emeryville. New machinery is being installed, including a new calender, new mills, a 25-foot belt press, and belt making machinery, so that the capacity of the plant will be nearly doubled. The excellent increase in business warrants him in believing that there will have to be still further increase in the matter of facilities. This establishment is going especially after the belt business.

Bissell & Roch is the name of the new vulcanizing firm at Marysville, Mr. Roch having bought a half interest with B. L. Bissell.

The Miller Rubber Co., of California, has been incorporated with a capital stock of $10,000, with its principal place of business in San Francisco.

William Perkins is no longer connected with The Goodrich Rubber Company, having made plans to start in for himself with a new rubber heel which he has invented.

Charles Gilbert, Pacific coast manager for the United States Tire Co., was married in Hanford last week, to one of the most attractive young ladies of that city. Mr. Brady, of the Gorham-Revere Rubber Co., acted as best man.

Mr. Sawyer, of the Sawyer Belting Co., of East Cambridge, is now visiting the principal points of interest on the Pacific coast.

Considerable talk has been heard recently among the men in the rubber business of forming a club for social purposes only. The regular trade association has fallen into disuse, and as its real benefits were chiefly from the social end it has been deemed advisable to have for the chief object of the new club, monthly luncheons at which the members may all meet together.

The Oregon Packing & Rubber Co. has been incorporated at Portland, Ore., with a capital stock of $15,000.

The Firestone Tire & Rubber Co. is now installed in its fine new building on upper Van Ness avenue. This company had built a special building not long ago, and had not occupied it long when the property was taken over by the city, as part of the new civic center site. This was not so unfortunate for the Firestone people as might appear, because they had found that they hardly had enough room for their increased business. Their new building is much larger. W. H. Bell, the coast manager, says that business has nearly doubled during the past year.

B. H. Pratt, Pacific coast manager of the Fisk Tire & Rubber Co., has returned from his recent visit to the factory.

J. Elwood Lee, president of the Lee Tire & Rubber Co., is making a tour of the west, and visiting the company's branches. He is now in San Francisco, having come up from a visit to Los Angeles, where he made his headquarters with the Chanslor-Lyon Company, distributors for the Lee tires.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

THE rubber manufacturers of this city and nearby towns intend to fight against the proposed cut in the tariff on rubber of from 35 to 10 per cent. The rubber manufacturers of this city and Lambertville decided at a meeting this month to make a formal protest against any reduction in the present rate.

The manufacturers who have combined to protest to Congress include John S. Broughton and J. Watson Linburg, of the United and Globe Rubber Manufacturing Co.; John A. Lambert, of the Acme Rubber Manufacturing Co.; George W. Pratt and B. H. Taylor, of the Lambertville Rubber Co.; J. Russell Kelso, of the Woven Steel Hose and Rubber Co.; Charles E. Stokes, Home Rubber Co.; William G. Grieb and L. P. Destribats, of Ajax-Grieb Rubber Co.; Clarence D. Wilson, Joseph Bartine and Bruce N. Bedford, of the Luzerne Rubber Co.; Alfred Whitehead, of the Whitehead Brothers Rubber Co.; Oscar F. Beck and Samuel H. Dodd, of the Vulcanite Rubber Co., of Morrisville; A. E. Sawyer, of Vulcan Tire Co.; C. H. Oakley, Essex Rubber Co., Inc.; C. Edward Murray and J. Boyd Cornell, Empire Rubber and Tire Co., and Crescent Belting and Packing Co.; W. J. B. Stokes, of the Thermoid Rubber Co.; William L. Blodgett and William H. Servis, of the Hamilton Rubber Co., and the Mercer Rubber Co., and the Joseph Stokes Rubber Co.

The manufacturers declare that the proposed reduction if put into effect, will virtually put out of business many branches of the manufacture of soft rubber. It is the opinion of the local manufacturers that the proposed cut is decidedly inimical to the interests of the manufacturers and employes. The duty on hard rubber is left considerably higher than that on soft rubber. John S. Broughton, of the United and Globe company, and C. H. Oakley, of the Essex company, will head a delegation which will visit the tariff makers at Washington.

* * *

The makers of automobile tires say the proposed cut will bring havoc to the trade. It is claimed that English, French and German tire makers will have no difficulty in underselling the American manufacturers, as the tire makers here are paid from $22 to $28 per week, while in the foreign countries it is said the average wage of tire makers is not more than $10 per week at the outside, with other labor in proportion.

* * *

Cornell G. Murray, son of General C. Edward Murray, treasurer of the Empire Rubber and Tire Co., and Crescent Belting and Packing Co., is to be married to Miss Anna G. Apgar, daughter of Counsellor W. Holt Apgar at an early date. Young Murray is manager of the sales department of the Empire Co.

* * *

With a view of further increasing the present prosperous business abroad of the Home Rubber Co., Arthur R. Foley, of this city, has been promoted to the superintendency of the London branch. W. J. B. Stokes, head of the Home company, said the business of the company was increasing so steadily that it was decided to have Mr. Foley assume direct control. Mr. Foley sailed on the *Mauretania*, April 23, from New York. He has been identified with the rubber industry from boyhood.

* * *

The Joseph Stokes Rubber Co. has contracted with builder, George E. Benson, for the erection of a one-story brick addition to the plant on Taylor street to cost $3,500. The new building is an addition to the power house.

New Rubber Goods in the Market.

A PUNCTURE PLUG AND A SELF-VULCANIZING PATCH.

WHEN the motorist skims by in his red touring car, going 30 miles an hour, he is naturally an object of envy. But when a few minutes later he is discovered with the machine pulled up at one side of the road, while he sits down in the dirt with various tools strewn around him making emergency repairs, envy turns to commiseration. If all the work, and bother, and fussing, and fretting of wayside accidents could be eliminated, how delightful automobiling would become.

But many active minds are busily engaged trying to make wayside repairing as easy as possible. Here for instance are a couple of articles, that many a motorist will recognize instantly as undisguised blessings. One is the Self-Vulcanizing Patch, a cut of which is herewith shown. It consists of a combination of raw gum inner surface with a "cured" outer covering. To use it merely moisten the face with gasoline and apply to the cleaned surface of the tube. Rub down firmly and the repair is finished. The heat of the moving tire is sufficient to make a properly vulcanized job of it, inside of a few minutes.

GOODRICH SELF-VULCANIZING PATCH.

Another boon to the motorist whose tire has taken a puncture—as tires inevitably will, as long as nails and other small, sharp-pointed objects are permitted to lie in the roadway—is a puncture plug that consists of a flat disc with a pointed stem coming from the center. Where the puncture is small, this stem can be pushed through the hole, when the little metal ball inside the stem automatically seals the puncture. No cement—no mess—no muss. Simple and quick, and said to be absolutely air tight. (The B. F. Goodrich Co., Akron, Ohio.)

WHAT A WOMAN DREADS MOST.

The newspaper humorists, who do so much to contribute to the gayety of life, invariably contend that what a woman most fears and dreads is a mouse. This, however, is not true. What a woman most fears, dreads and abhors is a wrinkle; and anything that will protect her from this arch enemy of her sex is bound perforce to receive an enthusiastic welcome.

Here is a contrivance, small, simple, neat and not expensive, that is designed to ward off as long as possible, the evil day of wrinkles. It is called the Daisy Massage Tapper. It requires no electricity or other extraneous power for its manipulation, as the patient is her own operator. It has a hard rubber handle, while the tapping feature consists of about 20 soft rubber vacuum cups, mounted on a metal back. Vacuum or suction massage is said to be recognized by the experts as an unrivalled beautifier, and the principle of this tapper is suction massage. The action of these vacuum cups is to stimulate the circulation, the theory being that stimulation brings the blood to the surface, feeds the tissues, builds up the flesh and renews the skin. This tapper can be applied wheresoever it is desired, but its chief field of operation naturally consists of face, neck and arms.

The manufacturers probably hardly contend that it would make a woman of 69 look like 19, but if it makes a woman of 50 look like 30, it will have adequately served its mission. [Imperial Brass Manufacturing Co., Chicago, Illinois.]

RUBBER EARS AND NOSES.

To be sure, one's own ears and nose are preferable to even the finest works of manufactured art. But if one has been caught in the rush of the Brooklyn Bridge, or has taken part in some peaceful political primary and has lost an ear or parted with a section of his nose, it is consoling to know that art can adequately supply the deficiency. Artificial ears and noses are made to take the place of the natural members which have been lost in part or *in toto*. They are made of rubber, which does so much in a thousand different ways to add to man's comfort and well-being. These artificial members are made of a vulcanized rubber, pliable in form and so natural in coloring that the difference cannot be detected. They are not, however, turned out in wholesale lots like shoes and tires; for if a man has lost an ear and wants a new one of rubber, naturally it must match the other. This means in every case an individual mold prepared with great care. The two cuts shown herewith are made from photographs of a rubber ear and a rubber nose made by Dr. W. B. De Garmo, 27 West 42nd street, New York.

A RUBBER NOSE.

AN EAR MADE OF RUBBER.

News of the American Rubber Trade.

A RUBBER COMPANY BECOMES A WATER COMPANY.

IT is not very often that a rubber manufacturing company goes into the business of municipal water supply, but that is what occurred during the recent Western Flood, when the Republic Rubber Co., of Youngstown, Ohio furnished the city with its entire water supply for a number of days. The city's own water supply was temporarily vitiated by the flood, while the water supply of the Republic Rubber Co., amounting to 6,000,000 gallons a day, was not affected. The company volunteered to give the city its supply of water, gratis, as long as it was necessary.

THE UNITED STATES RUBBER CO.'S ANNUAL MEETING.

The twenty-first annual meeting of the stockholders of the United States Rubber Co., will be held at the office of the company, in New Brunswick, New Jersey, on Tuesday, May 20, 1913, at 12 o'clock noon, for the election of directors, and for the transaction of any business that may come before the meeting, including the approval and ratification of all purchases, contracts, acts, proceedings, elections and appointments by the Board of Directors or the Executive Committee since the twentieth annual meeting of the stockholders on May 21, 1912, and of all matters referred to in the Twenty-first Annual Report to stockholders, which will be sent to stockholders before the meeting.

The transfer books will not be closed, but the New Jersey Corporation Law will not allow to be voted any share of stock which shall have been transferred after April 30, 1913.

A FIERCE BLAZE.

A fire that was sudden, fierce and dramatic, though not attended, fortunately, by any loss of life, or by any great loss of property, occurred in Needham, Massachusetts, early in the morning of April 11, when Stowe & Woodward's Rubber Works plant was practically destroyed. The building, constructed of cement and wood, was about 150 feet long, and a story and a half high. Within five minutes of the breaking out of the fire the entire building was a mass of flames. The company manufactured a rubberized lining used for buggy and automobile covers. In its preparation considerable gasolene is used, and it is supposed that a vat of gasolene situated on the first floor exploded. What occasioned this explosion is not known. The first intimation that the workmen had of the trouble was a sudden burst of flame, which gave them barely time to rush through the doors and leap out of the windows. The workmen on the second floor saved their lives only by leaping from the windows. There were about one hundred employes in the building at the time. The financial loss did not exceed $20,000, covered by insurance.

The firm is running its Campello factory to full time, however, and filling orders as fast as possible under this serious handicap.

Regarding this fire, a curious coincidence is noted. At a large establishment, devoted to the manufacture of rubberized cloth, not over fifty miles from the one just mentioned, three incipient fires were started on the same day that the Stowe & Woodward factory was burned. These fires were also in the machine room, and were immediately under the rolls or calenders. An official of this larger concern states that in his opinion, there was something peculiar in the meteorological conditions of the atmosphere that day, and that the electricity in the air was sufficient to ignite the material passing between the rolls of the calenders.

THE UNITED STATES RUBBER RECLAIMING CO.'S NEW OFFICES.

The United States Rubber Reclaiming Co., Inc., has joined in the uptown movement and moved its offices to the handsome new Forty-Second Street building, 18 East Forty-second street, New York.

THE SEAMLESS TIRE.

An automobile tire which is creating quite a little comment in automobile circles is that known as the "Seamless," so named from its makers—The Seamless Rubber Co., of New Haven, Connecticut. This company has been identified with the rubber manufacturing industry since 1877. It has been well known in the manufacture of druggists' sundries, and for two years and a half, now, has been marketing the "Seamless" tire. We reproduce their trademark, which is printed in red and black and is distinctive and striking. The tire is made of all Sea Island fabric, and Pará rubber, and is built and vulcanized in a single unit by the "Seamless" one-cure, wrapped-tread process. The company has adopted the slogan, "Built up to a Standard, not down to a Price," which is strong as a motto and excellent as a declaration of policy.

THE J. P. DEVINE CO.'S NEW LOCATION.

The J. P. Devine Co., manufacturers of vacuum drying apparatus, Buffalo, New York, have moved their offices and also their factory to 1372 Clinton street in that city.

NEW ADDRESS OF THE R. J. CALDWELL CO.

The R. J. Caldwell Co., commission merchants, have recently moved their offices from 488 Broadway, New York, to 15 Park Row, on the corner of Broadway.

THE REVERE CO.'S GENEROUS GIFT.

Mention has been made before in these columns of the donation of a spacious playground by the Revere Rubber Co., to the city of Chelsea, Massachusetts, where the company has a large plant. The deeds to the playground were finally passed on March 28. Mr. W. M. H. Gleason, the company's treasurer, acted as the company's representative, while the mayor and treasurer of Chelsea accepted the gift in the name of the city.

THE FIRESTONE'S NEW SYRACUSE BRANCH.

E. A. Hoffman, formerly manager of the supply house of Wyckoff, Church & Partridge Co., has just been selected by the Firestone Tire and & Rubber Co., of New York, to open and operate its new Syracuse branch and service station at No. 502-504 East Genessee street. This is another advance on the part of the Firestone Co. in its general policy of establishing branches and service stations over the country. Mr. Hoffman has lived most of his life in Syracuse, where he has a host of friends. His experience dates back to the early bicycle days, having been at one time in business for himself in Syracuse operating as Hoffman & Weaver.

MR. BABCOX IS PROMOTED.

Once in a while a man does so well in some other field of advertising that he is promoted into the rubber field. Mr. Edward S. Babcox has just achieved this distinction. He was formerly advertising manager of the Yawman and Erbe Manufacturing Co., of Rochester, New York, and has now been made advertising manager of the Firestone Tire and Rubber Co., of Akron, Ohio. Mr. Babcox is not only an advertising writer and planner of acknowledged ability, but he can talk very entertainingly on this most abstruse science.

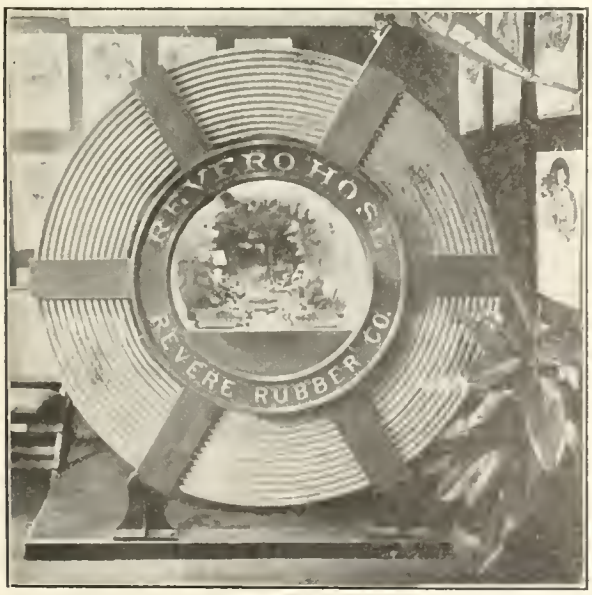
A RUBBER DISPLAY AT THE FLOWER SHOW.

The flower show held from April 5th to the 13th, at the Grand Central Palace, in New York City, was an unqualified success, and it deserved to be. There was one feature of particular in-

A Pergola Made of "Revero" Hose.

terest to rubber men, and that was the exhibit of the Revere Rubber Co., which showed how a commercial display could be made to appear in perfect harmony with an exceptionally artistic environment. Generally speaking, the show was a vast bower of bloom and blossom; while the Revere Rubber Co.'s exhibit was an exploitation of garden hose, but so exploited that there was no sense of incongruity. On the contrary, the hose exhibit seemed a very natural feature of the flower show.

The exhibit consisted of a pergola about 12 feet wide and 10 or 12 feet deep, the posts and cross-pieces being wrapped in "Revero" hose, while between the posts stood rubber plants and around the cross-pieces twined southern smilax. Eight thousand feet of hose were used in the construction of this artistic booth. An additional feature standing just outside of the pergola was



A Six Foot Reel of Hose, Containing a Miniature Garden.

a large reel of hose, of polished oak, 6 feet in diameter, and large enough to accommodate 6,000 feet of hose. In the center of the reel, covered by glass, was a miniature garden scene, showing flower beds and shrubbery and a garage in the background, while in the foreground stood a miniature gardener spraying the flower beds with real water from a diminutive hose. This exhibit attracted a great deal of attention—notwithstanding the riot of floral beauty, including priceless roses and $25,000 orchids, that surrounded it.

NEW INCORPORATIONS.

Behrmann Shoe Co., Inc., April 21, 1913; under the laws of New York. Authorized capital, $10,000 Incorporators: Henry F. Behrmann, Caroline Menauch and Alme Behrmann—all of 31 New Chambers street, New York. Location of principal office, New York City. To deal in shoes, rubber and cloth goods, etc.

Boston Rubber Supply Co., April 5, 1913; under the laws of Massachusetts. Authorized capital, $5,000. Incorporators: Jacob Gordon, 11 Westminster road; Isaac Kabler, 28 Creston street, and Louis Goldstein, 47 Linden Park street—all of Roxbury, Massachusetts. To manufacture and deal in rubber specialties, etc.

Cottica Rubber & Coffee Corporation, March 27, 1913; under the laws of New York. Authorized capital, $250,000. Incorporators: George J. Ord, 851 West One Hundred and Eighty-first street, New York; Vincent G. Butler, 122 Market street, Newark, New Jersey, and Daniel L. O'Connor, Huguenot Park, Richmond, New York. Location of principal office, Buffalo, New York.

The Harper Tire & Rubber Co., March 3, 1913; under the laws of Ohio. Authorized capital, $100,000. Incorporators: Warren D. Harper, James Thomas and Albert H. Vayo. Location of principal office, Canton, Stark County, Ohio. To manufacture and deal in automobile tires and the doing of all things necessary or incident thereto.

The Ireland Rubber Co., Inc., March 26, 1913; under the laws of New York. Authorized capital, $25,000. Incorporators: Frederick William Humphreys, 142 West Eighty-third street, New York; Charles Summa, 189 Academy street, Newark, New Jersey, and Walter Ulrich, 1572 Broadway, New York. Location of principal office, New York City.

Newark Rubber Co., March 26, 1913; under the laws of Maine. Authorized capital, $100,000. Incorporators: John H. Stone, 31 State street, Boston, Massachusetts, William R. and Edward S. Antoine—both of 57 Exchange street, Portland, Maine. To manufacture and deal in all kinds of rubber goods.

Peerless Tire Co., Inc., March 25, 1913; under the laws of New York. Authorized capital, $15,000. Incorporators: Michael Schiavone, 1424 Sixty-eighth street; Antonio Caropreso, 1452 Seventy-first street, and Louis Schiavone, 1450 Seventy-first street—all of Brooklyn, New York. Location of principal office, New York. To deal in rubber tires.

Severin Tire & Rubber Co., February 27, 1913; under the laws of Oklahoma. Authorized capital, $10,000. Incorporators: A. L. and L. H. Severin, and J. R. Eagan—all of Oklahoma City, Oklahoma. Location of principal office, Oklahoma City, Oklahoma. To manufacture, buy and sell automobiles and automobile supplies and sundries, etc.

The Stetson Mfg. Co., Inc., April 2, 1913; under the laws of New York. Authorized capital, $25,000. Incorporators: Cora S. Butler, 2112 Euclid avenue, Cleveland, Ohio, Florence M. Hall, 128 Ascension street, Passaic, New Jersey, and William A. Shepard, 5 Beekman street, New York. Location of principal office, New York City. To manufacture devices made of rubber, etc.

Zip Co., Inc., April 12, 1913; under the laws of New York. Authorized capital, $5,000. Incorporators: A. Calvin Ross, 38 Adelaide street, E. Toronto, Ontario: Augustus G. Porter, 127 Buffalo avenue, and Frederick Chormann, 315 Jefferson avenue, both of Niagara Falls, New York. Location of principal office, Niagara Falls, New York. To manufacture compounds used in treating rubber, and to manufacture rubber goods.

TRADE NEWS NOTES.

The W. C. Hendrie Rubber Co., of Denver, which recently gave out a contract for a tire factory in Torrence, California, is at the same time doubling the size of its Denver plant.

The Buckeye Rubber Co., of Akron, Ohio, is making a $20,000 addition to its present buildings, and is also remodeling one of its old buildings in order to use it as a curing room.

The American Tire and Rubber Co., of Akron, Ohio, has recently opened a branch office in Milwaukee, Wis., with Albert Weisskopf as general sales manager.

The Fort Dearborn Rubber Goods Co., of Chicago, dealing in reliners, blow-out patches and outer boots, has recently increased its capital from $5,000 to $10,000.

The Squires & Byrne Rubber Co., of Los Angeles and San Francisco, was recently awarded the contract to furnish the California and Oregon Grain & Elevator Co., of Portland, Oregon, 2,250 feet of Quaker City Rubber Co.'s Grain Elevator Belt.

The B. F. Goodrich Co., Akron, Ohio, recently opened new quarters in the Glenwood-Inglewood Building, Minneapolis, Minnesota.

The National Rubber Co., of St. Louis, is marketing a tire-cut filling material called "Narco." It is said to be self-vulcanizing and becomes an integral part of the tire upon standing over night.

Announcement has been made of the opening in New York of a branch selling agency for the Etablissements Bergougnan of Clermont-Ferrand, France, makers of the Gaulois tires, and an initial shipment of 5,000 tires is said to have been already received at the Gaulois headquarters, Sixty-fourth street and Broadway.

The Alling Rubber Co., which has a chain, or more properly a group of rubber stores in various towns in New England and New York State, expects soon to open another at 92 Genesee street, Utica, New York, of which Mr. William Walls will be the manager.

The stockholders of the Patterson Rubber Co., of Lowell, incorporated last October, have voted to increase the capitalization of the company from $500,000 to $1,000,000 by the issue of 2,500 shares of preferred and 2,500 shares of common stock at $100 a share.

UNITED STATES COMMON PAYS SIX PER CENT.

The directors of the United States Rubber Co. on April 3 declared the usual quarterly dividend of 2 per cent. upon the first preferred stock of the company, and a quarterly dividend of 1½ per cent. upon the common stock. Over nine-tenths of the second preferred stock has been extinguished under the recent offer made by the company; on the small amount as yet outstanding 1½ per cent. will be paid. It was stated that, although all of the April 1 inventories had not been completed, sufficient was ascertained to show that the net earnings of the company for the year would be from $1,500,000 to $2,000,000 in excess of all dividends declared, including the increased dividend on the common stock.

WANT AMERICAN RUBBER COATS.

A report from an American consular officer in a Mediterranean country states that a firm of large dealers in rubber goods in his district desires to represent an American exporter of rubber coats for men and women (mackintoshes) of the less expensive and of the better qualities. Correspondence may be in English. The report is No. 10,627.

LABOR ORGANIZATION AT AKRON.

While there are now practically no reminders in Akron of the recent strike that lasted a number of weeks in that city, it is reported that the American Federation of Labor is striving to bring about a permanent local organization in that city and to make it the headquarters of the rubber workers of America, who are connected with that labor organization.

PERSONAL MENTIONS.

Charles M. White, Jr., of The Firestone Tire and Rubber Co. has recently located in Detroit as pneumatic tire representative to the Automobile Manufacturers of Michigan. Mr. White formerly represented that company in Syracuse and his new position comes as a well deserved promotion.

M. A. Magee, who for several years has been connected with the Motz Tire and Rubber Co., of Akron, Ohio, has succeeded P. M. Pontius as sales manager. Mr. Pontius is specializing in the work of the Electric Pleasure Car Tire and is now in the position of manager of that department.

George W. Taite, who was vice-president and manager of the Sawyer Belting Co. for about ten years, and who resigned some few months ago and became the moving spirit of the transfer of The National Belting Co.'s plant from Lawrence, Mass., to Elyria, Ohio, has resigned his office as president of The National Belting Co. and sold his holdings.

MR. KENDALL GOES TO AKRON.

Mr. J. A. Kendall, the Western representative of Tyson Bros., Inc., of Carteret, N. J., who has been representing the company in Cleveland, has taken an office at 524 Second National Bldg., Akron, in order to be able to take better care of the Akron trade.

A RUBBER MAN IN SOUTH AMERICA.

A delegation of American business men, principally New Englanders, sailed from Boston on April 24th, under the auspices of the Boston Chamber of Commerce, for a three months' tour of South America. They will go across the Isthmus of Panama, take a look at the Canal, and then coast down the west shore of South America, visiting Lima and other points in Peru, besides the principal cities of Bolivia and Chile, going as far South as Valparaiso; from there cross the continent to Buenos Aires, and go up the east coast, stopping at Montevideo, Rio and other points, and landing in New York, July 23. There were about sixty-five members in the party.

Edward T. Smith.

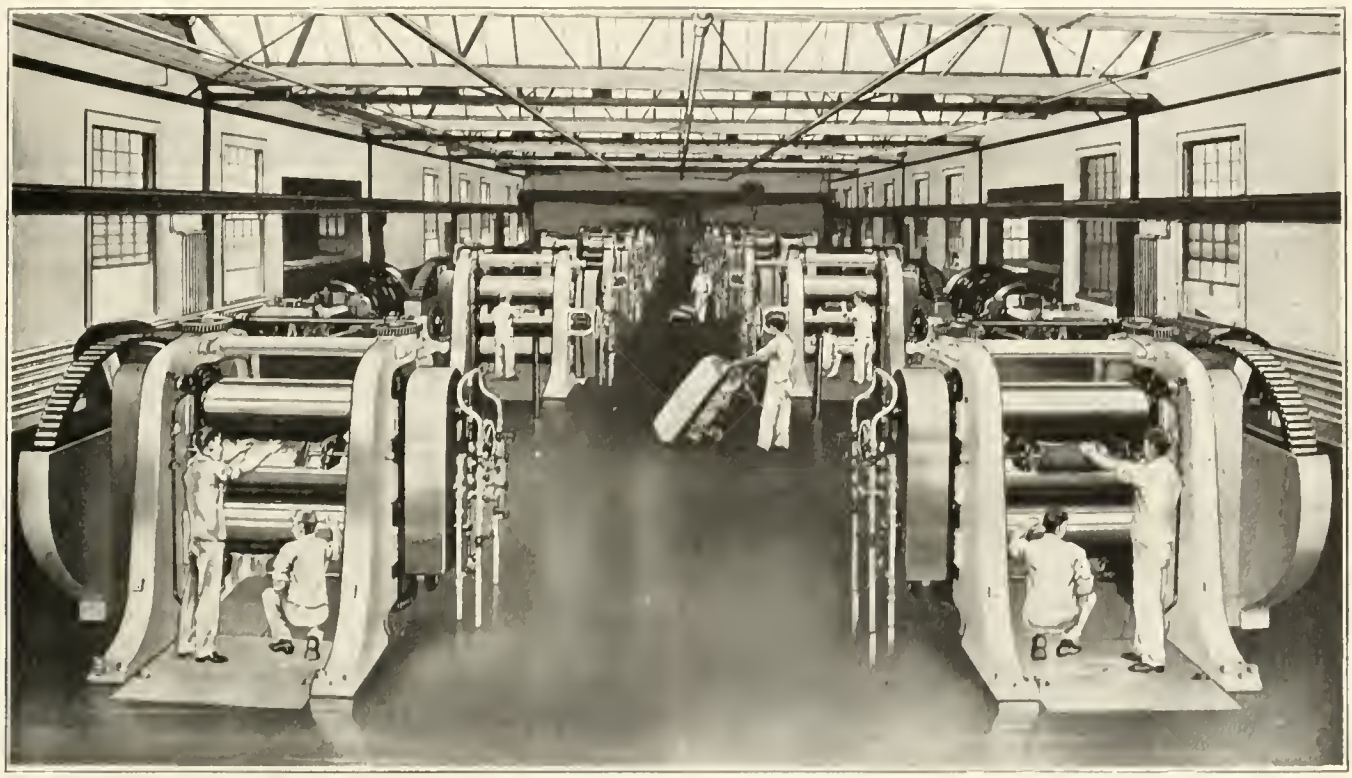
The only rubber man in the delegation is Edward T. Smith, of the Iroquois Rubber Co., of Buffalo, N. Y., who goes in the interest of the United States Rubber Co., to see what rubber goods are used on the Southern continent, what they look like, where they come from, and what prices are paid for them. In the present spirit of enterprise so evident all over South America, these tourists from the States will undoubtedly receive a warm welcome. Mr. Smith will doubtless learn a great deal of value to the company he represents.

A GREAT CALL FOR TIRES.

The statistician of the United States Tire Co., estimates that during the present year 5,000,000 pneumatic tires will be necessary for automobiles, and that in addition there are 50,000 motor trucks that will require tiring, and 250,000 motorcycles. Assuming that the motor trucks will require six tires each, that will make a total of 300,000 truck tires; and allowing only a pair of tires for the motorcycle, they would require a half million tires, bringing the total number of tires for the year in the vicinity of 6,000,000.

THE CALENDER ROOM OF THE REPUBLIC RUBBER CO.

The cut above shows the calender room of the Republic Rubber Co., of Youngstown, Ohio, as it appears in the new rolling mill of this plant. The company refers to this as "the biggest calender room in the world." The reproduction below shows that it is certainly a very large and well equipped calender department. It is here that the famous "Staggard" tread tires are made.



REPUBLIC RUBBER CO.'S NEW CALENDER ROOM.

OCCUPATIONAL DISEASES IN CHEMICAL TRADES.

A committee on occupational diseases in the chemical trades was recently appointed by the New York Section of the American Chemical Society. The objects of the committee may be specifically stated as follows:

1. To hold itself ready to advise the legislatures of the states of New York and New Jersey in reference to matters pertaining to occupational diseases in the chemical trades.

2. To study various bills presented in the legislatures in an effort to avoid unwise legislation; especially that which might be inoperative or ineffective from one or many reasons resulting from lack of technical knowledge at the time of writing the laws.

3. To inaugurate and superintend such investigations as might be decided upon which look toward improvement of conditions of labor in the chemical trades.

Dr. Charles Baskerville, Professor of Chemistry and Director of the Laboratory, College City of New York, is chairman of the committee.

TRUCK TIRE PRICES TO COME DOWN.

C. W. Martin, manager of the motor truck tire department of The Goodyear Tire & Rubber Co., Akron, Ohio, is authority for the statement that there will be another 10 per cent. reduction in truck tire prices. "This cut will take place immediately," he remarks, "and is the second cut which has occurred since the first of the year. This reduction is made possible not only by reason of our increased manufacturing facilities, but also by the recent drop in the price of crude rubber.

"Now that the truck has proved itself a prime factor in economic transportation, it seems safe to say that within four years the truck tire business of the country will exceed the automobile tire industry by far, for the truck represents the actual utilitarian reason for the existence of the motor driven vehicle."

TIRE MAKING IN THE SOUTH.

The citizens of Jacksonville, Florida, or at least some of them, are very enthusiastic on the subject of tire manufacture in that city. The Seminole Rubber Co has recently been formed and has purchased the site of a former tannery on the banks of the St. John's River. One of the Florida papers takes the following very optimistic view of the outlook:

"As 72 per cent. of a finished tire consists of long staple Sea Island cotton, this will be the only industry enjoying the many advantages of having the chief raw material right at its doors.

"Owing to the saving in freight rates on raw material and other advantages, a standard tire, with one extra layer of fabric and a real 5,000 mile guarantee, will be retailed at 10 per cent. below the present price. It is believed this will result in keeping a large part of the $20,000,000, that annually leaves the South for buying auto tires, for home circulation."

The consumption of tires in the South is of course very considerable and ought to increase rapidly, as motoring can be carried on in many parts of that section during the entire winter. There seems to be no reason why at least a certain percentage of the tires consumed in that section should not be constructed there.

THE FAULTLESS RUBBER CO. WINS ITS SUIT.

The United States Circuit Court of Appeals, for the Northern District of Ohio, recently rendered a decision favorable to the Faultless Rubber Co., in an interesting suit brought against the Star Rubber Co., of Akron, for infringement of its "Kantchoke Nipple," patent No. 926,011. The Faultless Rubber Co. owns patent No. 926,011, issued to it June 22, 1909, as the assignee of Thomas W. Miller. The subject matter of the suit was a nipple for nursing bottles. The specification stated as one of the objects "to prevent any contraction of the opening from the body portion into the mouthpiece of the nipple under compression of the same." The claim said to be infringed was claim 1, reading as follows:

"1. A nursing nipple, embodying a mouthpiece, a neck, and an intermediate body portion flaring from said neck to receive the bead of the bottle neck, the upper wall of said body portion projecting inwardly at an acute angle from its point of greatest width to form a substantially flat wall, the diameter of the opening from said body portion into the mouthpiece being relatively small in comparison with the diameter of said body portion."

In rendering its decision the court stated: "We agree with the Board (of Examiners) that the specification and drawings disclosed a novel combination giving a useful, new result, and entitled to protection by patent. One practical difficulty which Miller sought to avoid was the collapsing of nipples while in use. Evidently, a mere tube, when bent sharply to one side or when pushed inwardly so as to make a bend, would collapse and close. It is the patentee's theory that in the Ingram nipple (taken as the best type of previous nipples) the enlarged body portion is still so characteristically a tube that if the mouthpiece is pushed inwardly or bent to one side, either the opening into the mouthpiece or the two together will collapse; while, in the Miller device, this upper part of the enlarged body portion is so predominantly a diaphragm that it cannot break over, and instead, it yields longitudinally to a push or pull, and when the mouthpiece is turned sidewise, the diaphragm also turns. The arch of Ingram would resist against a sidewise bend of the mouthpiece, and the opening into the mouthpiece would collapse, but the diaphragm yields and the mouthpiece remains open. This result, as a new and useful result, seems probable enough on inspection of the patent and the earlier patents, and observation of samples, as far as they were submitted to us, confirms this idea. In any event, the utility of the new combination is probable enough, evidenced, as it is, by extensive public adoption,, so that the defendant who has copies cannot be heard to deny such utility."

Accordingly, the court grants the usual interlocutory degree for injunction and accounting against the defendant company.

INFRINGEMENT SUIT DECIDED IN FAVOR OF THE FISK RUBBER CO.

In a recent important decision—which it would take two and one-half pages of this publication to reproduce—the United States Circuit Court of Appeals, for the First Circuit, affirms the decree of the District Court which held that the claims of United States Patent 822561 to P. D. Thropp were invalid by reason of anticipation.

Suit was brought against The Fisk Rubber Co. for infringement of this patent which, it was alleged, covered the form of mold used in the manufacture of Fisk tire casings by the one-cure wrapped-tread process.

This case has been before the courts for nearly four years, and the two decisions in favor of The Fisk Rubber Co. are of great interest to the tire makers of this country by whom the one-cure wrapped-tread process, and the apparatus involved in this suit, have been very extensively used.

TRADE NOTES.

William H. Scheel has announced that he has recently added to his already extensive line of compounding ingredients for the rubber trade, new dry colors of exceptional excellence and has already developed an active request for yellows, reds and greens noted for being impervious to heat. Mr. Scheel is also offering a zinc chromate chemically pure, both yellow and green, as well as a line of English brilliant vermilion, and English Vermilion substitute. These new colors will compare favorably with the general line which Mr. Scheel has been successfully offering to the American rubber trade for the past twenty years.

Ernest Jacoby & Co., whose headquarters are at 79 Milk street, Boston, were incorporated March 1, 1913, for $25,000 under Massachusetts laws. This concern is putting out a superior English substitute made by Englishmen in its South Boston factory. This house has an extensive connection throughout the rubber trade. Its New York representative is Mr. W. F. Schling, 150 Nassau street.

THE CRAWFORD SECTIONAL OVEN.

It is claimed by many that temperatures can be more accurately gauged in cases where steam is employed than where other mediums are used. Recent experiences made in the generation of heat from gases have tended somewhat to negative this view. The Crawford Sectional Oven, heated by an enclosed gas burner, is said to be a very high type of oven construction and an economical consumer of fuel. It is especially designed for close temperature control.

It is claimed to have been successfully used in the treating of certain composition products, and to have successfully vulcanized certain types of rubber goods. It is in extensive use among manufacturers of electrical goods for drawing the moisture out of fabrics prior to impregnation and heat, treating them in the finishing process. In the latter case it is perhaps needless to call attention to the fact that cotton carbonizes at a slightly higher point than that at which water boils (212 degs. Fahr.). Therefore successful impregnating compounds must be capable of heat treatment at no higher temperature.

The insulation of all these ovens is high and permanent. Their sectional arrangements permit of rapid erection in cramped quarters by unskilled labor and they are easily portable.

The Crawford Sectional Oven is made by the Oven Equipment & Manufacturing Co., of New Haven, Connecticut.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta-percha for the month of January, 1913, and for the first seven months of five fiscal years, beginning July 1:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
January, 1913	209,772	$128,082	$662,623	$1,000,477
July-December, 1912	1,373,297	845,341	4,033,073	6,251,711
Total, 1912-13..	$1,583,069	$973,423	$4,695,696	$7,252,188
Total, 1911-12..	1,297,422	1,076,492	3,987,743	6,361,657
Total, 1910-11..	1,215,134	1,600,041	3,397,718	6,212,893
Total, 1909-10..	1,096,459	1,371,199	2,739,953	5,207,611
Total, 1908-09..	803,067	958,671	2,088,523	3,850,262

The above heading "All Other Rubber," for the month of January, 1913, and for the first seven months of three fiscal years, beginning July 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
January, 1913 .....*values*	$273,519	$389,105	$662,624
July-December, 1912	1,777,324	2,255,748	4,033,072
Total, 1912-13	$2,050,843	$2,644,853	$4,695,696
Total, 1911-12	1,374,337	291,460	1,665,797
Total, 1910-11	1,015,673	319,022	1,334,695

RUBBER IN THE RECENT FLOOD.

A FLOOD always means a loud call for rubber goods—obviously; rubber footwear and rubber clothing are in great demand. Some day when people are more provident than they are now, those who live in a territory where floods occur with any frequency, will have stored away in an odd corner, a folding raft with collapsible rubber floaters which they can get out on short notice and, by inflating the rubber floaters, put to good use, in saving life and valuables. But perhaps people have not yet quite reached that desirable degree of foresight.

One of The India Rubber World's occasional correspondents lives in Ohio, close to the region where the recent flood did its worst, and he has sent in a few paragraphs, together with snapshots, showing the use that rubber boots, rubber coats and rubber tires were put to, during the ten days' inundation.

THE FLOOD AND THE TIRE TRADE.

"It's an ill-wind that blows nobody good," and the recent huge flood disaster in the mid-west has been the direct cause for the purchase of a vast number of tires.

To begin with, curiosity impelled almost every automobile owner in the vicinity of the flood belt within "motoring distance," that is—to speed away to see the flood. The roads were so bad, the streams so swollen, the concealed rocks so numerous, that many a tire was burst. Then, if one approached too near the flooded area, his automobile would be seized by the soldiers and impressed into relief work. Relief work is death to tires. It means speeding through streets where the asphalt has buckled beneath the waters, or it means going through water so high that your carburetor is all but flooded. It means riding over stock and stone and keeping on, on the flat tire when the inner tube has burst; for when lives are to be saved tires don't count.

An Auto in the Hamilton Flood.

In addition, many an auto was caught in its garage by the tide, and knocked helter-skelter, out into the street; thence to be pummelled and driven about by the swift current till finally resurrected, much in the shape of the one in this snapshot taken at Hamilton.

RUBBER BOOTS IN THE FLOOD.

Many a man has been saved from catching a deadly cold through the use of rubber shoes or boots; but it is seldom that rubber footwear has assisted in the actual saving of so many lives as during the recent flood in Ohio. When the first horrors of that flood-night were over, the few who managed to escape from the torrent went out to the rescue of others. The work was done largely in boats, but often submerged out-houses, fallen walls, picket-fences and the like, kept these boats from making further progress. Then it became a matter of wading, and in ordinary foot-wear, with the waters freezing the feet, this would have been next to impossible, after two or three excursions into their depths. When relief work was finally organized, rubber boots were provided, and fitted in these the rescuers went about, carrying the sick and the exhausted to safety.

This photograph shows a rescue near the county court house at Dayton.

If there was any one item of dress more valued than any other by the soldiers of the Ohio National Guard detailed for

A Flood Worker in His Rubber Boots.

RUBBER COATS IN THE FLOOD ZONE.

patrol duty in the flood districts along the Great Miami, it was the rubber coat.

Almost without ceasing, the rain poured, day after day, succeeding the actual torrents that caused the flood, and refugees, some of whom were on the house tops, beyond reach of rescuers, for full forty-eight hours, looked with no little envy on the more

A National Guardsman in His Rubber Coat.

fortunate national guardsmen, notably the men from Toledo, who walked about—even in the lightest drizzle—well protected in rubber coats. The floods had, of course, gutted the stores of the rubber dealers, and, where not, left everything beneath a coating of mud a foot deep, so that until relief came in from without, little could be obtained from local purveyors.

The photograph shows a major of the guard halting the autos and sightseers at the borders of Hamilton, until they secured the needful passes.

THE INCREASING DEMAND FOR RUBBER TOYS.

A PHASE of the kindergarten system which is making demands upon dealers in rubber toys, is the use of such object teachers to convey to infantile minds the forms of characters in fairy tales, as portrayed by book illustrators at home and abroad. As a teacher reads a fairy tale she places on the desk, one by one, a rubber doll designed to portray this or that fairy, gnome or elf, as for instance, the "Mad Hatter," the dormouse, and the Queen, and other characters in "Alice in Wonderland." When the tale is told, the teacher passes the rubber toys about the room for the children to play with while the impression of the story is active in their minds.

At first thought, it would seem as if this development of the idea of teaching by means of toys would not be of consequence in sales of rubber products, but the contrary is the case as THE INDIA RUBBER WORLD has learned in interviews with makers, distributors and retailers of toys. The reason is not far to seek: it is that there are at least three million children in domestic kindergarten schools, and that the parents of many of these children, buy at the urging of the children, such rubber dolls and other rubber toys as are used in the school for conveying certain ideas set forth in fairy and other tales.

A very large order was recently placed for rubber toys of these kinds by a large corporation of cut-rate druggists. The designs to which the manufacturers will conform in filling this order provide for following the drawings of famous child-life illustrators of England, France, Germany and our country. Many of the patterns will be in colors, but the most of the order calls for terra cotta finish.

All buyers for department stores, and for the larger retail druggists give it as their opinion, that the market for rubber toys is enlarging. In almost all instances, rubber toys as sold by these branches of trade are advertised in the press and bulletined by placards in the stores as unbreakable toys. This is a catchy term that goes far with those who buy gifts for children, and who know that for a number of years the guile of many makers of toys has been to make the products extremely fragile, for the purpose of giving the shortest possible life to the object, in order that the whimpering of the child over a soon broken toy may quickly lead to the purchase of a duplicate. It is becoming the practice both in drug stores and department stores to place a good assortment of rubber toys in the show cases that display rubber bath tubs, basins, spraying bottles, hot water bottles, and many other articles in rubber of especial design for use by mothers and nurses in the care of young children. In many hospitals where children are treated, and where a long time is occupied in giving special forms of baths, the nurses keep the children from fretting by placing rubber ducks, geese, swans and dogs in the tubs. This is a sound method of preventing the fretting in children which in adults is termed worrying.

NAVY DEPARTMENT WANTS RUBBER SUPPLIES.

The Bureau of Supplies and Accounts of the Navy Department, Washington, invites bids until May 6 for rubber boots, air hose, garden hose, rubber hose for flexible voice tubing, rubber pipe hose, suction rubber hose, upper-deck fire hose, wash deck hose, and rubber steam hose.

NEW TRADE PUBLICATIONS.

ELBERT HUBBARD DISCOURSES ON THE DEVINE VACUUM DRYER.

THAT seer, sage and most hilarious metaphysician, Elbert Hubbard, has penned a treatise entitled "The Age of Rubber —Being an Appreciation of the Vacuum Drying Apparatus Manufactured by J. P. Devine Co." The vacuum drying apparatus manufactured by the J. P. Devine Co., is interesting enough in itself, but when touched up by Elbert Hubbard, and set off by the spangles of wit, humor, history, logic and philosophy that characterize the literary style of the prophet of East Aurora, it becomes more than doubly interesting. This is the way he starts: "Three-fifths of the surface of the earth is covered with water. The world seems very much better adapted to raising fish than men, although man in his existence passes through an aqueous stage, and to a degree he never gets out of it." And then he goes on to describe, in his own way, the vacuum drying process as done by the Devine apparatus. If you are not familiar with this vacuum drying machinery, you should get one of these books and find out about it, and if you are familiar with the machinery but would like to know more about Mr. Hubbard's peculiar gift of writing, get the book on that account.

"THE STAGGARD."

The Republic Rubber Co., of Youngstown, Ohio, issued on April 1, Number 1, Volume I, of "The Staggard," a four-page illustrated publication, devoted primarily to the exploitation of the Staggard tire. It appears to be intended chiefly for circulation among the employes of the company, and of its branches and agencies, but it contains quite a little news of interest to the tire industry generally. This first number contains some interesting illustrations, among them a typical scene in the recent Ohio flood, which shows some Youngstown factory (not the Republic) so deep under water that the freight cars alongside are buried to their roofs.

IF YOU ARE GOING TO MOTOR IN EUROPE.

If you have any expectation of touring Europe this summer in your motor car, you should get a "Goodrich Auto Map and Guide to Continental Europe," just published by The B. F. Goodrich Co. The map when opened out is 20 x 24 inches, and covers England, France, Germany, Switzerland, and a very considerable part of Spain, Italy and Austria. It shows the principal thoroughfares in all that vast section. On the reverse side of the map there is a good deal of information of importance to the Continental tourist. It gives the various customs and other laws of each country, with the requirements for local registration, and much other information necessary for the motorist's welfare and comfort. It also reproduces the road signs generally in use in England and the Continent, so that the motorist can familiarize himself with them in advance.

In addition to the Continental Guide, the Goodrich Co. has just issued a number of other leaflets—one being a route book showing how to get from St. Louis to Kansas City without having to ask a question of anybody. Three other smaller leaflets are entitled "Goodrich Service," which is devoted to tennis balls; "Police," which treats of the Goodrich clincher tires, and "The Newest Chocolate Lines in Rubber," describing various syringes and pumps made of chocolate colored rubber.

A FOLDING RUBBER WASH BOWL.

One of the convenient little travelers' kits, provided for the comfort and physical well-being of the motorist, contains among other helps for cleanliness, a folding rubber wash bowl, which takes practically no room when not in use, and can be filled with a plentiful supply of water when it is needed.

The Editor's Book Table.

THE RUBBER TREE BOOK. BY W. F. DE BOIS MACLAREN. London, 1912. Maclaren & Sons, Limited. [Cloth, 308 pages, with 83 illustrations; price, 11*s.* 6*d.* post free.]

WHILE it may be considered by some that everything possible has been said about rubber, the rapid and continuous growth of the industry involves so many new considerations, that there is always room for a well considered and comprehensive work, such as that recently produced by Mr. Maclaren. His intimate connection with rubber, as director of various successful planting and financial companies, gives him special facilities for treating his subject. Having had a period of large and constantly increasing yields, with the result of big dividends, rubber companies have not up to now experienced the need of special efficiency in estate working. It is, however, being more and more recognized, that efficiency is no less essential to success in the rubber-growing industry, than in any other.

It has been the author's purpose to arouse the interest of the planter in the soil he cultivates and the trees he grows there, by showing how varied and wonderful are the phenomena connected therewith. In the words of the introduction, the object with which the book has been written has been to assist in obtaining better results than in the past, on more economical lines, and with a view to the future welfare of the rubber-growing industry.

Starting with the general consideration of "What a Tree Is," Mr. Maclaren takes up the question of the soil and its fertility, manuring, weeding and other subjects; leading up to the seed and its reproduction through roots, stem and foilage. At this point he quits the botanical division of the subject for that of cultivation, dealing successively with "Land Grants"; "Elevation"; "Roads, Bridges and Dams," "Felling and Burning," as well as various other points.

Next in order come the questions more directly affecting planting; including nurseries, planting-out and pruning.

Of special interest to estate owners, is the chapter on "Planting Distances." Mr. Maclaren arrives at the conclusion that a distance of 30 x 30 feet, or 48 trees to the acre, is not too wide. While it would involve at first a little sacrifice, later results would more than pay for waiting. An instance is recorded from Sumatra, in which three isolated trees eleven years old yielded in 1912 over 100 pounds each of rubber. Mr. Maclaren remarks that 48 such trees per acre would, on this basis, produce annually 4,800 pounds, while 400 pounds per acre is considered a very good yield from closely planted trees.

Proceeding to the subject of extraction, the questions of tapping and coagulation are next dealt with, both in principle and practice. Under the former head the various methods of incision are treated on the basis of trials made at experimental points, while the merits of different tapping knives and utensils are likewise discussed. In the treatment of the question, "The Latex and How It Is Coagulated," latex is considered as a reserve of plant food, representing only about 2 per cent. of the total volume of nutriment, and being intermingled with other elements of no service as food reserves. Mr. Maclaren disputes the correctness of Dr. Stevens' suggestion that the resins in trees must be stores of plant food also if latex is. The functions of latex are considered under various aspects, it being added that the co-operation of nature has a wider scope than many dream of.

When the coagulation of the latex has brought it out of the hands of nature into an industrial form, it becomes available for mechanical treatment. Under this head washing mills are considered from various points; including the width and speed of rollers and loss in weight. The process of creping is finally dealt with. This naturally leads up to the subject of the grading of rubber; the opinion being expressed that (instead of five as had been suggested) three grades should be quite sufficient for all purposes, namely, first latex rubber; second grade earth rubber. Drying, smoking and packing occupy the following chapters.

Most direct interest attaches to Mr. Maclaren's estimate of the cost of production, for arriving at which he thinks there should be a standard way. When any estate is producing 100,000 pounds of dry rubber a year, he considers the cost f. o. b. should not exceed 1*s.* 6*d.* (36 cents) per pound. He adds that such a figure ought to be looked upon as having to be reduced each successive year, till it is well under 1*s.* (24 cents) per pound.

Every page of this work contains some statement of interest; the whole volume reflecting high credit upon its author.

KALENDER FUR DIE GUMMI-INDUSTRIE. EDITED BY DR. KURT Gottlob. Berlin, 1912. Union Deutsche Verlagsgesellschaft. [8vo, 514 pages, cloth.]

The last annual issue of the Gummi-Kalender (to call it by its abbreviated title) is fully up to the mark of its predecessors. Its main divisions include a diary with blanks for memoranda of prices and names of manufacturers of supplies; details of the various organizations connected with the German and Austrian rubber industries; rubber washing and manufacturing tables. In its miscellaneous section there is a discussion of the risks of poisoning in the rubber industry.

In the supplement, the "Annual for the Rubber Industry," is a chronological calendar of the history of rubber from 1536 to the present time; followed by an article on the "Chemistry of Rubber," from the pen of the editor. Next in order come articles on "The Technology of Rubber," "Analysis of Rubber and Rubber Goods," "Practical Testing of the Qualities of Rubber Goods," "The Coloring of Rubber Goods," and "Viscosity of Rubber Solutions." The value of this work is materially enhanced by various groups of statistical tables.

Any one in a position to follow the intelligent arrangement of the Calendar and its supplement will find them of material value as a guide in technical operations and as a compendium of facts affecting the rubber industry.

GUMMI-ADRESSBUCH, 1913. (RUBBER DIRECTORY, 1913.) UNION Deutsche Verlagsgesselschaft. Berlin. [8vo, cloth, 578 pages.]

The 11th edition of this directory of the German rubber industry has lately appeared in its accustomed form, displaying a steady increase in the number of names. As it will be recalled by those familiar with the work, the cities of Germany are classified in alphabetical order; in each case the separate sections of the trade showing the names of the local houses in the different branches. The names in each city are thus concentrated, the handy little volume being therefore specially adapted for use by those personally visiting the centers of the German rubber industry.

A separate section is devoted to Austria-Hungary, filling 16 pages, arranged in the geographical order of the cities and towns referred to. A number of advertisements are interleaved or appear in the body of the text. Any one wishing to arrive at the details of the German manufacture and distribution of rubber and asbestos goods will appreciate this directory for its completeness.

RUBBER STOPPERS IN CHAIR LEGS.

A man out in California with an inventive turn of mind writes to "Popular Mechanics" that he has discovered a very inexpensive way of preventing chairs from marring the floors. He gets four rubber stoppers and then bores a hole the size of the stopper in the lower end of each chair leg, and inserts the stopper so that it projects slightly below the wood. This is something that anybody with an auger the proper size can do for himself.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE reports of the Akers Committee, though of primary interest to Brazilian politicians and people, have been followed with considerable interest by manufacturers in Europe. Popular though Eastern plantation Pará has become for very many purposes, there still remain many purposes for which the Brazilian product is considered indispensable, and it would seem inevitable that it must command a considerably higher premium in the market in the near future than is at present the case. A prominent manufacturer in conversation with me recently, confidently predicted the price of 2s. per lb. for plantation Pará in the not distant future, and expressed the opinion that in order to compete, the Brazilian merchants will have to pay their gatherers at a higher rate and considerably reduce the present remuneration of officials, capitalists and other go-betweens. Of course one must take into account the prospective advantages to be derived from the Madeira-Mamoré railway, a railway which is now familiar to British investors—or perhaps I ought to say underwriters—owing to recent financial developments on this side.

THE FUTURE OF BRAZILIAN PARA.

A point in the report which I have seen criticized in various papers is the proposal to start rubber works in Brazil with Government assistance. Quite apart from any considerations as to the suitability of the climate, there is no doubt that European rubber manufacturers look with apprehension upon the probable loss of some profitable export business. It is probably correct to say that as regards value mechanical rubber goods, largely for railway use, are the most important of our rubber exports to South America, these being followed by waterproof garments and tires. How the position stands with Continental countries or the United States I have no information, but our manufacturers are certainly not enamored of the idea of rubber manufacturing in the South American countries, though they extract a few crumbs of comfort from the assertion that the competition will take several years to make itself seriously felt. The first factory, I understand, is being put up at Bahia; machinery being already despatched from England.

In the Russian supplement to the "Times," published on March 28, appeared an interesting contribution by V. P. Krymoff on the manufacture of rubber goods in Russia Owing to the system of protection, coupled with the possession of two very large factories, the imports of rubber goods into Russia are described as insignificant, while the exports have shown a large increase. The daily output of goloshes at the "Prowodnik" works now amounts to the huge total of 42,000 pairs. Solid cab tires are made and used in Russia in numbers far exceeding all other countries. On the other hand the automobile tire trade has not yet achieved any great proportions, though rapid progress is being made at the present time. It appears that compared with some of the American states, the proportion of motor vehicles in Russia is only 1 to 100 other vehicles. Rubber sponges are stated by the writer to be virtually a monopoly, which, whatever may have been the case twenty years ago, seems rather surprising, now that the manufacture is carried on in several other countries.

THE INDUSTRY IN RUSSIA.

The writer does not refer to Russian reclaimed rubber, the export of which in large quantities to England is a very sore point indeed with English reclaimers. It is, of course, generally known that there is an export duty on Russian goloshes going to England and America. This is sufficiently high to bar their use in England as raw material for reclaiming, and as there is no export duty on Russian reclaimed rubber to England this is proving a serious competitor to reclaimed stock of similar quality made in England. Indeed the situation is such that I hear rumors of an important English reclaiming works proposing to erect a branch factory in Russia. Outside reclaimed rubber I don't know that the imports of Russian rubbers into England occasion home manufacturers any disquietude. As far as footwear is concerned the competition seems to be practically limited to America. Perhaps the Russian goods cannot compete with the American in price; certainly, as far as old goloshes for reclaiming are concerned, the quality of the rubber is superior to that of the American. With regard to Russian goods in England I ought to add that quite recently motor tires have been coming over in quantity and of a quality to make their competition felt by home manufacturers.

Early in the morning of March 12, the works of the Mersey Rubber Reclaiming Co., Ltd., of Stockport were entirely gutted by fire, and the business of the company has for the present been brought to an abrupt stop. The works in the main consisted of a four-story mill, formerly used in the textile industry. The fire appears to have started on the top floor, where the drying screens were situated, though the actual cause remains a mystery, nothing wrong having been noticed by the night watchman who had quite recently visited the rooms. The loss to plant and rubber, of which there was a large stock, may be put at about £12,000; electrical driving gear having only quite recently been installed. This loss is fully covered, I understand, by insurance, and so also is the mill. The Mersey company was established about two and one-half years ago, and as they were well booked up with orders for several months ahead, the fire is a most unfortunate occurrence. At the moment I cannot say definitely what will be done in the future, but I understand that recommencing the business on another site is a matter now under the consideration of the directors.

DISASTROUS FIRE.

Like the matter of the new King who is to preside over the destinies of Albania, there is considerable discussion and uncertainty about the personality of the new chairman of the above association. Colonel Birley has now held office for nearly two years, the ordinary term of one year having been extended by general request. If what I hear is correct, some difficulty is being found in deciding upon his successor, not from any rush of applicants, but because those approached have begged to be excused. Compared with what is known—at any rate in this country—as the American Rubber Trust, our manufacturers' association has always suffered from the fact that important works like the Silvertown, North British, Dunlop and Warner, have remained outside its membership though without in any way acting antagonistically towards it. The salesmen in America, I understand, have a definite price and stick to it, while here, despite the issue of notices as to this or that advance in price by the association, individual members have confessed to an uneasy feeling that their competitors do not always quite play the game. This is a delicate matter to which I only refer in a spirit of detachment, as being quite outside my personal ken. It is, of course, well known that the proceedings of the association are not communicated to the press, a matter which has in the past been adversely commented on by our London contemporary. With regard to the conduct of affairs I may say that general meetings of the members are only called at irregular intervals, the main business being attended to by a standing committee of half a dozen and a secretary.

THE INDIA RUBBER MANUFACTURERS' ASSOCIATION.

The 1913 revised druggist sundries list has just been issued

(end of March) from the London premises, 117 to 123 Golden Lane, London, E. C., and the type and illustrations are of their usual excellence. The general trend of the alterations in price is downward, an important reduction being in the case of the De Vilbies range of atomizers.

THE B. F. GOODRICH CO., LIMITED.

A new pencil-mark eraser, to take the place of the well-known rubber brand, is now on sale at our stationers' shops, coming, I understand, from Germany. Whether this has anything to do with the recent fall in price of rubber, I do not know, but at any rate, I have met people who say they prefer the new substance to rubber. A block of the following approximate dimensions sells for one penny: 2 in. x ¾ in. x ½ in. thick. It is evidently made of some solidified oil with mineral matter of a soft texture, which does not remove the gloss on the paper.

NEW ERASER.

This company whose works are at Ordsall Lane, Manchester, have recently completed the extensions to their balata belting plant, and are now busily engaged in extensions to their mechanical rubber department. Owing to contiguity to house property, and the difficulty of getting more ground space, some of his passages, where a knowledge of rubber machinery on the American girder and concrete principle. This work when completed will afford room which is very necessary for the expansion in the mechanical rubber business to which branch the company largely confines itself.

THE IRWELL AND EASTERN RUBBER CO., LIMITED.

"Celluloid, Its Manufacture, Application and Substitutes," is the title of a new and important work by Masselon Roberts and Cillard. It has been translated from the French by H. H. Hodgson, and published by Griffin & Co., London, at 25s. net. As the first book, I believe, published in English on the celluloid industry, and at any rate, the most modern and comprehensive, I may perhaps be allowed a few lines in this correspondence to congratulate the authors on having achieved a somewhat difficult task, and it would not surprise me if he met with criticism in of course, familiar to many rubber men by reason of its connection with our Parisian contemporary "Le Caoutchouc et la Gutta Percha," in which paper considerable attention has all along been paid to the celluloid industry. In drawing attention to the paucity of literature on the subject the authors make no reference to the important work of E. C. Worden, of Milburn, New Jersey, published in 1911; which, dealing with the nitro-cellulose industry, devotes 205 pages to celluloid alone.

CELLULOID.

Celluloid is an intimate mixture of nitro-cellulose and camphor, and in the earlier chapters of the book nitro-cellulose, the rationale of its nitration and the various commercial nitration processes, are fully treated, with a wealth of mathematics, which will probably prove disconcerting to many readers. Those, however, who are in a position to understand the mathematics will recognize their importance, and will not enroll themselves among those who may be inclined to think them out of place in a volume of this sort. The celluloid industry has attained considerably more prominence in France and Germany than is the case with England and America, for which, and for other reasons, the book is almost entirely concerned with continental practice. The British Xylonite Co., for instance, finds no mention, though there are some references to American procedure.

Rubber men who are unfamiliar with the celluloid industry will be interested to notice so much similarity in plant, the rolling mill for instance in which the cellulose nitrate, steeped in the alcoholic solution of camphor, and mixed with various mineral or organic colors, is worked into uniform sheets, seems to differ in no essential from the rubber mixing mill. The block press again is very similar to that used in the fine cut sheet industry. The waste celluloid, i. e., cuttings from goods, corresponds to unvulcanized rubber waste and can be used again in large proportions. There is nothing corresponding to vulcanized scrap in the industry. The analysis of celluloid is stated to be very difficult, another point of similarity with rubber. Not unnaturally, under the circumstances of the authorship, reference is made to the advantages offered by the Dynamometer P. B. and the elasto-durometer, for making mechanical tests on celluloid. I must confess that I have never worn a celluloid collar, but goods of their class, made from what is commonly called American linen, seem to be largely manufactured in France and Germany in the celluloid works. The inflammability of celluloid naturally comes up for mention in the book, but as I do not feel inclined to discuss this important matter in a line or two, I leave it alone.

The book concludes with a limited notice of the proposed substitutes for celluloid, few of which the authors say have any real industrial value. The best future, they say, appears reserved for the acetates—which, by the way, are now being used in the "non-flam" film manufacture. Altogether the authors must be congratulated, in my opinion, in having produced a much needed and well written work. The translator has had by no means an easy task with a very great measure of success. The name Cillard is, some one-story buildings are being converted into three-story would have come to his aid in making rough places smooth.

BIG PROFITS IN WATERPROOF GOODS.

At the twenty-fourth annual meeting of J. Mandleberg & Co., recently held at Manchester, a dividend of 15 per cent. was declared. During the last fourteen years there had been an average distribution of 20 per cent. per annum; their investments having thus been returned almost three times to the original shareholders.

STATISTICS OF RUBBER CONSUMPTION.

The fluctuations of rubber consumption during recent years as quoted by Messrs. Hecht, Levis & Kahn are as follows:

	Quantity.	Increase.	Decrease.
	Tons.	*Tons.*	*Tons.*
1905/6	62,574	.....	.....
1906/7	68,173	5,599	.....
1907/8	62,376	.....	5,797
1908/9	71,089	8,713	.....
1909/10	76,026	4,937	.....
1910/11	74,082	.....	1,944
1911/12	99,564	25,482	.....

The remarkable increase of consumption in the last year reported upon, is the most interesting feature of this table.

REGISTRATION OF THE HANOVER RUBBER COMPANY.

The Hanover Rubber Manufacturing Co. has been registered in that city. Its object is the manufacture and sale of rubber goods. The capital equals $5,000.

THE BERLIN-FRANKFURT RUBBER WORKS.

The Berlin-Frankfurt Rubber Works report a satisfactory year for 1912. Advantageous purchases of crude rubber led to this result, which allows the payment of a 9 per cent. dividend.

NEW AUSTRIAN RUBBER FACTORY.

The "Fama" Rubber Manufacturing Co. has been registered at Vienna with a capital equalling $12,600. Its address is Rennweg 64.

EASTER EGGS OF RUBBER.

Easter eggs of rubber are reported to have been again in favor during the recent Easter season. They consist of an oval ball of rubber, containing a number of rubber toys. This new adaptation of rubber is being watched with interest by manufacturers of rubber toys in Germany.

RUBBER FLUCTUATIONS.

The Credit Colonial and Commercial, of Antwerp, the company which is continuing the business of the old firm of L. & W. Van de Velde, has issued a valuable chart, showing the fluctuations in rubber prices since 1893. Several comprehensive statistical tables deal, moreover, with the world's production and consumption during that period.

Gustav F. Hübener, of Hamburg, has published a large chart showing in graphic form the fluctuations in rubber prices since 1902, with a table going back to 1883; thus indicating thirty years' results.

PROPOSED GERMAN COLONIAL UNIVERSITY.

Since 1908 Germany has had a "Colonial Institute" at Hamburg in which a certain number of young officials in the Colonial Administration have received instruction in the languages, ethnology, zoology and botany of the varous colonies for which they are destined. It is now proposed to establish a regular colonial university at Hamburg, which will regard all outlying nations and civilizations as separate entities of the human race. This university will have chairs in colonial history, languages and sciences, and will work in harmony with the Colonial Institute.

CAPITAL IN STOCKS OF RUBBER.

German rubber manufacturers are said to have a large amount of capital invested in stocks of crude rubber. In the case of one leading concern, their stock of rubber in the crude state and in process is said to represent upwards of $400,000. Few other branches have to carry such large amounts of valuable raw material. This fact is quoted as illustrating the financial importance of the rubber industry.

STATISTICS OF JAPANESE TRADE.

NOW that the effects of the new Japanese tariff are being fully experienced, the statistics of Japanese imports for January, 1913, are of special interest, as compared with the returns for the three months ending January, 1912:

	Month of January, 1913.	Three months to January 31, 1912.
Dental rubber	$2,770	$432
Soft rubber—Rods and buds	4,779	6,978
do Plates and sheets	2,110	3,905
do Tubes	4,182	4,223
do Belts and belting (machinery)	2,800	904
do Thread	790	4,074
do Erasers	1,270	1,734
do Supplies	917	51
do Other goods	5,212	3,822
Other—Lumps, bars, rods, plates and sheets	4,882	1,174
Other forms	8,856	3,266
Cycle tires	28,669	26,647
Insulated wire (other than submarine, telegraph and telephone)	178,120	60,288
Cords (other than flexible)	8,393	34,310
Rubber boots	1,964	72
Overshoes	902	1,310
Waterproof tissues	1,522	2,394
Elastic webbings, etc.	2,968	2,193
Insulating tape	3,275	3,341
Totals	$264,381	$161,118

Bearing in mind that the figures referring to 1912 are for the three months ending January 31, which those of 1913 are for the month of January alone, it will be seen that a marked advance is taking place in Japanese importations. In soft rubber tubes the imports for the month of January are alone about equal to those for the three months ending January, 1912. The total for January, 1913, in the 19 divisions quoted is $264,381 as compared with $161,118 for the three months ending January, 1912.

Taking one-third of the last-named amount as representing the amount for the month of January, 1912, the result is about $54,000 or one-fifth of the amount shown for January, 1913. The purchases made in anticipation of the tariff of 1911 have evidently been used up, and the Japanese import trade is returning to a position of normal activity.

Japan is making progress in the export of insulated electric wires. The figures of January, 1913, equalled $5,060, against $3,166 for the three months ending January, 1912.

NOTES FROM BRITISH GUIANA.

(By Our Regular Correspondent.)

WEATHER conditions are still conducive to the successful prosecution of the balata industry. Scarcely a day passes but that there is a fairly heavy rainfall, and there are abundant indications that the long rainy season is upon us. The result is reflected in the exports, which for the first three months of the year are 198,888 lbs., against 23,810 lbs., for the same period last year, when industry generally was in a paralyzed condition owing to the parching of the earth by the drought.

The annual session of the legislature has now closed. The financial chamber has sat in Committee of Ways and Means and fixed the taxes for 1913-14. It will be some relief to those interested in the balata industry to learn that there has not been a whisper as to the revival of the export tax on balata. It will be recollected that when last year this export tax was taken off in response to a fairly whole-hearted protest, some members of the combined court held out the threat that the abolition of the tax must only be regarded as a temporary measure, that sooner or later the industry must be compelled to contribute more largely to the revenue. Since then the report of the Balata Committee has been issued, in which it was clearly demonstrated that the government is in reality heavily in debt to the balata industry. That probably has in itself been sufficient to scotch any proposal as to reviving the tax. In addition, the industry is certainly not in such a position that it can afford to pay any further imposts. On the contrary, it requires the most careful attention of the government, which it has not received at this session. The promised bill is still apparently in course of preparation. In the meantime the fact that the combined court has cheerfully consented to meet the deficit that is expected to accrue at the end of the financial year by drawing on the surplus fund, would appear to indicate that the balata industry need not fear any new raid from the tax-gatherer for some time to come.

The annual report of the Director of Science and Agriculture for 1911-12 has just been issued. Professor J. B. Harrison says, in the course of a comprehensive review of the condition of agricultural industry in the colony, that the rubber industry continues to expand. A total of 2,259 acres is now under rubber, of which 1,800 acres are estimated to be under Pará rubber. Prof. Harrison says, "Tapping has been continued on two estates and has been started during the year on another. The quality of the rubber has been good, and the yields are reported to be satisfactory. The growth of Pará rubber trees continues to be satisfactory when they are planted in suitable situations. It has been free from any serious pests or diseases during the year, and Pará rubber does not appear to have been very adversely affected by severe drought. The rate of growth was considerably reduced during the drought, but the plants remained in a vigorous condition, except in wind-swept situations in the coastal regions."

The speech of the new governor at the session of the legisla-

ture, recently closed, was listened to with interest, but it contained little of importance to the balata industry. Referring to this subject he spoke as follows:

"I have inspected several estates and small plantations of this product, but nowhere have I found the necessary care and attention being given to the planted area. This is a great disappointment to me for the few trees I have seen properly attended to prove, as might be expected, that this tree grows here as freely and satisfactorily as in the Eastern Hemisphere."

INTERESTING CORRESPONDENCE ON THE SUBJECT OF THE IMPORTATION OF PARA SEEDS.

Professor J. B. Harrison, Director of Science and Agriculture, sent the following letter to the Government Secretary on January 28: "Sir: With reference to my letter of the 3rd April, 1912, covering an indent on the government of the Straits Settlements for the supply of 150,000 Pará rubber seeds and your reply thereto, of the 10th April, 1912, I now have the honor to report that the germination results have not been quite as satisfactory as in former years. The records are as follows:

Dates of receipt, 1912.	No. of seeds received.	No. of seeds germinated.	Percentage of germination.
October 24	7,844	4,276	54.5
November 7	20,676	12,960	62.7
November 21	63,659	48,170	75.7
December 2	7,935	5,799	74.6
December 5	51,813	24,451	47.2
Total	151,927	95,656	62.9

"The seeds received on December 2 were part of the shipment, the bulk of which came to hand on November 21. These seeds were left by the postal authorities at Trinidad, and thence were eleven days longer than necessary in transit. In every case the packing was all that could be desired, hence the lower average rate of germination appears to have been due to defects latent in the seeds when packed. These defects may have been caused by the prolonged droughts which affected many parts of the tropics in 1911 and 1912."

The Assistant Government Secretary sent the following letter to the Colonial Secretary of the Straits Settlements: "I am directed by the Governor to transmit herewith, copy of a letter from the Director of Science and Agriculture with regard to the Pará rubber seeds imported from the Royal Botanic Gardens, Singapore, and to say that this government is fully satisfied with the results, which show that these seeds can, by the method adopted by the Straits Settlements Botanic Department, be cheaply sent to the most distant places and yet give excellent germination results."

The annual report of the Institute of Mines and Forests, which has just been published, raises many points of the greatest interest to those engaged in the balata industry. One matter that occasioned some difficulty was a point raised by the Secretary, as to whether it is the duty of the institute to take out warrants and arrest laborers, without using any discretion and merely at the request of any employer; if so, in case of failing to prove the charge, and an action for damages is brought, is the institute liable in any way? Mr. Payne held on this point, of so much importance to employers, that as the institute acts as the agent of the employer and engages employes out of monies placed at its disposal by employers, it is its duty to proceed against the breaker of the contract in the absence of some exceptionally complete and satisfactory explanation. When the services have been embarked upon, however, the employe is also entitled to claim the assistance and protection of the institute, and the institute is entitled to and should use discretion, and liability to an action subsequently would depend upon the circumstances of each case.

The Secretary of the Institute wrote to the Government Secretary with regard to an ordinance under which nothing excused a laborer for leaving his employment, not even sickness or the absence of work, objecting to its injustice. Large gangs of men had been sent to work on places improperly prospected, where there was not sufficient work for half the number of men sent. Laborers coming to town under these circumstances before the expiration of the contract were liable to imprisonment, although in some cases they had been at the grant six months without earning sufficient to repay advances.

A letter was also sent to the government regarding better means of communication with the upper reaches of the Essequibo, a vital matter for the balata industry, suggesting an overhead ropeway from a point below Waraputa Falls, to which launches run in all seasons, to a point above King William Falls. The power to work this, it was suggested, could be obtained from the various falls met with *en route*. It was estimated that the journey would then occupy 12 hours instead of 12 days as at present. The government replied asking to be "furnished with some information as regards the probable amount of traffic to be dealt with at present and in future" and also with respect to "the number of persons who would be benefited by such a scheme." Nothing appears to have been done in the matter, since no concrete proposal has been put forward.

With regard to the labor question, the report states "It is regretfully to be put on record that the labor troubles, which were acute during the period on which we last reported, have not by any means subsided to normal conditions. When a system of advances to laborers is practised, there will always be found absconding, and other irritating and annoying circumstances. The mutual confidence that existed between capital and labor in the past has not been fully restored. There is every reason to believe however, that labor difficulties will be gradually overcome, and that we shall soon see a change for the better in the relation existing between employers and employes." The institute statistics show that the percentage of absconders contracted through the institute, as indicated by the warrants issued, was 3.66 per cent. of the number employed in the balata industry, as against 1.94 per cent. in the mining industry, and 1.37 per cent. in other industries.

THE BATAVIA RUBBER EXHIBITION OF 1914.

The program just received of the 1914 International Rubber Exhibition and Congress, at Batavia, show the latest arrangements prospectively made. Opening September 8 and closing October 10, the exhibition in this term of nearly five weeks will give ample time for the study of the display, while its technical interest will be largely concentrated in the Congress, lasting from September 7 to September 12; particulars of which appeared in the April issue of this journal.

The exhibition will be divided into thirteen sections, where the various exhibits will be properly grouped so as to show the botany, cultivation, preparation and packing of rubber, in fact, all its phases from the time it leaves the tree until it is ready for market. The subsequent stages of washing, vulcanizing and manufacturing are dealt with in a special section, confined to manufactures; with a view of both the crude rubber and the finished product being shown.

Other special sections include wild rubber and substitutes, gutta-percha and balata. The literature of rubber, its commerce and statistics are likewise under their respective heads. Applications for space should reach the General Secretary, Koningsplein, Batavia, Java, by November 1, 1913.

While the exhibition will undoubtedly do much by its international features, to attract those specially interested in crude rubber, it will at the same time afford the American manufacturer an opportunity of reaching with his products the teeming populations of the Far East. Java has a population of nearly 30 millions and Sumatra three millions. Numerous visitors may be looked for from other parts of the East, who would be possible, if not actual, buyers of rubber goods.

Some Rubber Planting Notes.

THE GROWTH OF MALAYAN RUBBER SHIPMENTS.

STATISTICS for the first three months of the present year as compared with 1912 and 1911, show a steady increase in the rubber exports of the Federated Malay States. The figures are:

	1911.	1912.	1913.
January	1,329,170	2,730,576	4,787,280
February	1,490,849	2,715,767	3,936,529
March	1,916,219	3,089,583	3,890,880
Total pounds	4,736,238	8,535,926	12,614,689

It will be remarked, however, that the returns for February and March, 1913, show a retrogression from that of January.

A supplementary return from the Colonial Secretary, Singapore, shows exports from the Straits settlements ports during March, 1913, as 2,008,533 lbs., as compared with 1,584,267 lbs. in February. These figures, in addition to rubber from the colony, include trans-shipments, but do not include rubber exported from the Federated Malay States.

LONDON ASIATIC RUBBER AND PRODUCE COMPANY (FEDERATED MALAY STATES).

According to the report for 1912, the crop was 706,945 pounds, as compared with 352,688 pounds in 1911. The gross price obtained was 4s. 3.17d. per pound, against a cost of 1s. 10.52d. Estimate for this year's crop is 947,000 pounds. Total area planted is 6,749 acres. A dividend of 50 per cent. has been declared.

RUBBER ESTATES OF JOHORE.

The report for 1912 presented to the seventh annual meeting of this company shows a crop of 106,261 pounds, against an estimate of 90,000 pounds. For the current year the estimate is 230,000 pounds. Cost, including selling charges, was 2s. 9.84d. per pound, and price realized was 4s. 3.18 d. per pound. The total area planted is 14,942 acres; the dividend paid being 5 per cent.

ANGLO-MALAY RUBBER CO.

According to the report for the year 1912, the total crop for the year was 943,491 pounds, against 780,972 pounds in 1911. Cost of production f. o. b. was 1s. 8.78d. per pound, against 1s. 8.52d. in 1911. The gross price realized was 4s. 3.36d. per pound; and the total cultivated area is 4,318 acres. A dividend of 60 per cent. was declared for the year 1912. For the current year the crop estimate is 1,150,000 pounds.

THE VISIBLE SUPPLY OF RUBBER.

At the annual meeting of the Golden Hope Rubber Estates, Mr. James Lloyd Anstruther, chairman of the company, quoted the total visible supply of rubber on April 1 as having been: 1911, 12,738 tons; 1912, 10,698 tons, and 1913, 12,978 tons. London deliveries of plantation rubber for the month of March had been in excess of the receipts; the respective quantities being 2,614 and 2,443 tons.

SELABA RUBBER ESTATES (FEDERATED MALAY STATES).

The crop for 1912 was 319,595 pounds, which realized 4s. 4.64d. per pound, against a cost of 1s. 10.53d. per pound. A saving of 5d. per pound had been effected as compared with last year in the cost of production. A dividend of 28 per cent. has been announced.

BIKAM RUBBER ESTATE (FEDERATED MALAY STATES).

The crop for 1912 amounted to 153,295 pounds, which realized 4s. 5.89d., as compared with a cost of 2s. 7.36d. per pound; the planted area being 993 acres. A dividend of 18 per cent. has been declared for the year.

LUNUVA (CEYLON) TEA AND RUBBER ESTATES.

The report for the year 1912 shows a crop of 14,301 pounds, costing 1s. 0.82d. per pound, which realized 4s. 0.07d. per pound.

SOUTH AFRICAN CRUDE ASBESTOS.

According to an official statistical return, the South African exports of crude asbestos for four years are as follows:

	Total.	Proportion shipped to Germany.
1908	$111,140	$50,550
1909	138,755	67,525
1910	140,650	65,655
1911	139,890	65,370

United States importations for the four years represented:

1908	$1,115,800	1910	$1,122,085
1909	1,021,390	1911	1,318,539

The American importations were almost entirely from Canada, while Germany and Russia furnished in 1911 manufactured asbestos to the amounts, respectively, of $12,616 and $10,928.

GOLD COAST AGRICULTURAL DEPARTMENT.

In amplification of the annual report for 1911 reviewed in the February number of the INDIA RUBBER WORLD, the Agricultural Department of the Gold Coast Colony has issued a short history of its institution and development. Since 1890 the number of its agricultural stations has grown from one to nine; while the distribution of Pará seeds has increased since 1904 from 55,000 to 300,000 in 1910, and that of plants from 12,000 in 1906 to 29,000 in 1910. The total staff has risen in number from 2 in 1890 to 27 in 1911.

ENGLISH ENTERPRISE IN GERMAN EAST AFRICA.

"Manihot Rubber Plantations" is the style of an English company, registered nearly three years ago with a capital equaling $250,000, for the acquisition of two estates aggregating 1950 acres, about 18 miles from Tanga, German East Africa. According to the report issued December, 1911, it was expected to complete by the following March the planting of 350,000 *Manihot* trees; a sufficient acreage remaining unplanted for a further 150,000 trees.

While some 300,000 trees on the younger plantations are expected to begin coming into bearing towards the end of the present year, the results obtained from trees already matured have been sufficiently favorable, to encourage the company to arrange for dealing with the larger yield anticipated for 1914 and succeeding years. The resident manager reports that he is now engaged in removing the rubber cleansing factory from Tanga to the plantations, which will permit of the cleansing taking place immediately after tapping; with an anticipated improvement in the condition and color of the "Manihot crepe" produced.

RUBBER GROWING IN COCHIN.

A Cochin planter writes the "South of India Observer," that there are about a dozen rubber estates opened in the Cochin States, under a contract of 50 years, with certain conditions. He adds that in view of the exorbitant expenses of rubber cultivation, while the price of rubber is going down every now and then, and with artificial rubber over our heads like a sword of Damocles—the Cochin government should be a little more farsighted. The writer of the letter suggests that it should consent to receive at present only about one-half of the contract amount, which would be a great boon to rubber planters in Cochin, and would furnish a good incentive for more openings.

According to the latest accounts, there are now 37 rubber planting companies in South India, against 34 a year ago.

PROPOSED TROPICAL COLLEGE FOR CEYLON.

AT one time the mere gathering of tropical produce brought wealth to the discoverers, but now-a-days systematic and scientific cultivation is imperatively needed. Special training is moreover required, as the most efficient agriculturist of the West, when called to reside in the East, has to start his agricultural education afresh, building up his knowledge by experience.

The prominence given to the subject of a Tropical Agricultural College through the article in the London "Times," referred to editorially in the April issue of this journal, has attracted attention in the East. The Ceylon "Observer," in commenting on the proposition of such a college in the West Indies, remarks:

"The idea of such a university is one worthy of every support, for its success would mean profitable employment for those in the tropical zone and those at home. The scheme is full of possibilities, and it is to be hoped, will materialize. . . . Rubber is a case in point."

Meanwhile it is of interest to note, that an effort is being made in Ceylon to secure the Tropical College for that island. A strong and representative committee has been formed, which has held several meetings with that object in view. A memorandum had been drawn up urging that Ceylon is the most centrally situated tropical possession of the British Crown and therefore the most convenient center in the East for the college, with, moreover, its tropical planting industries at hand.

Peradeniya, it is remarked, is already a center of study, research and instruction, and would be the most suitable location for the college, which would subsequently become one of the colleges of the University of Ceylon, when the latter was established in the course of time. A site of 40 acres had been reserved for college buildings on this experimental station, which covers 500 acres. Rubber, tea, cocoa and cocoanuts are now grown on plantations, while experiments are conducted with a variety of other product. With this view, the raising of a fund to go towards the endowment of such a college was proposed in the memorandum.

On the suggestion of Mr. E. Rosling, a cable was drafted to the London "Times," drawing attention to the meetings and to Ceylon's reasons for asking for the college. The memorandum referred to was drawn up by Mr. R. N. Lyne, the Director of Agriculture.

OFFICIAL REPORT ON CEYLON EXHIBIT AT NEW YORK.

IN the April number of The India Rubber World reference was made to the report of Mr. Leonard Wray, the Malayan Commissioner, upon his section at the New York exposition. Since then the report of Mr. F. Crosbie-Roles, the Ceylon commissioner, dealing with the exhibit under his charge, has come to hand in the "Times of Ceylon," of which he is editor.

In his opinion, the New York International Rubber Exposition was a decided success from the plantation-producers' point of view. He adds, that as all plantation rubber is called Ceylon rubber by the trade in America, it would have been lamentable had the island not participated in the first exposition in the country of largest consumption. He refers to the rubber-testing machines of the Bureau of Standards, Washington; suggesting that it would be desirable to offer that department samples of first grade Ceylon rubber, with a view to best plantation being mentioned in future specifications, for which hard fine Pará continues to be the sole standard.

Reference is made to the commissioner's efforts to promote the establishment of a fast line of steamers from Ceylon to the Atlantic ports of America, in view of the largely increased shipments of rubber and other produce. The British Consulate General at New York had promised to do all in its power to facilitate trade between Ceylon and America.

With reference to the question of direct trading as compared with purchases for America through London, Mr. Crosbie-Roles remarks that the increased consumption of plantation rubber is what all planters desire, and that it will soon be demonstrated whether London can maintain its position as the chief medium between the East and West.

With regard to the American consumption of rubber, the commissioner expresses the opinion that America will want all Ceylon can supply; adding that there would be a great improvement in evenness of quality as the trees matured, and as the output of the individual plants became larger manufacturers would also better understand plantation rubber.

Many other features of the exposition and conference are likewise dealt with in this interesting report.

PLANTERS' ASSOCIATION OF CEYLON.

RUBBER occupied a leading position among the subjects dealt with at the recent annual meeting of the Planters' Association of Ceylon, when the fifty-ninth yearly report was presented.

During the past season new clearings had not been extensive; operations of this character having been chiefly limited to clearing and planting by the small native land owners. Owing to the S. W. monsoon having been abnormally heavy, tapping was carried on with difficulty in certain districts, with a consequent loss of crop.

While pricking is still in vogue in some cases, tapping is principally restricted to paring. The importance is emphasized of only cutting bark, which is completely renewed. Differences of opinion have prevailed as to thinning out; there being some advocates of a maximum number of a hundred trees per acre, while others claim that 150 or even 200 trees to the acre can be grown if kept in a high state of cultivation.

With regard to preparation, a tendency is recorded towards the smoke cure; the benefits of which consist in the action of the constituents of the smoke, directly upon the proteid matter contained in the rubber latex. It is considered necessary to retain as much proteid matter as possible in the prepared rubber. The report continues:

"This question is an important one, if plantation rubber is to compete, quality for quality, with the product of the Amazon which is at present the acknowledged standard. There is undoubtedly room for a large amount of research work in this connection, together with the invention of machinery and appliances to carry it out economically and on practical lines."

Total shipments of Ceylon rubber had been: 1909—1,372,416 pounds; 1910—3,298,652 pounds; 1911—7,154,658 pounds; 1912—15,001,075 pounds.

Reference was made in the report to the benefits Ceylon might anticipate from participation in the recent New York exposition.

In addressing the meeting, Mr. G. G. Bliss, the retiring chairman, moved the adoption of the report and referred to the services rendered planting interests by Sir Henry McCallum, the retiring governor, particularly through the creation of an Agricultural Department. He likewise alluded to the benefits the planting community would receive from the appointment of Mr. R. N. Lyne, as head of that department.

Among other subjects, the question of motor transport was discussed; a committee being appointed to deal with the matter, in its relation to Ceylon planting interests.

INCREASED YIELD OF LUMUT ESTATES.

At the recent annual general meeting of this company, it was stated that the original estimate of 60,000 pounds of rubber for the year 1912 had been more than doubled in the actual yield, which amounted to 139,000 pounds. The estimate for the current year is about 250,000 pounds.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED MARCH 4, 1913.

NO. 1,054,679. Demountable rim for resilient wheels. S. A. Currin, Bristol, England.
1,054,692. Automobile wheel. G. A. Imhoff, Carrington, N. D.
1,054,696. Fountain-mop. I. L. Lewis, Syracuse, N. Y.
1,054,762. Automobile pump. R. A. Goeth, R. B. Rodgers and J. A. Dittmar, San Antonio, Tex.
1,054,802. Instrument used for diagnostic purposes in obstetrical practice. Harry Spiro, San Francisco, Cal.
1,054,820. Tire with detachable tread. J. A. Bowden, Los Angeles, Cal.
1,054,842. Hose-coupling. A. Heimerman, Syracuse, N. Y.
1,054,863. Gasket. C. S. Parker, London, Ontario, Canada.
1,054,935. Governing mechanism for elastic-fluid turbines. M. M. Pearson, assignor to General Electric Co.—both of Schenectady, N. Y.
1,054,980. Tire attachment. R. L. Morgan, Worcester, Mass.
1,055,029. Vehicle-wheel. G. L. and H. C. Garrett, Richmond, Indiana.
1,055,111. Crutch tip. W. R. Wilcox, Ypsilanti, Mich.
1,055,118. Elastic supporter. A. V. Ziegler, Los Angeles, Cal.
1,055,283. Spring-hub wheel. E. Kreh, Mare Island, Cal.

Design.

43,673. Golf-ball. A. Johnston, Edinburgh, Scotland.

ISSUED MARCH 11, 1913.

1,055,326. Drilling-cable. T. Gore, New York.
1,055,333. Resilient wheel. E. J. Kreis, Mendota, Ill.
1,055,372. Tire-armor. A. Turnbull, Glasgow, Scotland.
1,055,404. Saturating machine. F. W. Kremer, Rutherford, N. J.
1,055,430. Machine for treating coated fabrics. A. Thoma, Cambridge, Mass., assignor to Clifton Mfg. Co., Jersey City, N. J.
1,055,444. Pneumatic slack-adjuster. C. P. Cass, Maplewood, Mo., assignor to The Westinghouse Air Brake Co., Pittsburgh, Pa.
1,055,472. Tire. M. L. Keagy, Canton, Ohio.
1,055,477. Hose-coupling. E. J. Lombard and O. L. Krogstad, Hudson, Wis.
1,055,496. Vehicle wheel-rim. E. C. Shaw, assignor to The United Rim Co.—both of Akron, Ohio.
1,055,507. Pen. C. F. Backmyer, Chicago, Ill.
1,055,573. Tire. H. C. Tripp, Auburn, N. Y.
1,055,696. Wheel-rim. F. R. Barker, assignor to J. C. Lewis.—both of Boston, Mass.
1,055,709. Automobile-wheel. W. W. Cheeseman, Cincinnati, Ohio.
1,055,750. Resilient wheel. R. J. Hughes, Houston, Tex.
1,055,774. Pneumatic tire casing. N. W. McCleod, assignor to American Tire Co.—both of St. Louis, Mo.
1,055,895. Resilient wheel. W. J. Faber, Oneida, N. Y.
1,055,946. Attachment for fire nozzles. C. Scheer, Silverton, Col.

Design.

42,701. Vehicle-tire. H. J. Richards, assignor to The L. & M. Rubber Co.—both of Carrollton, Ohio.

Trade Marks.

56,372. Condensite Co. of America, Glen Ridge, N. J. The word *Condensite.* For solid plastic compounds, etc.
58,948. Weissfeld Bros., New York. Illustration of a globe map. Rubber aprons, etc.

ISSUED MARCH 18, 1913.

1,056,010. Plastic packing. F. A. Dailey, St. Paul, Minn.
1,056,013. Tire-vulcanizer. C. I. Dodson, Pittsburgh, Pa.
1,056,033. Pneumatic cleaner. J. Kubosch, Milwaukee, Wis.
1,056,082. Anti-skid device for wheels. F. Young, Newark, N. J.
1,056,109. Vehicle-wheel. W. B. McFadden, Syracuse, N. Y.
1,056,113. Feeding-bottle. E. Watkin, Morgan, Wyomissing, Pa.
1,056,136. Demountable rim. A. Denis, Springfield, Mass.
1,056,167. Cushion-tired wheel. N. Gratz, Boise, Idaho.
1,056,184. Hose-coupling lock. F. T. Kitchen, West New Brighton, N. Y., assignor to Gold Car Heating & Lighting Co., New York.
1,056,188. Hose clamp. Sidney J. Linton, Groveland, N. Y.
1,056,208. Hose rack. C. Nuhring, Cincinnati, Ohio.
1,056,278. Vehicle wheel. T. B., K. E., C. T. and H. W. Jeffery, Kenosha, Wis.
1,056,390. Aeroplane. P. Anderson, Freeport, and Aage Nielsen, New York, assignors to Anderson-Nielsen Airship Co., New York.
1,056,506. Air hose coupling and uncoupling tool. C. L. Courson, Pitcairn, Pa.
1,056,521. Spring vehicle wheel. W. H. Fahrney, Chicago, Ill.
1,056,539. Fountain pen. G. W. Heath, Newark, N. J.
1,056,554. Resilient wheel. J. Kohler, Chicago, Ill.
1,056,591. Vehicle wheel. W. E. Schilling, Kansas City, Mo.
1,056,597. Cushion wheel. W. D. Simpson, Columbia, S. C.
1,056,617. Bicycle pump. E. B. Wright, St. Helena, Cal.
1,056,642. Anti-slipping device for vehicle wheels. W. P. Deonier, Harrah, Okla.
1,054,664. Automobile wheel. G. L. Griffith, Blockton, Iowa.
1,056,726. Tube for automobiles, bicycles and the like. E. J. Andrieu, Roubaix, France.

Trade Marks.

62,087. Gold Medal Water-Proofing Co., Oakland, Cal. The word *Walrus.* For water proof coats.
63,876. Frank Duttenhofer, Cincinnati, Ohio. The words *Cincinnati Gasket & Packing Co.* in circle. Metallic, gum and other gaskets, etc.

ISSUED MARCH 25, 1913.

1,056,828. Ventilating cushion for boots and the like. W. B. Price, New York, assignor to Sponge Rubber Inner Heel Co., New York.
1,056,844. Aeroplane. J. T. Simpson, Newark, N. J.
1,056,976. Vehicle tire. B. H. Devine, Utica, N. Y.
1,056,977. Tire. B. H. Devine, Utica, N. Y.
1,056,988. Respirator. S. W. Greene, East Greenwich, R. I.
1,056,994. Vehicle wheel. V. J. Hultquist, Bellevue, Pa.
1,057,002. Elastic fluid turbine. T. J. Loftus, Castella, Cal.
1,057,083. Vehicle tire. M. C. Overman, New York.
1,057,108. Overshoe holder. E. J. Akins, Moundsville, W. Va.
1,057,164. Tire. J. H. Messenger, London, England.
1,057,232. Tire. J. R. Gammeter, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
1,057,333. Method of attaching rubber to metals. L. Daft, Rutherford, N. J., assignor to Electro-Chemical Rubber & Mfg. Co., New Jersey.
1,057,388. Emergency automobile tire. F. L. Bigsby, Kirksville, Mo.
1,057,396. Hose supporter stud. R. Gorton, Newton, Mass.

Design.

43,738. Hoof pad. J. H. Curley, Brockton, Mass.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MARCH 5, 1913.]

24,899 (1911). Rubber steps for vehicles. A. Upton, 21 Albert Road, Peckham, London.
24,915 (1911). Treating bunions. F. J. Scholl, 5 Manchester avenue, Aldersgate street, London.
25,020 (1911). Inflation of motor vehicle tires. R. A. Rogers, St. Cleer, Wilton Park Road, Shanklin, Isle of Wight.
25,066 (1911). Veil fastenings. G. Barnett, 36 Dunsmure Road, Stamford Hill, London.
25,102 (1911). Tread bands. W. Long, 48 The Avenue, Southampton.
25,129 (1911). Detachable linings for mackintoshes. A. E. Tarbuck, Ness Holt, Ainsdale, and G. B. Carr, 537 Land street, Southport—both in Lancashire.
25,134 (1911). Medical compresses. R. D. Johnson, Bagshot House, and E. S. and H. B. Hudson, Pengelly—both in Bush Hill Park, Enfield, Middlesex.
25,201 (1911). Jointing rubber articles. H. Gare, 230 Bristol Road, Edgbaston, Birmingham.
25,213 (1911). Wheel for dealing cards. H. Hurm, 14 Rue Jean Jacques Rousseau, Paris.
25,248 (1911). Spring wheels with pneumatic cushions. A. Roe, 5 Waterloo Square, Anna Valley, Andover, Hampshire.
25,256 (1911). Coagulation of rubber latex. A. C. Davidson, Sirocco Engineering Works, Belfast, Ireland.
25,286 (1911). Plastic compositions. R. H. Pybus, 74 Kedleston Road, and E. M. Pybus, The Old Lodge, Markeaton street—both in Derby.
25,329 (1911). Jackets and covers for wheel tires. E. Dankmann, 10 Catharinen Canal, St. Petersburg.
25,333 (1911). Anti-skid device on twin tires. A. Bosshard, Arbon, Switzerland.
25,360 (1911). Tire attachments to rims. L. Scaglia, 4 Rue Neuve, Nyon, Switzerland.
25,449 (1911). Plastic compositions. W. Plinatus, 8 Xantenerstrasse, Berlin.

*25,453 (1911). Pneumatic cushions for wheels. A. J. Wolff, Hartford, Conn., U. S. A.

[Abstracted in The Illustrated Official Journal, March 12, 1913.]

25,541 (1911). Repairing patches for boots. Deutsche Gummiwaren-Industrie, O. Schlappig & Co., and O. Schlappig, 10 Lorettostrasse, Dusseldorf, Germany.

25,637 (1911). Making pneumatic tires, etc. F. H. Rushton, 158 Grimsby Road, New Cleethorpes, Lincolnshire.

25,747 (1911). Detachable rims. E. F. and G. W. Goodyear Reliance Works, Dudley, Worcestershire.

25,782 (1911). Pneumatic cushions in wheels. J. Algie, 6 Algonquin avenue, Toronto, Canada.

25,805 (1911). India-rubber substitutes. W. Plinatus, 39a Kornbergstrasse, Stuttgart, Germany.

25,845 (1911). Mud guards for wheels. C. Stride, Summersdale, Chichester.

25,872 (1911). Pneumatic cushions in wheels. C. Stride, Summersdale, Chichester.

25,882 (1911). Rubber and canvas tubes. W. E. Carmont, 55 Queen's Road, Richmond, Surrey.

25,883 (1911). Rubber insertions for tires. W. E. Carmont, 55 Queen's Road, Richmond, Surrey.

25,931 (1911). Detection of punctures. G. H. E. Cooke, 17 St. Edmunds Terrace, Regents Park, London.

25,942 (1911). Making cycle rims. G. W. Dawes, Monastery Bldgs., Upper Priory, Birmingham.

25,993 (1911). Fabric foundations for tire covers. H. Theis, 13½ Viktoriastrasse, Cassel, Germany.

26,016 (1911). Making pneumatic tires. P. A. Newton, 6 Breams Bldgs., Chancery Lane, London.

26,049 (1911). Air tubes and chambers. St. Helens Cable and Rubber Co., Arpley, and G. W. Price, 182 Wilderspool Causeway—both in Warrington, Lancashire.

26,121 (1911). Vehicle wheels. G. Hookham, and J. A. Harrison, 7 New Bartholomew street, Birmingham.

[Abstracted in The Illustrated Official Journal, March 19, 1913.]

26,285 (1911). Pneumatic treads. D. Marshall, 30 Winchcombe street, Cheltenham.

26,424 (1911). Boot protectors. R. Stelling, 17 North street, Scarborough.

26,479 (1911). Horseshoes. R. G. W. Pockett, Daisybank, Leckhampton, Gloucestershire.

*26,591 (1911). Detachable rims. B. C. Ball, 482 Harrison street, and L. E. Younie, 71 Seventh street—both in Portland, Oregon, U. S. A.

*26,612 (1911). Compound fabric for pneumatic tires. L. A. Subers, 1722 E. 85th street, Cleveland, Ohio, U. S. A.

26,622 (1911). Waterproof fabrics. G. M. Anderson, and Anderson, Anderson and Anderson, St. Paul's Churchyard, London.

26,623 (1911). Compound waterproof fabrics. G. N. Anderson, and Anderson, Anderson and Anderson, St. Paul's Churchyard, London.

26,631 (1911). Syringes. J. R. Bullen, Parnell, Auckland, New Zealand.

*26,647 (1911). Valves. M. Levrant, 181 Greenwich street, New York, U. S. A.

26,681 (1911). Clips for tires. W. C. Sneyd, 145a Northenden Road, Sale, Cheshire, and D. V. Jones, 5 Cumberland street, Deansgate, Manchester.

26,685 (1911). Inflating vehicle tires while in motion. R. E. Darnley, Langwood, Huddersfield.

26,698 (1911). Rubber studs for tires. G. W. Beldham, Boston Lodge, Ealing, London.

26,740 (1911). Studs for tires. M. Lorme, 9 Bread street Hill, London.

26,753 (1911). Grooves in tire covers. A. Latrille and L. Charmantier, 77 Rue Michelet, Paris.

26,837 (1911). Belts and bands. C. H. Gray, care of India Rubber, Gutta Percha, etc., Works Co., Silvertown, London.

26,838 (1911). Belts and belt fastenings. C. H. Gray, care of India Rubber, Gutta Percha, etc., Works Co., Silvertown, London.

26,840 (1911). Air tubes or chambers. J. A. Meunier, 43 Rue Laffitte, Paris.

26,843 (1911). Vacuum cleaning apparatus. J. Bamberger, 7 Fredriciastrasse, Charlottenburg, Germany.

[Abstracted in The Illustrated Official Journal, March 27, 1913.]

26,900 (1911). Vocal instruments. R. Beel, 17 Raeburn street, Acre Lane, Brixton, London.

26,978 (1911). Spring wheel with solid tire. S. A. Horstmann, Monmouth Place, Bath, and C. A. Lister, The Priory, Dursley, Gloucestershire.

26,995 (1911). Mud guards. W. R. Birt, West Lodge, Western Road, Wylde Green, near Birmingham.

27,004 (1911). Non-skid device for pneumatic tires. L. I. Perry, 155 Haverstock Hill, Hampstead, London.

27,081 (1911). Spring wheels with pneumatic cushions. H. Payton, "Hedingham," Wellington Road, Edgbaston, and J. Davies, 36 Arthur Road, Erdington—both in Birmingham.

27,095 (1911). Siphon bottles. J. R. Trigwell, 8 Mayall Road, Brixton, London.

27,245 (1911). Molds for vulcanizing tires. Soc. Generake des Etablissements Bergougnan, Clermont-Ferrand, Puy de Dome, France.

*27,289 (1911). Capsuling bottles. A. L. Weissenthanner, Bayonne, N. J., U. S. A.

*27,299 (1911). Wheel tires. A. H. Shoemaker, 1025 E. 33rd street, Portland, Oregon, U. S. A.

27,319 (1911). Removal of tire covers. C. Ogden, 53 Trafford Road, Salford, Lancashire.

27,335 (1911). Non-skid devices. W. C. Gobbett, 19 Cecil Mansions, Marius Road, Balham, London.

27,424 (1911). Treating rubber latex. G. W. Sutton, Crofton Cottage, Stevenage, Hertfordshire.

27,478 (1911). Supporting and protecting cocks' combs. F. P. Dinger, Wolfersdorf, Sachsen-Weimar, Germany.

27,506 (1911). Horseshoe tires. A. Folliet-Mieusset, 17 Rue des Chartreux, Brussels, and R. van de Casteele, 1 Rue du Moulin, Ledeberg lez Gand, Belgium.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

447,619 (August 24, 1912). F. W. Smith. Improvements in vehicle tires.

447,730 (August 29). C. R. Terrell. Repair stopper for tire punctures.

447,834 (August 31). M. G. C. Dodwell. Elastic tire for vehicles.

447,917 (September 3). E. Bessonnet. Mud guards for wheels of automobiles and other vehicles.

447,962 (September 5). J. Theroulde and E. de Huertas. Process for replacing treads of pneumatic tires.

447,904 (September 27). Société Thomas, Bazin, Casanova & Co. Process for manufacture of artificial rubber.

448,005 (September 5). A. Bloch and F. Arena. Elastic tires.

448,108 (November 17, 1911). G. Reynaud. Process of rubber manufacture.

448,035 (November 16). E. Vincent. Solid rubber tires for vehicles.

448,068 (September 7, 1912). A. Fraissier Fils. Mud guard for automobiles.

448,139 (September 18). M. M. Weiss. Elastic tire.

448,169 (September 11). M. Baudon & R. Baudon. Elastic vehicle wheel.

448,170 (September 11). J. Florin. Mud guards for vehicle wheels.

448,273 (September 13). J. Savoie. Tire cover for wheels.

448,419 (November 25, 1911). Desmettre. Improvement in pneumatic tires.

448,433 (September 18, 1912). L. Chapirot. Circular revolving mud guard for vehicle wheels.

448,438 (September 18). S. Laville. Cover for pneumatic tires.

448,456 (September 19). J. J. Butler. Pneumatic tire.

448,520 (September 19). Diamond Rubber Co. Process for preparation of substance analogous to rubber.

448,573 (November 29, 1911). R. Legrand. Elastic tire and method of manufacture.

448,627 (September 24, 1912). Ilanovija and Milkorie. Armed anti-skid cover.

448,644 (September 24). E. Licot. Articulated elastic mud guard, easily mounted and dismounted.

448,663 (December 2, 1911). G. Reynaud. Process of rubber manufacture.

448,711 (August 5, 1912). H. Dreyfus. Process for the manufacture of synthetic rubbers and of their intermediate products.

448,744 (September 18). V. Gandon. Machine for manufacture of pneumatic tires.

448,796 (September 27). G. Dezavis. Mud guard for vehicles with rubber wheels.

448,860 (September 30). L. Demuth. Mud guards for autobusses and other vehicles.

448,968 (July 6). H. P. Plicht. Tire for automobiles.

448,980 (September 18). C. Friederich. Elastic tire for vehicles of all kinds.

[Note.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

258,450 (May 12, 1912). Appliance for tapping the latex of rubber or other trees. George M. von Hassel, Königgrätzerstrasse 87, Berlin.

258,460 (March 3, 1912). Process for manufacture of rubber tires and covers with radial screw springs. A. E. Wale, Coleshill, England.

258,532 (November 28, 1911). Tire fastenings. Otto Eisele, Möhringen, near Stuttgart.

258,899 (April 7, 1911). Coagulation and disinfection of rubber latex. Martin Hohl, Colombo, Ceylon.

258,872 (June 25, 1912). Manufacture of soles from rubber and leather. Max Singenwald, Elisenstrasse 57, Leipzig, and August Schreiber, Leipzig, Sellerhausen.

259,124 (March 10, 1911). Rubber washing machine. Max Frankel & Runge, Spandau.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

252,849 (1913). Molding core for the manufacture of hollow rubber objects; more specially of air chambers for pneumatic tires. H. Zeimer, Kaiserstrasse 125, Carlsruhe, Germany.

252,531 (1913). Process of manufacture of rubber substitutes for industrial uses. O. Rohm, Weisterstadterstrasse, Darmstadt, Germany.

252,749 (1913). Process for manufacture of elastic substances possessing the properties of rubber and products resulting therefrom. W. E. Reeser, Amsteldyk 46, Amsterdam, Holland.

252,906 (1913). Manufacture by means of ethers and cellulose, of rubbers and other ingredients. L. Collardon, Glen Lyn, Greenfort avenue, Hanwell, England.

252,623 (1913). Process of preparation of a substance resembling rubber, and product resulting therefrom. Farbenfabriken vorm. F. Bayer & Co., Leverkusen, Germany.

252,907 (1913). Compositions with a foundation of rubber and their manufacture. L. Collardon, Glen Lyn, Greenfort avenue, Hanwell, England.

Report of the Crude Rubber Market.

THE most prominent feature of the London market during April has been the steady fall in the price of fine Pará from 3*s.* 10¾*d.*, at which it stood on March 26, to 3*s.* 3¾*d.* on April 15; the lowest point reached during the month. An improvement then set in which brought the price on the 21st to 3*s.* 6*d.*; since which time it has receded to 3*s.* 4½*d.*, on the 26th at time of writing; the net reduction for the month being 6¼*d.*

Manufacturers seem to be still holding aloof from operations exceeding actual requirements. In many cases the opinion is entertained that supplies can be replenished on a lower basis of values, caution in purchasing being thus the order of the day.

In harmony with the movement of fine Pará, plantation rubber dropped almost continuously during the month; the prices for first latex giving way from 3*s.* 10¼*d.* on March 26, to 3*s.* 2½*d.* on April 26. The two standards were quoted:

	Pará.	*Plantation.*
March 26	3*s.* 10¾*d.*	3*s.* 10¼*d.*
April 26	3*s.* 4½*d.*	3*s.* 2½*d.*

Following the Easter holidays came the plantation auction of April 1, when 890 tons were offered. As compared with the previous sale of March 18, a reduction of 6*d.* per pound was established by the close of the third day's sale. The opinion was expressed that the fall has come very inopportunely and will affect all branches of the trade.

Statistics of the London auctions up to and including the first April sale showed up to that point total offerings in 1913 of 6,129 tons, as compared with 3,891 tons for the corresponding period of 1912. Average prices realized at the seven series covered by the statistics for 1913 showed a decline during the three months from 4*s.* 5½*d.* to 3*s.* 5½*d.*

Notwithstanding the increase of 2,238 tons in quantity offered, London stocks of plantation rubber on March 31 represented in 1913 2,790 tons, as compared with 1,849 tons a year earlier; the augmentation in quantity being thus only 941 tons. Another healthy sign is the fact that the London deliveries from January 1 to March 31 were this year 6,980 tons, against 4,027 last year during the same period.

The second April sale on the 15th included 1,013 tons, which sold at an average of 6*d.* to 7*d.* below the rates of the previous sale. As to the future course of the market, it was considered that in view of the large quantities still coming forward, the prospect of any rise in values depends upon a more active demand from the United States.

The Hamburg market has been very quiet during the month, but prices have not been much influenced by the London plantation auctions.

At the Amsterdam sale of April 11, 82 tons were offered, of which 69 tons sold. The quantity placed on sale included 56 tons *Hevea*, 21 tons *Ficus* and 5 tons of other descriptions. *Hevea* realized 17 per cent, and *Ficus* 20 per cent. below valuations.

A sale was announced for April 23 at Antwerp of 453 tons Congo and other sorts and 77 tons plantation.

New York Quotations.

Following are the quotations at New York for Pará grades, one year ago, one month ago, April 29—the current dates:

Pará.	May 1,'12.	Apr. 1,'13.	Apr. 29,'13.
Islands, fine new	110@111	89 @ 90	80@ 81
Islands, fine, old	112@113	.....	.....
Upriver, fine, new	112@113	92 @ 93	82@ 83
Upriver, fine, old	115@116	.....	.....
Islands, coarse, new	63@ 64	43 @ 44	39@ 40
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	93@ 94	66 @ 67	55@ 56
Upriver, coarse, old	.....	.....	.....
Cametá	67@ 68	48 @ 49	42@ 43
Caucho (Peruvian) ball	93@ 94	70 @ 71	57@ 58
Caucho (Peruvian) sheet	.....	.....	.....
Plantation Ceylons.			
Fine smoked sheet	126@127	97 @ ..	81@ 82
Fine pale crepe	125@126	95 @ ..	80@ ..
Fine sheets and biscuits	119@120	92 @ ..	80@ ..
Centrals.			
Esmeralda, sausage	92@ 93	68 @ ..	56@ ..
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	91@ 92	.....	55@ ..
Panama	.....	.....	.....
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	91@ 92	.....	55@ 56
Mexican, slab	.....	.....	.....
Mangabeira, sheet	.....	.....	.....
Guayule	.....	64 @ ..	.....
Balata, sheet	85@ 86	.....	.....
Balata, block	.....	.....	.....
African.			
Lopori, ball, prime	Africans were neglected owing to low prices ruling for Pará.	.....	.....
Lopori, strip, prime		.....	.....
Aruwimi		80 @ ..	65@ ..
Upper Congo, ball red		90 @ ..	75@ ..
Ikelemba		.....	.....
Sierra Leone, 1st quality		.....	.....
Massai, red		88 @ ..	74@ ..
Soudan Niggers		.....	.....
Cameroon, ball		63½@ ..	60@ ..
Benguela		63 @ ..	.....
Madagascar, pinky		.....	.....
Accra, flake		25 @ ..	.....
East Indian.			
Assam	.....	83 @ ..	.....
Pontianak	.....	8 @ ..	.....
Borneo	.....	.....	.....

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During April the condition of the money market as regards commercial paper has improved somewhat, there being a better demand, especially the last half of the month, but rates have held high, the best rubber names ruling at 5½@6 per cent., and those not so well known 6@6½ per cent."

New York Prices for March (New Rubber).

	1913.	1912.	1911.
Upriver, fine	$0.88@ .96	$1.11@1.23	$1.45@1.66
Upriver, coarse	.64@ .72	.93@ .99	1.08@1.18
Islands, fine	.85@ .92	1.08@1.18	1.30@1.56
Islands, coarse	.41@ .47	.63@ .67	.62@ .90
Cametá	.43@ .48	.66@ .72	.79@ .92

Rubber Scrap Prices.

Late New York Quotations.—Prices paid by consumers for carload lots, per pound—are practically unchanged.

	April 29, '13.
Old rubber boots and shoes—domestic	9⅝@ 9¾
Old rubber boots and shoes—foreign	9½@ 9⅝
Pneumatic bicycle tires	6¼@ 6⅜
Automobile tires	10 @10⅛
Solid rubber wagon and carriage tires	9¼@ 9½
White trimmed rubber	11 @11½
Heavy black rubber	4¾@ 5
Air brake hose	6 @ 6½
Garden hose	1⅛@ 1½
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾

STATISTICS PARA INDIA RUBBER (IN TONS).

(Including Caucho.)

STATISTICS FOR THE MONTH OF MARCH.

	Pará.	Caucho.	1913. Tons.		1912. Tons.	1911. Tons.	1910. Tons.
Receipts at Pará	2,900	1,360	= 4,260	against	4,400	3,530	5,210
Shipments to Liverpool	1,410	860	= 2,270	"	1,830	2,150	2,780
Shipments to Continental Ports	590	330	= 920	"	380	320	620
Shipments to America	1,500	300	= 1,800	"	2,680	690	1,280
American Imports	1,370	200	= 1,570	"	2,570	1,100	3,200
American Deliveries	1,770	130	= 1,900	"	2,610	810	3,090
Liverpool Imports	1,485	593	= 2,078	"	1,940	2,191	1,681
Liverpool Deliveries	1,035	670	= 1,705	"	2,140	764	1,751
Continental Imports	440	250	= 690	"	390	350	380
Continental Deliveries	420	240	= 660	"	380	320	380

VISIBLE SUPPLY—1st April, 1913.

	1913. Pará.	1913. Caucho.	1912.	1911.	1910.
Stock in England, Pará, 1st hands	1,021	.....	1,390	689	292
Pará, 2nd hands	129	.....		3,029	255
Caucho	.....	403	290	719	202
Stock in Pará, 1st hands	530	110	260	960	90
2nd hands	270	150	450	220	950
Syndicate	810	.....	2,240	2,870	.....
Stock in America	310	180	90	450	260
Stock on Continent	30	20	70	130	20
Afloat—Europe	1,270	880	1,350	1,400	3,040
Afloat—America	800	200	840	230	170
	5,170	1,943			
Total Visible Supply, including Caucho.	7,113		6,980	10,697	5,279

CROP STATISTICS—30th June, 1912, 31st March, 1913.

	Pará.	Caucho.	1912/13.	1911/12.	1910/11.	1909/10.
Pará Receipts			1912/13	27,100	6,330	
			1911/12	25,670	4,440	
			33,430	30,110	29,230	32,180
Pará Shipments to Europe	14,110	4,630	18,740	15,530	15,160	15,580
Pará Shipments to America	13,880	2,100	15,980	16,150	10,530	15,820
England Landings, net			12,862	11,057	11,152	10,702
England Deliveries, net			12,679	14,447	9,485	11,074
America Landings, net			15,310	17,745	10,770	16,010
America Deliveries, net			14,990	17,555	10,460	16,540
Continental Imports, net			3,680	2,640	2,500	1,980
Continental Deliveries, net			3,725	2,680	2,420	1,990

POSITION—1st April, 1913.

Decrease in Receipts during March, 1913, against March, 1912	140
Increase in Receipts—Crop, July/March, 1912/13, against 1911/12	3,320
Decrease in Deliveries—Crop, July/March, 1912/13, England and Continent, against 1911/12	723
Decrease in Deliveries—Crop, July/March, 1912/13, America, against 1911/12	2,565
Increase in Visible Supply Pará Grades, against 1st April last year	133
Decrease in Stock, England, March 31st, 1913, against March 31st, 1912	127

WILLIAM WRIGHT & CO., Brokers.

Liverpool, 2nd April, 1913.

During the month 90 tons Pará have been shipped from Europe to America.

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA, 1912.

[In Shillings and Pence Per Pound.]

July 5, 1912	4/9	November 29	4/5½
July 12	4/10	December 6	4/7
July 19	4/10	December 13	4/7
July 26	4/11¾	December 20	4/6½
August 2	4/11	December 27	4/7½
August 9	5/0½	January 3, 1913	4/7¼
August 16	5/0½	January 10	4/6½
August 23	5/2	January 17	4/6½
August 30	5/1¾	January 24	4/5¾
September 6	4/11½	January 31	4/4
September 13	4/9½	February 7	4/2¾
September 20	4/8	February 14	4/3
September 27	4/7	February 21	4/0½
October 4	4/7	February 28	4/0½
October 11	4/7	March 7	3/10¾
October 18	4/6½	March 14	3/11¼
October 25	4/6	March 20	3/11
November 1	4/4½	March 28	3/9½
November 8	4/5	April 4	3/6¼
November 15	4/5¼	April 11	3/4½
November 22	4/5¼	April 18	3/4¾

Liverpool.

William Wright & Co. report [April 1, 1913]:

Fine Para.—The market has been dull and an easy tendency has prevailed; during the past few days a sharp decline has been experienced, this doubtless owing to strikes and a consequent absence of demand in America, coupled with dear money and ample supplies in Brazil. Closing value of Up River, 3*s.* 8*d.* [89 cents] (a decline of 4*d.* per pound during the month), with indications of still lower prices, though a reaction may come at any time. Receipts this month are 4,265 tons, including 1,365 tons Caucho, against 4,980 tons last month, and 4,400 tons last year, bringing the crop up to date to 33,435 tons, against 30,110 tons last season, showing an increase of 1,430 tons Rubber and 1,895 tons Caucho.

Amsterdam.

Joosten & Janssen report [April 11]:

The result of today's sale must be considered satisfactory in view of the dullness pervading the market generally.

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

March 24.—By the steamer *Christopher,* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	65,300	.....	43,000	.....=	108,300
General Rubber Co.	400	.....	27,100	.....=	27,500
Meyer & Brown	36,300	4,100	16,100	.....=	56,500
Meyer & Brown	32,900	13,500	60,600	54,000=	161,000
Henderson & Korn	4,300	.....	1,300	.....=	5,600
Astlett & Co.	28,100	19,600	37,400	2,400=	87,500
Ed. Maurer	36,000	6,600	3,200	1,100=	46,900
Hagemeyer & Brunn	3,600	1,800	14,500	600=	20,500
G. Amsinck & Co.	9,300	1,300	3,500	1,900=	16,000
Lazard Freres	.....	.....	2,800	.....=	2,800
	216,200	46,900	209,500	60,000=	532,600
MANAOS.					
Arnold & Zeiss	45,200	.....	7,800	10,200=	63,200
General Rubber Co.	.....	.....	.....	4,600=	4,600
Ed. Maurer	2,900	700	1,500	200=	5,300
American Export Co.	11,400	.....	.....	.....=	11,400
Henderson & Korn	15,800	33,000	500	600=	49,900
Robinson & Co.	16,200	.....	37,100	.....=	53,300
	91,500	33,700	46,900	15,600=	187,700
Total	307,700	80,600	256,400	75,600=	720,300

April 4.—By the steamer *Denis,* from Pará and Manáos:

Arnold & Zeiss	130,700	.....	99,700	6,200=	236,600
General Rubber Co.	41,200	5,200	30,100	1,300=	77,800
Meyer & Brown	35,000	5,200	2,200	110,900=	153,300
Meyer & Brown	25,700	.....	16,500	.....=	42,200
Henderson & Korn	12,300	.....	32,300	30,200=	74,800
Astlett & Co.	1,100	2,500	4,600	.....=	8,200
Ed. Maurer	.....	17,200	39,900	3,000=	60,100
Ed. Maurer	.....	.....	10,400	1,100=	11,500
G. Amsinck & Co.	.....	.....	.....	19,000=	19,000
Hagemeyer & Brunn	.....	1,800	6,600	.....=	8,400
	246,000	31,900	242,300	171,700=	691,900
MANAOS.					
Arnold & Zeiss	56,400	.....	20,200	900=	77,500
General Rubber Co.	56,700	.....	11,300	.....=	68,000
Ed. Maurer	21,500	1,700	1,700	29,100=	54,000
Robinson & Co.	86,500	.....	16,000	1,200=	103,700
Henderson & Korn	6,000	700	19,000	15,700=	41,400
American Export Co.	11,400	.....	.....	.....=	11,400
	238,500	2,400	68,200	46,900=	356,000
Total	484,500	34,300	310,500	218,600=	1,047,900

April 14.—By the steamer *Dominie,* from Pará and Manáos:

Arnold & Zeiss	79,300	10,900	100,300	24,100=	214,600
General Rubber Co.	69,800	8,300	24,700	4,800=	107,600
Meyer & Brown	24,800	4,500	10,900	52,100=	92,300
Meyer & Brown	21,700	.....	4,500	91,100=	117,300
Meyer & Brown	35,400	3,400	900	.....=	39,700
Ed. Maurer	9,500	28,300	1,700	.....=	39,500
Henderson & Korn	.....	.....	32,300	4,500=	36,800
Astlett & Co.	.....	9,500	.....	.....=	9,500
De Lagotellerie & Co.	18,900	4,300	19,800	8,400=	51,400
G. Amsinck & Co.	10,700	400	52,800	.....=	63,900
G. Amsinck & Co.	4,200	600	2,500	3,400=	10,700
	274,300	70,200	250,400	188,400=	783,300
MANAOS.					
Arnold & Zeiss	54,500	11,100	22,700	.....=	88,300
General Rubber Co.	16,200	4,500	8,700	2,300=	31,700
Meyer & Brown	.....	3,400	.....	.....=	3,400
Ed. Maurer	6,000	7,100	1,000	3,700=	17,800
Henderson & Korn	28,000	6,000	.....	.....=	34,000
Robinson & Co.	12,900	.....	1,800	.....=	14,700
American Export Co.	32,500	.....	.....	.....=	32,500
	150,100	32,100	34,200	6,000=	222,400
Total	424,400	102,300	284,600	194,400=	1,005,700

PARA RUBBER VIA EUROPE.

POUNDS.

MARCH 24. By the *Carmania*=Liverpool:

N. Y. Commercial Co. (Fine)	80,000	
Robinson & Co. (Fine)	9,000	
James T. Johnstone (Fine)	7,000	
Raw Products Co. (Fine)	30,000	
Raw Products Co. (Coarse)	13,500	139,500

MARCH 31.—By the *Celtic*=Liverpool:

N. Y. Commercial Co. (Fine)		47,000

MARCH 31.—By the *Potricia*=Hamburg:

Various (Fine)		18,000

APRIL 2.—By the *President Grant*=Hamburg:

Various (Fine)		2,500

APRIL 3.—By the *Oceanic*=Southampton:

Various (Coarse)		15,500

APRIL 19.—By the *Adriatic*=Southampton:

Robinson & Co. (Fine)	11,200	
Raw Products Co. (Fine)	38,000	
Raw Products Co. (Coarse)	11,200	60,400

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

POUNDS.

MARCH 25.—By the *Panama*=Colon:

Pablo Calvet & Co	3,200	
Dumarest Bros. & Co	800	
Lanman & Kemp	1,700	
Charles E. Griffin	2,000	
American Trading Co	1,900	
G. Amsinck & Co	2,200	11,800

MARCH 25.—By the *Antilla*=Tampico:

N. Y. Commercial Co	*40,000	
Continental-Mexican Rubber Co.	*34,000	*74,000

MARCH 27.—By the *Clyde*=Colombia:

J. S. Sambrada & Co	3,000	
A. M. Capen's Sons	2,500	
G. Amsinck & Co	2,500	
Maitland, Coppell & Co	3,500	
Isaac Brandon & Bros	5,000	
Heilbron, Wolff & Co	1,000	17,500

MARCH 27.—By the *Prinz Sigismund*=Colombia:

G. Amsinck & Co	1,000	
Wessels, Kulenkampff & Co	800	
Heilbron, Wolff & Co	200	2,000

MARCH 27.—By the *Creole*=New Orleans:

Various		4,500

MARCH 29.—By the *Esperanza*=Mexican Ports:

N. Y. Commercial Co	3,500	
Arnold & Zeiss	2,500	
Lawrence Johnson & Co	2,000	
J. G. Mollarth	1,800	9,800

MARCH 29.—By the *Zacapa*=Colombia:

R. del Castillo	3,000	
G. Amsinck & Co	1,500	4,500

MARCH 31.—By the *Alliance*=Colon:

G. Amsinck & Co	9,500	
American Trading Co	2,800	
J. J. Julia & Co	1,500	
Broedermann & Litzrodt	1,000	
Gillespie Bros. & Co	1,200	
Meyer Hecht	1,000	
M. A. De Leon & Co	500	
Colombian Smelting & Ref. Co.	500	18,000

MARCH 31.—By the *Comus*=New Orleans:

T. N. Morgan		1,200

MARCH 31.—By the *Manderville*=Colombia:

Manhattan Rubber Mfg. Co	1,000	
T. N. Morgan	500	
Rosenthal & Sons	1,200	
A. S. Lascelles	300	3,000

MARCH 31.—By the *Patricia*=Hamburg:

Ed. Maurer		*11,200

APRIL 1.—By the *Westerwald*=Colombia:

Maitland, Coppell & Co	1,000	
Caballero & Blanco	4,500	5,500

APRIL 2.—By the *Prince Joachim*=Colombia:

F. Lapiedra	3,000	
Manhattan Rubber Mfg. Co	2,000	5,000

APRIL 3.—By the *Almironte*=Colombia:

R. del Castillo		4,500

APRIL 4.—By the *Mexico*=Mexican Ports:

Meyer & Brown	2,000	
E. Steiger & Co	10,000	
Hermann Kluge	1,200	
Willard Hawes & Co	1,000	
I. Menendez	500	
Harburger & Stack	7,000	
Various	4,500	26,200

APRIL 4.—By the *Guantanamo*=Tampico:

Arnold & Zeiss	*80,000	
Continental-Mexican Rubber Co.	*44,000	
Ed. Maurer	*40,000	
Harburger & Stack	*1,000	*165,000

APRIL 7.—By the *Santiago*=Mexican Ports:

American Trading Co	1,000	
H. Marquardt & Co	500	
J. W. Wilson & Co	500	2,000

APRIL 7.—By the *Colon*=Colon:

G. Amsinck & Co	8,500	
W. R. Grace & Co	2,000	
Wessels, Kulenkampff & Co	1,000	
R. G. Barthold & Co	1,000	
Meyer Hecht	500	13,000

APRIL 7.—By the *Santiago*=Tampico:

Mexican Crude Rubber Co.	*75,000	
Ed. Maurer	*45,000	*120,000

APRIL 7.—By *El Sud*=Galveston:

Various		*28,000

APRIL 8.—By the *Albingio*=Colombia:

Mecke & Co	1,000	
Winter, Sons & Co	2,000	3,000

APRIL 8.—By *El Occidente*=Galveston:

Various		*13,500

APRIL 9.—By the *Thames*=Colon:

Maitland, Coppell & Co	1,500	
Isaac & Samuel	4,500	6,000

APRIL 9.—By the *Prinz Eitel Frederick*=Colombia:

Wessels, Kulenkampff & Co		1,000

APRIL 9.—By the *Corrillo*=Port Simon:

Isaac Brandon & Bros	1,000	
Wessels, Kulenkampff & Co	1,000	2,000

APRIL 9.—By the *Pretoria*=Hamburg:

Adolph Hirsch & Co		22,500

APRIL 10.—By the *Antilles*=New Orleans:

Various		5,000

APRIL 12.—By the *Monterey*=Mexican Ports:

G. Amsinck & Co	6,500	
E. Steiger & Co	5,500	
J. W. Wilson & Co	2,000	
Mecke & Co	1,500	
J. Menendez & Co	1,000	
Willard Hawes & Co	1,000	17,500

APRIL 14.—By the *Tennyson*=Bahia:

J. H. Rosshach & Bros		24,000

APRIL 14.—By *El Mundo*=Galveston:

Various		*11,200

APRIL 15.—By the *Altai*=Colombia:

Winter, Sons & Co		2,000

APRIL 16.—By the *Frutero*=Colon:

Rosenthal & Sons	1,500	
A. S. Lascelles & Co	500	2,000

APRIL 16.—By *El Cid*=Galveston:

Various		*6,500

APRIL 16.—By the *Camagney*=Tampico:

Continental-Mexican Rubber Co.	*385,000	
Ed. Maurer	*45,000	*430,000

APRIL 17.—By the *Comus*=New Orleans:

Various		23,000

APRIL 17.—By the *Karl Schurz*=Colon:

J. S. Sambrada & Co	1,700	
Mecke & Co	3,000	
Lawrence Import Co	500	
Neuss Hesslein & Co	500	
M. Keith	1,500	
Camacho, Roldau & Van Sickle	1,000	8,200

APRIL 17.—By the *Advance*=Colon:

G. Amsinck & Co	6,500	
Pablo Calvet & Co	3,000	
Dumarest Bros.	1,000	
Andean Trading Co	10,500	
Piza, Nephews & Co	5,700	
F. Lapiedra	1,000	
Colombian Smelting & Ref. Wks.	300	
W. R. Grace & Co	1,500	29,500

APRIL 18.—By the *Panama*=Colon:

Ed. Maurer	4,000	
Isaac Brandon & Bros	1,000	5,000

APRIL 18.—By *El Rio*=Galveston:

Various		*130,000

APRIL 21.—By the *Antilla*=Tampico:

Arnold & Zeiss	*82,000	
Ed. Maurer	*130,000	
Central Mexican Rubber Co.	*110,000	
Mexican Crude Rubber Co.	*54,000	
C. F. Wells	*5,500	*381,500

AFRICAN.

POUNDS.

APRIL 21.—By the *Morro Castle*=Mexican Ports:

J. J. Julia & Co	2,500	
G. Amsinck & Co	4,000	
Meyer Hecht	2,000	
Lawrence Johnson	2,000	
Mecke & Co	500	11,000

APRIL 21.—By the *Antilla*=Mexico:

C. F. Wells		4,500

APRIL 22.—By the *Allemania*=Colombia:

Caballero & Blanco	2,000	
De Lima, Cortissoz & Co	500	2,500

MARCH 24.—By the *Carmania*=Liverpool:

Arnold & Zeiss	11,200	
Various	25,000	36,200

MARCH 26.—By the *Minnetonka*=London:

Meyer & Brown	3,500	
Various	15,000	18,500

MARCH 26.—By the *Emanuele Accame*=Lisbon:

Various		4,500

MARCH 27.—By the *Finland*=Antwerp:

Meyer & Brown	29,500	
Ed. Maurer	9,000	38,500

MARCH 28.—By the *New York*=Southampton:

Arnold & Zeiss		26,000

MARCH 29.—By the *Veniero*=Lisbon:

Various		5,500

MARCH 29.—By the *Cevic*=Liverpool:

James T. Johnstone		7,000

MARCH 31.—By the *Patricia*=Hamburg:

Meyer & Brown	23,700	
Ed. Maurer	33,500	
Wallace L. Gough	33,500	
Hagemeyer & Brunn	22,500	
Rubber Trading Co	7,500	
Various	36,500	157,200

APRIL 1.—By the *Laplond*=Antwerp:

Arnold & Zeiss		38,000

APRIL 1.—By the *Rochambeau*=Havre:

Meyer & Brown	69,500	
Arnold & Zeiss	18,500	
Ed. Maurer	40,000	128,000

APRIL 2.—By the *President Grant*=Hamburg:

General Rubber Co	5,000	
Ed. Maurer	26,000	
Various	12,500	43,500

APRIL 7.—By the *Fronconia*=Liverpool:

Meyer & Brown		3,500

APRIL 8.—By the *Ameriko*=Hamburg:

Meyer & Brown	13,500	
Ed. Maurer	15,500	
Various	14,000	43,000

APRIL 8.—By the *Kroonland*=Antwerp:

Meyer & Brown		33,500

APRIL 9.—By the *Pretoria*=Hamburg:

James T. Johnstone	22,500	
Ed. Maurer	12,500	
Wallace L. Gough	23,500	
Various	15,000	73,500

APRIL 11.—By the *Floride*=Havre:

Various		13,500

APRIL 12.—By the *Baltic*=Liverpool:

Meyer & Brown		1,100

APRIL 14.—By the *Minneapolis*=London:

Robinson & Co	11,500	
Chas. T. Wilson	3,500	15,000

APRIL 14.—By the *Rotterdom*=Amsterdam:

Manhattan Rubber Mfg. Co		3,500

APRIL 2.—By the *Hohenfels*=Colombo:

Meyer & Brown	*96,000	
N. Y. Commercial Co	*80,000	
Ed. Maurer	*18,500	
Robert Badenhop	*33,500	*228,000

APRIL 2.—By the *President Grant*=Hamburg:

Ed. Maurer	*11,200	
Charles T. Wilson	*17,500	
Various	*15,500	*44,200

APRIL 3.—By the *Oceanic*=Southampton:

Meyer & Brown	*10,500	
Ed. Maurer	*5,000	
Rubber Trading Co	*7,000	
Charles T. Wilson	*1,800	
Arnold & Zeiss	*40,000	*64,300

APRIL 7.—By the *Philadelphia*=Southampton:

Meyer & Brown	*24,000	
Arnold & Zeiss	*27,000	
Charles T. Wilson	*11,000	
Ed. Maurer	*3,500	
Rubber Trading Co	*7,000	
Goodyear Tire & Rubber Co.	*22,500	
Various	*8,500	*103,500

APRIL 8.—By the *Minnehaha*=London:

Meyer & Brown	*34,600	
Ed. Maurer	*16,500	
General Rubber Co	*155,000	
James T. Johnstone	*33,500	
L. Littlejohn & Co	*4,500	
Various	*9,500	*253,600

APRIL 8.—By the *Kroonland*=Antwerp:

Meyer & Brown	*78,000	
Arnold & Zeiss	*67,000	*145,000

APRIL 9.—By the *Olympic*=Southampton:

Meyer & Brown	*18,200	
N. Y. Commercial Co	*67,000	
W. Stiles	*3,000	
Ed. Maurer	*2,000	*90,200

APRIL 9.—By the *Ryndam*=Amsterdam:

James T. Johnstone		*5,000

APRIL 10.—By the *Themisto*=Amsterdam:

Rubber Trading Co		*4,500

APRIL 10.—By the *Wildenfels*=Colombo:

N. Y. Commercial Co	*45,000	
Ed. Maurer	*15,000	
H. W. Peabody & Co	*3,500	
Meyer & Brown	*35,500	*99,000

APRIL 11.—By the *Kabinga*=Colombo:

N. Y. Commercial Co	*56,000	
Meyer & Brown	*50,000	
Ed. Maurer	*5,000	*111,000

APRIL 11.—By the *Floride*=Havre:

Michelin Tire Co		*56,000

APRIL 14.—By the *Indrawodi*=Singapore:

Malaysian Rubber Co	*13,500	
L. Littlejohn & Co	*28,000	*41,500

APRIL 14.—By the *Minncopolis*=London:

Meyer & Brown	*30,000	
General Rubber Co	*65,000	
Adolph Hirsch & Co	*4,500	

James T. Johnstone	*1,100	
Charles T. Wilson	*33,500	
Robinson & Co	*3,000	
Arnold & Zeiss	*56,000	
Ed. Maurer	*5,500	
H. W. Stiles	*5,000	
Henderson & Korn	*15,500	
Various	*25,000	*244,100
April 17.—By the *Majestic*=Southampton:		
Ed. Maurer	*15,000	
Rubber Trading Co	*6,500	
Raw Products Co	*2,000	
Ed. Maurer	*10,000	
Willard Stiles	*5,500	*39,000
April 19.—By the *Adriatic*=Southampton:		
Meyer & Brown	2,000	
James T. Johnstone	11,200	13,200
April 19.—By the *Vaderland*=Antwerp:		
Meyer & Brown		11,200
April 21.—By the *Niagara*=Havre:		
Various		7,500
April 22.—By the *Minnetonka*=London:		
Various		7,000
April 22.—By the *President Lincoln*=Hamburg:		
Meyer & Brown	41,000	
General Rubber Co	11,000	
Ed. Maurer	17,500	
Wallace L. Gough	23,500	93,000

EAST INDIAN.

[*Denotes Plantation Rubber.]

	Pounds.	
March 24.—By the *Lord Curzon*=Colombo:		
Meyer & Brown	*308,000	
N. Y. Commercial Co	*247,000	
Ed. Maurer	*110,000	
H. W. Peabody & Co	*32,500	
Robert Badenhop	*30,000	
Raw Products Co	*4,500	
Henderson & Korn	*6,000	
Wallace L. Gough	*26,000	*764,000
March 26.—By the *Minnetonka*=London:		
Meyer & Brown	*81,000	
General Rubber Co	*45,000	
Arnold & Zeiss	*71,500	
N. Y. Commercial Co	*195,000	
James T. Johnstone	*13,500	
Charles T. Wilson	*24,500	
Rubber Trading Co	*4,500	
Robinson & Co	*5,500	
Adolph Hirsch & Co	*18,000	
L. Littlejohn & Co	*12,500	
Malaysian Rubber Co	*4,500	
W. Stiles	*2,000	
Goodyear Tire & Rubber Co	*52,000	
Various	*15,000	*544,500
March 27.—By the *Finland*=Antwerp:		
Meyer & Brown		*50,000
March 28.—By the *New York*=Southampton:		
Meyer & Brown	*24,500	
N. Y. Commercial Co	*42,000	
Ed. Maurer	*16,500	
Arnold & Zeiss	*52,000	
Charles T. Wilson	*36,000	
Raw Products Co	*2,000	
Rubber Trading Co	*2,000	*175,000
March 31.—By the *Bloemfontein*=Colombo:		
Meyer & Brown	*76,000	
N. Y. Commercial Co	*112,000	
Ed. Maurer	*27,000	
General Rubber Co	*22,500	*237,500
March 31.—By the *St. Paul*=Southampton:		
N. Y. Commercial Co	*22,500	
Arnold & Zeiss	*48,000	
Goodyear Tire & Rubber Co	*35,000	
Various	*11,000	*116,500
March 31.—By the *Patricia*=Hamburg:		
Various		*5,000
March 31.—By the *Suveric*=Colombo:		
Meyer & Brown	*32,000	
N. Y. Commercial Co	*59,000	
Ed. Maurer	*35,000	
H. W. Peabody & Co	*31,500	*157,500
April 1.—By the *Lapland*=Antwerp:		
Meyer & Brown		*37,500
April 2.—By the *Mesaba*=London:		
Meyer & Brown	*42,200	
James T. Johnstone	*48,000	
Ed. Maurer	*33,500	
General Rubber Co	*43,500	*167,200
April 19.—By the *Fangturn*=Colombo:		
Meyer & Brown	*42,500	
N. Y. Commercial Co	*18,000	
Ed. Maurer	*13,500	
H. W. Peabody & Co	*3,500	
Various	*18,500	*96,000
April 19.—By the *Adriatic*=Southampton:		
James T. Johnstone		*8,500
April 19.—By the *Vaderland*=Antwerp:		
Meyer & Brown		*49,000
April 21.—By the *New York*=Southampton:		
Arnold & Zeiss	12,500	
Meyer & Brown	*11,500	
Robinson & Co	*13,500	
Raw Products Co	*2,000	
Rubber Trading Co	*8,500	
Arnold & Zeiss	*29,000	
William H. Stiles	*5,500	
Ed. Maurer	*35,000	
Charles T. Wilson	*60,000	
Various	*13,000	*178,000
April 21.—By the *Niagara*=Havre:		
Michelin Tire Co		*40,000
April 21.—By the *Clan McIver*=Singapore:		
Arnold & Zeiss	*12,500	
Meyer & Brown	*11,200	
Ed. Maurer	*78,000	
James T. Johnstone	*22,500	
Boustead & Co	*11,200	
L. Littlejohn & Co	*41,000	
General Rubber Co	*11,200	
Various	*35,000	*222,600
April 22.—By the *Minnetonka*=London:		
Meyer & Brown	*65,000	
General Rubber Co	*45,000	
James T. Johnstone	*33,600	
L. Littlejohn & Co	*35,000	
Adolph Hirsch & Co	*19,000	
Boustead & Co	*1,700	
Various	*56,500	*255,800
April 22.—By the *President Lincoln*=Hamburg:		
Meyer & Brown	*2,000	
Charles T. Wilson	*2,000	
Various	*8,000	*12,000

BOSTON ARRIVALS.

Imports in February, 1913.

	Pounds.	Values.
Gutta-Jelutong	921,379	$56,201
India rubber	148,862	132,831

CUSTOM HOUSE STATISTICS.

Port of New York—March, 1913.

Imports:	Pounds.	Value.
India-rubber	10,250,913	$8,313,409
Balata	28,343	16,994
Guayule	210,026	93,405
Gutta-percha	8,819	6,513
Gutta-jelutong (Pontianak)	1,769,043	95,028
Total	12,267,144	$8,525,349
Exports:		
India-rubber	106,044	$77,158
Balata	12,323	6,200
Guayule	4,491	2,884
Gutta-percha	.....	.....
Reclaimed rubber	35,541	8,963
Gutta-jelutong (Pontianak)	.....	.....
Rubber scrap, imported	1,947,465	157,197
Rubber scrap, exported	326,999	57,638

EXPORTS OF INDIA-RUBBER FROM PARA, MANAOS AND IQUITOS FOR MARCH, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.	Fine.	Medium.	Coarse.	Caucho.	Total.	Grand Total.
Zarges, Berringer & Co	167,060	5,194	147,654	35,151	355,059	434,557	96,781	134,425	226,594	892,357	1,247,416
General Rubber Co. of Brazil	102,143	12,987	63,280	84,908	263,318	113,320	20,404	22,916	96,742	253,382	516,700
J. Marques	97,159	37,717	174,972	47,138	356,986	134,477	7,758	15,381	87,896	245,512	602,498
R. O. Ahlers & Co	10,326	.....	3,655	45,559	59,540	39,408	.....	9,911	3,477	52,796	112,336
Suarez Hermanos & Co., Ltd	.....	.....	.....	.....	.....	147,117	7,677	16,973	32,783	204,550	204,550
De Lagotellerie & Co	9,010	2,040	9,900	4,200	25,150	.....	.....	.....	.....	.....	25,150
Pires Teixeira & Co	1,700	1,700	10,560	280	14,240	12,070	.....	.....	.....	12,070	26,310
Kiernan & Peters	36,827	3,126	6,798	1,120	47,871	2,218	2,532	3,399	2,032	10,181	58,052
Sundry exporters	14,430	1,241	31,045	12,166	58,882	49,894	.....	10,474	153,664	214,032	272,914
Itacoatiara, direct	1,350	150	960	.....	2,460	5,850	150	4,440	150	10,590	13,050
	440,005	64,155	448,824	230,522	1,183,506	938,911	135,302	217,919	603,338	1,895,470	3,078,976
Manáos, direct	365,822	55,376	121,302	68,009	610,509	354,454	84,918	146,370	391,333	977,075	1,587,584
Iquitos, direct	.....	.....	.....	.....	.....	94,111	2,389	33,317	197,227	327,044	327,044
Total, March, 1913	805,827	119,531	570,126	298,531	1,794,015	1,387,476	222,609	397,606	1,191,898	3,199,589	4,993,604

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR MARCH, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.	Fine.	Medium.	Coarse.	Caucho.	Total.	Grand Total.
Zarges, Ohliger & Ca	74,303	5,306	25,574	5,346	110,529	150,879	35,482	47,412	215,735	449,508	560,037
General Rubber Co. of Brazil	34,713	3,751	10,054	3,408	51,926	33,391	20,932	21,642	57,540	133,505	185,431
Ahlers & Ca	78,403	18,887	37,239	9,138	143,667	99,108	20,927	38,035	73,546	231,616	375,283
De Lagotellerie & Co	26,354	.....	.....	.....	26,354	62,825	6,074	21,000	30,198	120,097	146,451
J. G. Araujo	.....	.....	.....	.....	.....	4,320	160	7,854	304	12,638	12,638
Mesquita & Co	.....	.....	.....	.....	.....	1,749	773	1,177	367	4,066	4,066
Semper & Co	.....	.....	.....	.....	.....	44	.....	255	261	560	560
Théodore Lévy, Camille & Co	.....	.....	.....	.....	.....	58	90	1,285	5,759	7,192	7,192
W. Peters & Co	14,544	4,520	2,071	16,464	37,599	.....	480	3,640	450	4,570	42,169
B. Levy & Co	.....	.....	.....	.....	.....	.....	.....	4,070	1,500	5,570	5,570
Demetrio Padilha	.....	.....	.....	.....	.....	.....	.....	.....	5,673	5,673	5,673
Amorim Irmãos	.....	.....	.....	.....	.....	2,080	.....	.....	.....	2,080	2,080
	228,317	32,464	74,938	34,356	370,075	354,454	84,918	146,370	391,333	977,075	1,347,150
Iquitos, direct	.....	.....	.....	.....	.....	94,111	2,389	33,317	197,227	327,044	327,044
Total	228,317	32,464	74,938	34,356	370,075	448,565	87,307	179,687	588,560	1,304,119	1,674,194

INDIA RUBBER WORLD

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Antwerp.

RUBBER STATISTICS FOR JANUARY.

DETAILS.	1913.	1912.	1911.	1910.	1909.
Stocks, Feb. 1....*kilos*	561,289	521,956	539,207	516,534	331,433
Arrivals in March—					
Congo sorts	172,396	172,449	365,463	174,167	410,838
Other sorts	16,715	7,642	60,342	31,452	112,645
Plantation sorts	152,685	70,873	57,591	57,569	20,643
Aggregating	903,085	772,920	1,022,603	779,722	875,559
Sales in March.....	251,580	413,904	376,989	280,620	279,704
Stocks, March 31.....	651,505	359,016	645,614	499,102	595,855
Arrivals since Jan. 1—					
Congo sorts	691,716	730,472	940,962	830,830	781,387
Other sorts	35,178	30,618	161,177	80,155	277,064
Plantation sorts	436,897	277,610	167,529	128,694	69,641
Aggregating 1,163,791		1,038,700	1,269,668	1,039,679	1,128,092
Sales since January 1..1,023,346		1,354,422	1,212,266	1,082,089	1,127,972

RUBBER ARRIVALS FROM THE CONGO.

APRIL 2.—By the steamer *Elizabethville:*

		Kilos.	
Bunge & Co.	(Société Générale Africaine)	55,200	
do	(Belgika)	1,200	
do	(Comptoir Commercial Congolais)	15,300	
do	(Comfina)	20,900	
do	(Chemins de fer Grand Lacs)	12,200	
do	(Forestière)	1,800	
Société Colonial Anversoise	(Haut Congo)	1,600	
do	(Lomami)	12,500	
do	(Cie. Franc. du Haut Congo)	6,300	
do	(Cie du Kasai)	75,000	
Charles Dethier	(American Congo Co.)	20,900	
Crédit Colonial & Commercial Anc. L. & W. Van de Velde (S. A.)		2,800	
Willaert Frères		2,500	
Osterrieth & Co	(Lubefu)	2,400	
do	(Produits Végétx du H. Kasai)	100	
Sundries		4,300	235,000

Plantation Rubber From the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

[From January 1 to March 17, 1913. Compiled by the Ceylon Chamber of Commerce.]

	1912.	1913.
To Great Britain .....*pounds*	1,470,427	2,436,562
To United States.....	928,028	1,840,795
To Belgium	355,810	457,506
To Australia	26,754	74,871
To Japan	2,181	50,978
To Germany	14,307	23,479
To Italy	.....	22,460
To Austria	2,717	20,419
To Holland	.....	500
To Canada	12,121	.....
To Norway and Sweden.....	39	.....
Total	2,812,384	4,927,570

The export figures of rubber for 1913 given in the above table include the imports re-exported. (These amount to 505,361 pounds—376,392 pounds from the Straits and 128,969 pounds from India). To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date deduct the quantity of imports from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To	Singapore. Mar. 7.	Penang. Feb. 28.	Port Swettenham. Feb. 28.	Total.
Great Britain ..*pounds*	3,500,099	2,035,333	3,529,740	9,065,172
Continent	51,834	10,533	446,616	508,983
Japan	90,783	.....	.....	90,783
Ceylon	.....	15,467	241,823	257,290
United States	1,145,582	49,333	.....	1,194,915
Australia	18,323	.....	.....	18,323
Total, 1913	4,806,621	2,110,666	4,218,179	11,135,466
Same period, 1912.....	2,161,478	847,722	3,210,560	6,219,760
Same period, 1911.....	1,266,855	330,267	2,479,933	4,077,055
Same period, 1910.....	581,467	497,971	1,329,538	2,408,976

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FOREIGN FACTORIES IN THE UNITED STATES.

THE tariff demolishers, in their statistical endeavors, do not seem to figure out the number of foreign industries that have been brought over to the United States solely because those interested could not sell in this market and make the goods at home. In the rubber trade alone are scores of examples. The greatest hard rubber business in America was founded by the German Poppenhusen, who brought with him such men as A. D. Schlesinger, and about whose factories gathered scores of skilled German artisans, today patriotic and thrifty American citizens. Later the great hard rubber company, Heinrich Traun & Söhne of Hamburg, found it wise to build and operate their own factory in the United States.

The real beginning of the druggists' sundries business lay with the Tyer Rubber Co., started by Henry G. Tyer, an Englishman, who brought more than half a million of dollars of English money to this side of the water.

The Michelins, first in the field of automobile tires in Europe, found the tariff not to their mind, and erected a factory in New Jersey to manufacture for the Americans.

Card clothing made on a large scale in Europe was taxed at our custom house, and the English Moseleys helped to establish the Mechanical Fabric Co.

Mandelberg, a great English manufacturer of mackintoshes, quite recently equipped a factory near New York, simply because of the protection given to American manufacturers.

Nearly all of the original American elastic fabric companies, and these are many, came here because of our protective duties.

In a word, capital, skilled labor and great industries have come here to stay—to the advantage of the country—under, say, a 35 per cent. duty. Had the duty been 10 per cent. they would have stayed at home, and with their cheaper labor shut up many an American factory.

REDUCING RUBBER PRICES TO ENCOURAGE NEW USES.

A VERY interesting proposal, referred to on another page of this issue, has recently appeared in the English financial press, to the effect that the rubber planters agree to set aside one-tenth of their product to be sold to certain English and American manufacturers at 60 cents a pound, under an agreement that this shall be used in the manufacture of articles not now on the market—the purpose being to encourage new uses for rubber.

It undoubtedly would be easy to find manufacturers who would religiously live up to this arrangement, and employ any 60-cent rubber they might acquire, solely in exploiting new methods of using rubber; but would any substantial end be accomplished by this project? Obviously it would be a matter of expense to the planters, for when the market price of their rubber was 90 cents, if they sold 10 per cent. of their product for 60 cents, they would be losing 33⅓ per cent. of their legitimate price for the one-tenth sold at this figure, which would be a loss of 3⅓ per cent. on their whole product. And would this artificial lowering of price in reality greatly encourage new uses of rubber? If under this encouragement a use were found for some new rubber article, as soon as it secured recognition it would have to be manufactured from rubber at the full market price—this 10 per cent. cheap rubber being reserved exclusively for untried articles.

Rubber manufacturers, if not quite as deeply interested as the planters in the increased consumption of rubber, are, nevertheless, alert to the possibilities of the unbeaten path, and are always ready to test the

public demand for something new. It is quite probable that this natural ambition to manufacture something in which, for a time at least, they would have a monopoly, is a sufficient incentive to keep the manufacturing mind constantly at work on the possibilities of new and original lines of production.

But the one thing that will best serve as an encouragement to the extension of rubber manufacture into entirely new fields will be for the producers of crude rubber to bring their costs down, and keep them down, so that they can offer low prices not to a few manufacturers under special arrangement for a specified use, but to all manufacturers alike, for whatever use may seem to them to promise success and profit.

THE ADVANTAGE OF COMBINING TIRES WITH FOOTWEAR.

THE venerable adage about the undesirability of having one's eggs all in one basket, is as sound now as on the day when it was predicated. The United States Rubber Co. recognized the sanity of this saw, when some seven years ago it purchased the control of the Rubber Goods Manufacturing Co. Up to that time its product had consisted almost entirely of rubber footwear. It perceived the desirability of having something else to fall back upon, when the demand for footwear was slack, so it acquired a number of capable tire mills.

A number of the other large rubber manufacturing companies have taken a similar step—for instance, the Hood Rubber Co., which has added a well-equipped tire department to its footwear plant, and the Goodrich and Diamond companies, which some time ago increased the variety and volume of their product by the installation of efficient footwear departments.

There couldn't be a finer combination than the manufacture of tires with the manufacture of boots and shoes. One insures the other. The consumer is kept consuming, no matter what the meteorological conditions are. When it is prime weather for motoring, it is poor weather for rubber boots and arctics, and when everybody is clamoring for hip boots and high-top gaiters, nobody wants a tire. But the demand for one or the other goes continuously on.

Last winter, for instance, was an unfavorable one for the makers of footwear. In the greater part of the country there was but a light fall of snow. In the big cities, at any rate, one might have gone through the entire winter quite comfortably with only a pair of footholds. But the same open winter that made many people oblivious to the rubber boot and arctic, kept the call for automobile shoes and inner tubes continuous, for the car that in normal winters has been jacked up for a four months' rest was out daily on the roadway, wearing out its tires.

Where a manufacturer has both a footwear and a tire department he need not concern himself about the prognostications of the weather bureau. Every kind of weather brings grist to his mill.

RUBBER IN COLLEGE THESES.

AN interesting side light on the rubber industry, illustrating the general interest that the public takes in this subject, is shown by its popularity as a theme for college theses and school compositions. There is lying at this moment on the editorial desk a finely bound typewritten volume of 35,000 words, with sundry appendices of charts, maps and tables, on the history of the American rubber industry. It has been prepared by a candidate for an advanced degree in one of the largest of our American colleges, as a partial fulfilment of the requirements for securing that degree. The editor has been asked to look it over. It is a worthy and painstaking effort, and shows a wide reading in the literature of india-rubber.

Two days ago an application was received from a senior of another large university for suggestions as to where the best information could be obtained on the manufacture of rubber in the United States, with a view to preparing a graduation thesis on the subject. Immediately following that came a young woman, about to graduate from a high school, accompanied by her instructor, also in search of information on this interesting topic, as a preparation for the writing of a high school composition.

The editor seized a few fleeting moments from his busy life to give what assistance he could to these applicants for rubber knowledge. These are not isolated cases, for during the last year many similar requests have been received—sometimes from students—sometimes from teachers—for light on the great industry of rubber production, gathering and manufacture.

Possibly the popularity of this subject as a theme for school and college work is due to the fact that it is newer than most of the subjects that have been used for this purpose since schools were. But probably it is owing to the amount of space devoted to the various phases of rubber manufacture, and particularly to tire making, in the

daily and periodical press. At any rate it shows a very general interest in rubber in its relation to modern life.

Quite a number of the large manufacturers—with specially wise advertising departments—have recognized this general desire for rubber information, and have published little pamphlets giving a swift survey of the history, botany and general development of rubber production and manufacture; concluding naturally with a more or less extended reference to the particular product—boot or belting, tire or hose—which that company may be interested in. Where the advertising is permitted to permeate the entire story, the value of the pamphlet is materially weakened, but where the advertising is not allowed to be too glaring, the pamphlet is bound to appeal to the inquiring mind, is insured a serious reading, and consequently is effective from an advertising standpoint.

The distribution of these booklets, which takes place in response to requests from seekers after rubber light, and particularly from students engaged in literary research, is obviously a very valuable sort of distribution, for this literature not only makes a lasting impression upon the mind of the student who is deep in the preparation of his thesis, but is bound to be duly impressed upon all those who come in contact with him during this season of literary production; for nobody feels his work more profoundly than the undergraduate who is enjoying the first thrills of authorship.

THE BEST RUBBER SCHOOL.

OVER in London they have inaugurated a rubber school, or rather they have opened certain distinctively rubber courses in one of their polytechnic institutes, on "The Chemistry and Analysis of Rubber," "The Manufacture and Analysis of Rubber Goods," and kindred themes.

It is not the desire of this publication to belittle any enterprise that makes for the development of the industry. This London rubber school will probably accomplish creditable results, and certainly can do no harm, but in our own country at least, the best rubber schools are still to be found within the four walls of the factory.

This does not mean that the best way to study rubber is to enter the factory at an early age and grow up exclusively in its atmosphere; for in order to achieve the best results, the factory school should not be entered until a sound and broad foundation has been laid in the technical school. But having availed himself of the instruction given by the best technical schools, the graduate can then enter the rubber mill and acquire this particular instruction rapidly and effectively. For instance, having devoted several years to the general study of chemistry, the best place to acquire a knowledge of the special chemistry of rubber is in the laboratory of the rubber mill. Possibly some day our leading rubber experts will be found giving courses of instruction in the schools, but at present they are confining their attention to the practical running of rubber factories; and to learn what they know, one must resort thither and put himself in contact with them.

THE CALL OF CHEAP LABOR.

BRAZIL'S crude rubber industry is threatened by Eastern plantation rubber. Labor in the Brazilian rubber sections was, and is, scarce and high priced. At the call of the cheap and abundant labor in Ceylon, the Malay States, Java and contiguous territory, the Brazilian industry of Pará rubber production was moved half across the world in less than ten years. So much for tropical industries.

Now as to those of the temperate zone. There are in Central and Northern China millions of capable, thrifty, industrious workmen who would joyfully hustle fifteen hours a day for fifteen cents. They would make excellent workers in any line of rubber manufacture where labor is a chief consideration. Their call to American manufacturers has heretofore been unheeded. But, if competition with European cheap help is forced upon the American manufacturer, and further if to meet such competition he is not to be allowed to adjust his wage scale to suit new conditions, will he not be forced to listen to this call?

In the light of rubber history will not the present tariff program end in the establishment of great American shoe, tire and sundries factories in Chinese centers of cheap labor?

NOT ALONE IN THE GREAT COMPANY THAT HE NOTABLY helped to create, but all over the world is the passing of Adolph Prinzhorn heard with sincere sorrow. His unruffled friendliness, his broad charity toward human frailties, and his genuine interest in all that was for the good of the trade made him a most lovable character. His friends were not only the best and most distinguished men in the Fatherland, but in the United States, in England, and in the Middle East. Such men, citizens of the world, friends of humanity, are potent apostles of industrial integrity and progress. We voice the thought of the world's rubber trade in tendering sincere sympathy to the Continental Caoutchouc & Gutta Percha Company for their great loss.

A. STAINES MANDERS HAS, ABOVE ANY OTHER MAN that we know, the rare faculty of organizing great exhibitions of international interest. What he has done in the past in rubber exhibitions has been of the greatest educational value. Rubber planting was new, and thousands who were interested wanted to have the graphic presentment of the exhibition, to supplement and explain what they had read in the printed page. Hence governments, planters and those who supplied planters, were eager to exhibit. Like all other industries, however, rubber planting is fast getting upon a stable basis and its novelty is disappearing. In the future the new tools, machines, processes and products will steadily lessen in number. Under these conditions it will be only the novel that will be willingly shown, and the result will be a steadily diminishing volume of exhibits—that is, if rubber exhibitions were planned every two or three years *ad infinitum*. We hold no brief for Mr. Manders, but it would seem that he appreciated this situation. The fact that he planned a fibre exhibition to be held in an adjoining building, and at the same time as the 1914 Rubber Exhibition, would point to such conclusion. In his announcements Mr. Manders says: "A similar exhibition will not be held until 1918 or perhaps latter."

If all that is new in rubber, in fibres, in coffee, cacao, cane, and all of the varied tropical products could be shown once in two or three years in London, the joint exhibitions would be very great, and valuable beyond description.

The Tropics are just beginning to be generally exploited. A comprehensive Tropical Products Exhibition, including of course all that is new in rubber, is what is needed.

IN VIEW OF THE PRESENT TARIFF SITUATION ONE OR TWO statements which appear in the letter from our Japanese correspondent, in this issue, are interesting. He is describing the industry of making rubber toy balloons in Japan. He says that the imports of toy balloons into Japan ceased some years ago. He then goes on to remark that the lowest grade of the imported toy balloons of former days cost the Japanese dealer 25 cents a gross, while the same thing is now being produced in Japan at the price of 7½ cents a gross. Later in his letter he makes a statement that renders it very clear how the home product can sell at one-third the price of the imported article. He says: "The average daily wage of the women balloon makers is 20 sen (10 cents) for ten hours. The average daily rate for rubber manufacturing workers, male and female, is 50 sen (25 cents) for ten hours." There you have the contrast;—rubber workmen in Japan receiving 25 cents a day and rubber workmen in America receiving from ten to twenty times that amount. Men who work for 25 cents per day have to live on a 25 cents a day scale. Is that, or any approximation thereto, desirable in this country? That is the crux of the tariff question.

AN ENGLISH PAPER SPEAKS OF THE FACT that the question is being agitated of organizing a rubber club in London. It certainly would seem as if London could support such a club. There has been a rubber club in this country for fourteen years, and it is a highly successful organization. It has a membership of nearly 350, and the midwinter dinner, midsummer outing and other gatherings of the club are largely attended. It also has an inner membership, called a "firm membership," in which between 50 and 60 of the leading rubber concerns of the country are represented, which is devoting itself to the solution of the important problems pressing upon the American rubber trade today. To be sure, the English rubber manufacturing industry is less than one-half that of the United States, but it is a large and important field, in addition to which are the great rubber plantation interests centering in that city. A rubber club in London ought certainly to prove a successful and valuable organization.

IF ANYONE HAS BEEN UNDER THE IMPRESSION that the use of the automobile had about reached flood tide and was unlikely to remain stationary or possibly to recede, his impression was erroneous. The Secretary of State for New York announces that the number of automobile owners who have registered during the past three months has exceeded the 100,000 mark, which is more than 20,000 over the number registered during the same period last year. The registration fees collected during the same period came within $8,000 of reaching a million—which is nearly $325,000 in excess of the fees for the same time last year.

The same situation has developed in Ohio, where the registrar of automobiles announces that in point of registrations the entire number for 1912 was exceeded on May 10, the registrations at that time for this year being 63,720, as compared with 63,117 for the entire twelve months of 1912.

Obviously, the stationary period of automobile consumption has not only not been reached, but is nowhere in sight.

Rubber in Southern Brazil—II.

By the Editor of The India Rubber World.

The Rubber Port of Bahia—Chats with Exporters—Courtesies from Brazilian Officials—Local Washing Plants—Wide Distribution of the Manihot—The Four Principal Kinds—Methods of Gathering—Yield According to Dr. Quinn—Dr. Zehntner's Figures.

MORE than eighty per cent. of the *Maniçoba* rubber produced by Brazil's southern states comes out at the port of Bahia. It is therefore an interesting place to the rubber man, and one that I was more than anxious to see.

BOAT LANDING, BAHIA.

A PLANTED AREA ON THE UPLANDS.

Somewhere I had formed the idea that the landing was difficult and dangerous, so when we left the steamer in a comfortable launch and disembarked at a very respectable pier, the surprise was an agreeable one.

The water front buildings were a bit ragged in outline and the piers crowded with merchandise and debris, but that was due in part to the Port Work preparations of the French concessionaires. This concession is to be a monopoly, the company charging for every pound of cargo entering the port. The quays are to have 36 feet of water at low tide, the fill being made by pumping from the harbor. Modern warehouses, cranes, etc., will be installed, and as All Saints Bay is better adapted in its surroundings for expansion than is the bay at Rio, the city of Bahia has great future possibilities.

The city is built first on a narrow terrace but a trifle above tide water, then on a steep incline, and then on a plateau high above the first tier of buildings. To get to the upper city there is a steep inclined plane, and for foot passengers a big double elevator.

Like Brooklyn it is a city of churches, the total being 260; and others, so it is said, are projected. There are many fine buildings, a fair second-class hotel, some excellent *pensions*, and the finest oranges that the thirsty traveler could desire. As befits an ancient city, the streets are grotesquely narrow, although the modern spirit is evident in the broadening of some of the main thoroughfares, which means cutting long blocks of high buildings clear to their centers. There is to be a central avenue 250 feet wide. There are excellent trams, the usual tropical carriages and some 100 automobiles and motor trucks. Speaking of the latter, tires suffer severely, and motor owners are constantly complaining. This is due to the uneven stone pavements, the car-tracks and the reckless driving—that is, in part. Another reason is that seconds

MAP SHOWING *Manihot* AREA IN EASTERN BRAZIL.

and thirds in tires have been sent to this market, and when they gave out were bought in for a few cents, shipped abroad, mended and came back as new ones.

There are five firms in rubber exporting in Bahia, and two of them have cleaning plants of their own. Several are also interested in *Manihot* plantations in the interior. We visited all of them and found them more than willing to give information, and deeply interested in the future of Ceará rubber. Incidentally none seemed to believe that any general plan for washing all of Brazil's rubber would be of value, either to producer or manufacturer. One said very plainly that the existence of dirty rubber was due to the cupidity of the rubber manufacturer. He purchased dirty lots in the hope of getting a cheaper rubber content. If he bought only clean rubber, such would in time be the only product.

We learned that last year caterpillars destroyed many of the rubber trees, and that this year the rains were delayed so that another setback was feared. Indeed some of the local rubber men were very gloomy about the future of *Manihot* planting because of insect pests — such as caterpillars and white ants—and droughts. At the same time they acknowledged that wild *Manihots* were not killed off, and that it cost 50 per cent. less to gather plantation rubber than wild.

PLANTATION *Manihot Glaziovii*—7½ YEARS OLD—35 INCHES IN GIRTH—IN COURSE OF TAPPING.

Then, too, there are the taxes and costs of transportation. They were all of the opinion that the whole export tax on Ceará rubber should be taken off, for a time at least. They also cited the freight rates on the railroads as being far too high. For example, from Joazeiro to Bahia—about 577 kilometers—the rate is 670 reis for 10 kilos, or about what it costs from Bahia to Europe. Labor is also scarce and food and all other supplies are very high.

The courteous head of the *Defesa da Borracha*, in Rio had cabled ahead to the department in Bahia, and the result was courteous attention on the part of Sr. Alvaro Ramos and the heads of the local *Defesa*, who arranged audiences with the Governor, the Secretary of State and other high officials. They were all exceedingly polite, and opened every avenue to us in our endeavors to gather information concerning rubber.

The rubber fields — that is where the *Manihots* grow, either wild or planted—are not of easy access from Bahia. The nearest is a day's journey, and the best up the San Francisco River are five days away, the journey involving railway travel, water travel and mule riding.

But first a bit on the various *Manihots* about which there has been considerable confusion. Only a short time ago but one was known, the *Glaziovii*. Today four distinct types are recognized, and only last winter I met a student of the tree who said he was sure that there were at least seven. Right here it may be well to describe the four, not botanically, but in such terms that the non-scientific may be able easily to identify them.

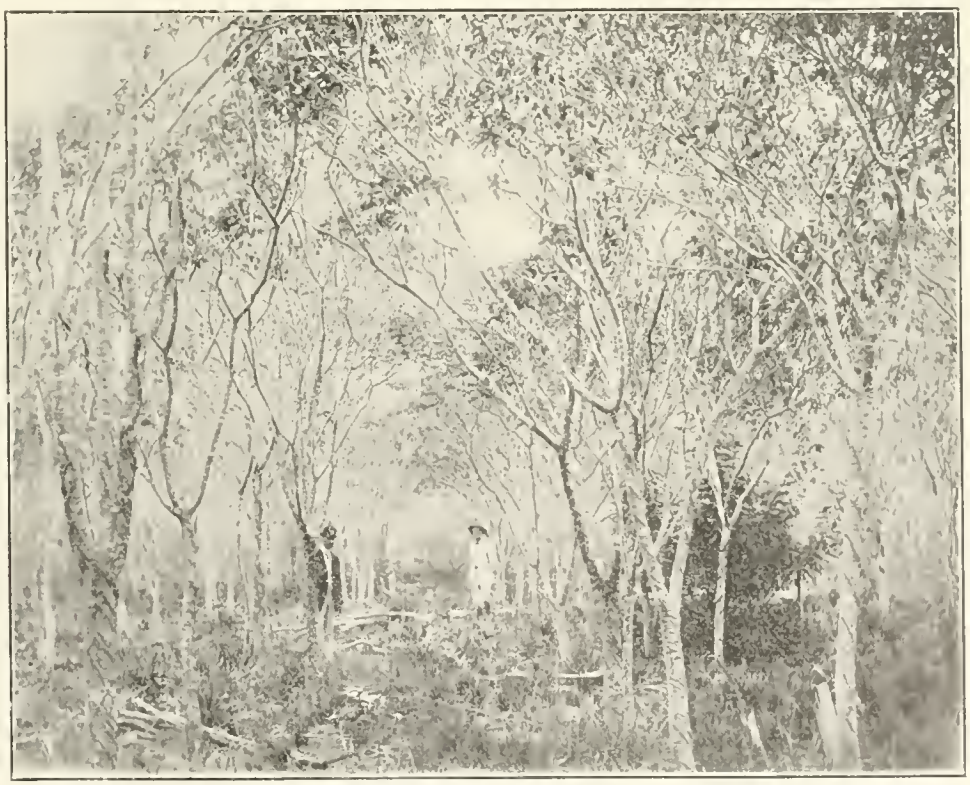
The *Manihot* was formerly called the *Jatropha Elastica*, and it is a blood cousin of the *Manihot Utilissima*, which produces sweet cassava, and the *Manihot Palmata*, or bitter cassava. The product of the various *Manihots* is called Ceará, *Maniçoba*, Jequie or *Manihot* rubber.

American manufacturers for a long time ignored Ceará rubber. The Europeans, however, used it freely, and have always claimed that under most conditions it was the equal of Fine Pará.

The *machadino,* which has so irreparably damaged the Pará forests of the Amazon, is very generally used for tapping the *Manihot Glaziovii,* to which it does just as much harm. In Bahia, however, the other sorts are tapped by a kind of home-made farrier's knife that answers the purpose very well.

Manihot Pianhyensis—FOUR YEARS OLD—AVERAGE YIELD PER ACRE 232 POUNDS OF DRY RUBBER.

In tapping the *Glaziovii* and *Dichotoma* the outer bark is first removed and the tree trunks tapped in zigzags. The roots are pared half-herring-bone fashion but roughly. On the tree trunk the latex is caught in cups, but the general procedure is to tap the trunk low down between the roots and dig a shallow hole at the base of the tree. Into this the rubber milk trickles, its watery content being absorbed by the soil. The sand with which the hole is dusted sticks to the rubber and makes it easier to handle, and also decreases its value very considerably. In the past the Ceará milk was allowed to coagulate on the tree, and the result was a good dry rubber containing some bark. Some of the planters are now preparing *Manihot* rubber in sheets that are clean, dry and in every way excellent. This can only be done in plantations or where it is possible to superintend the tapping of wild trees. Most of the rubber at present comes from trees scattered over a vast wild area, impenetrable except by native tappers, who are paid by weight. The result is, as a rule, very dirty, wet rubber, badly coagulated and containing stones, bark and dirt. Wherever it is possible to gather the latex in receptacles, clean rubber of fine quality is the result.



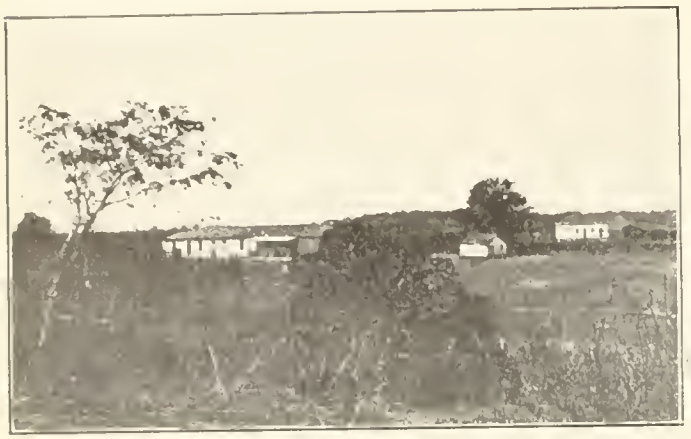
Manihot Dichotoma—ONE TO SEVEN YEARS OLD.

The *Manihot Glaziovii,* or Ceará rubber tree, grows to a height of forty feet with a diameter of twelve inches. It has many branches, the lowest of which is about six feet from the ground. The bark is dark purple with transparent film-like epidermis, which curls off as bark is removed. This exfoliation is usually removed before tapping. The leaves are large, and are divided in five, and sometimes there are seven parts. The leaf stalk and veins are whitish. The planters were deceived at first by the favorable appearance of this tree, and planted it extensively, but it did not produce well. It is found wild in Ceará, Parahiba and Rio Grande do Norte, is deciduous and thrives in dry lands and mountain regions—in fact, will grow anywhere.

The *Manihot Dichotoma,* or Maniçoba of Jequie, derived its last name from a town in the state of Bahia, which is the center of commercial trade in this rubber. It is a small tree, with a trunk scarcely exceeding 10 inches in diameter. The bark is smooth and purplish in color with parchment-like epidermis, similar to the *Glaziovii.* The leaves when new are of peculiar shield-like shape, and later become digitate. It is found in the southeastern districts of the state of Bahia, and along the Paraguasu and Contas rivers. It thrives best in red clay soil, and is rarely found in sandy soil, or if so, gives much less rubber.

The *Manihot Heptaphylla* (Ule) is a small tree, growing to the height of seven to sixteen feet, with a diameter of four to six inches. The trunk is comparatively short and stocky, dividing into two or three branches which form a full-leaved top of a lively green color. The bark is dark gray in color, and the leaves are usually divided in seven lobes. The seeds are light colored, without the sharp edges, thereby differing from the Ceará, and are larger. This tree is found exclusively

on the right margin of the San Francisco river, growing in the mountains and rocky places.



HOUSES AND STORE ON *Manihot* PLANTATION EIGHT DAYS FROM BAHIA.

Manihot Heptaphylla—NINE MONTHS OLD.

The *Manihot Piauhycnsis* originated in the state of Piauhy, and although small in size is most important as a producer of rubber. It resembles the *Heptaphylla*, with a height of seven to sixteen feet and a diameter of four to six inches. The trunk, smooth and light gray in color, divides into two or three branches forming a full spreading top. The leaves are usually divided in five and sometimes seven parts. They are digitate in form with the points rounded, a peculiarity of the *Piauhycnsis*. The seeds are similar to the *Heptaphylla*. This tree, found in the state of Piauhy along the dividing line of the state of Bahia, and between 8° and 10° south latitude, and as far to the north as Itamaraty or San Pedro. It grows principally on the small mountain slopes and ridges.

Like the *Hevea* the *Manihot* shows one type which Dr. Quinn calls the *Manihot Brava* which gives no rubber at all, but which is easily confused with the good *Manihots*—that is, those that do produce rubber.

Manihots have more than once been suggested as adapted to cultivation in the United States, particularly in parts of Florida and Texas. Indeed, at one time one of the Southern experiment stations started their cultivation. The matter was not carried far, however, and no conclusions reached. That they could be grown in the Philippines and Porto Rico, as they are in the Hawaiian Islands, there is no doubt.

So many different figures were given as to the yields of *Manihots* that I was at a loss to wholly reconcile the great differences that were but too apparent. Of course in some cases my informants had taken the product of certain trees that were abundant producers, and based their estimates upon them. In others they were frankly optimistic

TAPPING *Manihot Piauhycnsis*, RESACCA ESTATE, MINAS.

promoters. I have therefore turned to the statements of Dr. Santiago Cardwell Quinn, who is in the center of the *Manihot* district, and an unbiased observer. He says:

"The tapper works approximately six months in the year, covering January to June. He takes one set of 650 trees, on the average tapping on Mondays and Tuesdays 250 trees per day and on Wednesdays 150. On Thursdays and Fridays he re-taps Monday's and Tuesday's lots and on Saturdays those he tapped the previous Wednesday. The same trees are tapped twice a week. With *Manihot*, as with *Hevea*, the so-called wound response is very marked.

"In the season his output may be taken on the average at 360 kilos of damp rubber, equivalent to about 475 pounds market rubber, or, say, equivalent to about 285 pounds actual dry rubber. He is paid by the kilo, depending more or less on the state of the market. Nowadays the average price may be taken at 1$200 Brazilian—or say 29 cents—per pound for market rubber, or about 48 cents per pound for dry rubber. These costs, however, do not represent the real ones. The tapper is paid really by a barter method as on the Amazon, and the profits on the barter transaction must be deducted in order to arrive at the true cost. We may deduct, therefore, at least 12 cents per pound on this head, making the original net cost about 17 cents per pound.

"The carriage of this rubber to the railway is not so great as one might imagine. Thus every year some 200 to 300 tons of *Manihot* rubber is despatched from Gruna, an important rubber center in Bahia at some distance from the right bank of the River San Francisco, for shipment on rail at Bomfim. The distance is about 150 miles, and the pack-mules, carrying 250 pounds each, take five days on the journey, at the regular rate of 12 milreis—$3.80—per mule, which works out at about 1½ cents per pound. The rubber is packed in sacks which represent a small item. There are town dues amounting to 16 cents per 30 pounds, and a rail freight to the port of Bahia of about 38 cents per 30 pounds, whilst the sea freight is rather under $19 per ton weight to New York or Liverpool."

BADLY TAPPED *Manihot Dichotoma.*

SHOWING THE TWO DISTINCTIVE GROWTHS. x1—*Heptaphylla*, x2—*Piauhyensis.*

As in Pará the export tax on rubber at Bahia (11¼ per cent. ad valorem) is assessed through the "Pauta" or valuation taken every two weeks, and based upon the market price at the time of the last valuation. It amounts to about 5 cents per pound. In Minas, at 3½ per cent., it amounts to 1 to 2 cents a pound.

In this connection it will be interesting to note the figures given by Dr. L. Zehntner on the production of the Maniçobas of Bahia. These observations were made at the Villa Nova Plantations, Bomfim, Bahia, and are as follows:

Age.	Dry rubber on tree, one day.	Dry rubber on tree, 60 days.	Dry rubber 700 trees, 60 days.
2 yrs.	2 Grs.	120 Grs.	185 lbs.
3 "	3 "	180 "	277 "
4 "	4 "	240 "	370 "
5 "	5 "	300 "	463 "

The *Manihots* cover an immense area of the healthy uplands of Southern Brazil, a territory running 1,000 miles north and south and as much east and west.

There are, of course, sections where it does not appear at all, and others where it is inaccessible. In eleven of the great Brazilian states it is found wild, but its gathering is chiefly in the states of Bahia, Ceará, Piauhy and Maranhao. So far the planting of *Manihots* in Brazil has been in the states of Bahia, Minas and Piauhy. There are also several in Rio, and even as far south as Sao Paulo. It is estimated that there are at least three million trees in the Brazilian plantations at the present time.

Of the Ceará plantations so far installed a few are owned by Americans, Germans and French. The Michelins, for example, are said to be back of one that is distinctly French.

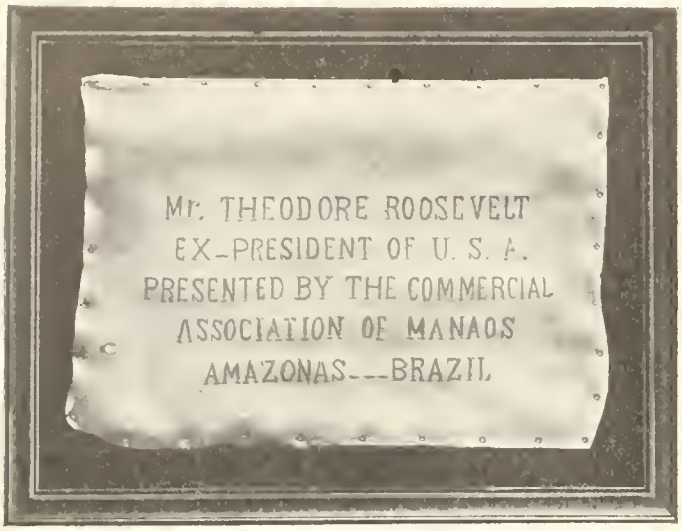
It is an interesting fact, however, that most of the plantations are owned by Brazilians, particularly as the salvation of the rubber industry, as far as Brazil is concerned, seems to lie in rubber planting.

(*To be Continued.*)

The accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.

INTERESTING RUBBER SOUVENIRS.

THREE very interesting souvenirs, showing progress in rubber preparation up the Amazon, were given to the Editor of THE INDIA RUBBER WORLD after the close of the New York



SHEET OF AMAZONAS RUBBER PRESENTED TO MR. ROOSEVELT.

Rubber Exposition. They represented fine sheets of unsmoked *Hevea* rubber, prepared in Amazonas, and were intended for President Taft, Ex-President Roosevelt and the Editor of THE

SHEET OF AMAZONAS RUBBER PRESENTED TO MR. PEARSON.

INDIA RUBBER WORLD. The illustrations show two of them mounted and framed; and as the first of their kind they are certainly historic.

THE CLYDE RUBBER WORKS CO.'S NEW PLANT.

The Clyde Rubber Works Co., Ltd., of Glasgow, Scotland, has just removed to its new plant at Renfrew, a short distance from Glasgow. This new plant has been specially erected to meet the company's requirements and is equipped with the most modern machinery, electrically driven. These greatly increased facilities will enable the company to meet the demand for its goods with the utmost promptness.

FRENCH VIEW OF BRAZILIAN SITUATION.

M. O. LABROY, a French engineer (who, in conjunction with M. V. Cayla, recently made a journey of investigation through Amazonia, on behalf of the Brazilian government), lately returned to France to purchase the plant necessary for the contemplated experimental stations. He has contributed to the "Bulletin" of the Paris Brazilian Information Bureau an article embodying his views on the situation and the measures proposed for remedying it.

In the first place he recalls the fact that the Amazon Valley (which exported last season 40,000 tons of rubber) derived this valuable product almost exclusively from two varieties of trees, which are still to be found in abundance in the vast forests in the territory drained by the various rivers. This rubber-extracting industry occupies annually more than 150,000 workers, or *seringueros,* whose task is to collect the milk flowing from incisions in the lower part of the trees, transforming this milk, by the heated smoke of a fire of palm nuts and certain indigenous woods, into a gum of industrial and commercial value far exceeding that of any other description.

In view of the spontaneous growth of new trees and the reserves of virgin forest, the writer expresses the opinion that the Brazilian rubber-extracting industry is not in any immediate danger from the exhaustion of supply; while even a marked reduction in present values would not materially affect the Amazonan production. Still, the northern States of Brazil, which derive their principal revenues from the rubber export tax, have, in conjunction with the Federal government, decided to put into force a series of economic measures tending to reduce the cost price of rubber and at the same time to develop agriculture in the different productive centers.

The service of the "Protection of Rubber" was organized last year in accordance with the new law, due to the intelligent initiative of Dr. Pedro de Toledo, minister of agriculture. After deciding upon the creation of a rubber manufacturing industry at Rio de Janeiro, the commission settled the important question of coal depots on the Amazon and navigable rivers. A commission of hydrographic engineers has been making surveys for the improvement of the navigation of the Rio Branco and a similar work will soon be undertaken on the Rio Negro.

A trial of agricultural colonization is now being made on the national *fazenda* of São Marcos, and will furnish indications of value in future enterprises of this kind.

While giving attention to the improvement of river transport, the question of sanitation has not been lost sight of, commissions of doctors under Dr. Oswaldo Cruz being engaged in studying the various diseases prevalent among the Amazonian population.

Finally, agronomic stations are being established in the states of Pará, Amazonas, Matto Grosso, Bahia, Piauhy and Minas Geraes. These stations will be specially devoted to the study of various technical and scientific problems connected with the rational production of rubber. Such establishments in the natural centers of production, with perfectly equipped laboratories and installations, will prove an important feature in the plans of colonization, in regions where agriculture is but little advanced. The development of agricultural production is regarded as a matter of primary importance, without which there is no lasting prosperity to be anticipated. The Valley of the Amazon presents very favorable conditions for such development.

It is pointed out that the cultivation of *Hevea* would be easily supplemented by that of Cacao, young and old trees having proved equally fruitful, notwithstanding the absolute lack of rational treatment. Other products which could also, in M. Labroy's opinion, probably be successfully raised are tobacco, sugar cane, cocoanuts, rice and bananas.

Such are a few of the features of the present movement which, according to M. Labroy, are now being carried out for the direct or indirect benefit of Brazilian rubber cultivation.

The Plantation Rubber Industry.

By Cyril E. S. Baxendale.

A PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912.

EARLY HISTORY.

IT is remarkable that—as civilization has become dependent on cultivated produce—the profitable cultivation of rubber should have been, for years, open to doubt.

It was in 1876 (not less than 36 years ago) that *Hevea* seeds were brought from Brazil to Europe by that prince of smugglers, Mr. H. A. Wickham. There was an earlier attempt, but as the few seedlings raised all died, we need not waste time over that. From the 70,000 seeds collected in Brazil by Mr. Wickham, 2,800

CYRIL E. S. BAXENDALE.

plants were raised at Kew Gardens (London) and, in the same year, shipped to the Perideniya Gardens of Ceylon (Ridley tells us) as a depot for the plants from which the cultivation might be spread all over those British Colonies wherein the plant could thrive.

In 1877 a case of 22 plants reached Singapore and were successfully planted by Mr. Murton, the then curator of the newly founded Botanic Gardens there. The same year the first *Hevea* trees arrived in the Malay States. Two cases were sent from Ceylon to the late Sir Hugh Low (British resident of Perak) who planted them at Kwala Kangsar, and, I am glad to say, he lived long enough to see something of the great success of the industry that he helped to found.

It may seem strange that these trees reached maturity many years before it was realized that they were capable of yielding a sufficient quantity of rubber to make their regular tapping profitable. The only explanation I can offer for this is that the duty of tapping them was relegated to Sakeis (Malayan Aboriginals), who adopted the same methods they applied to the collection of wild rubber; that is to say, they hacked them with choppers, while the results they achieved were insufficient to tempt any capitalist to put ten cents into the business.

It is to our scientist friends that we owe the primary knowledge of how these trees might be made profitable. On what we now consider to have been a red-letter day in the year 1888, Mr. H. N. Ridley was appointed director of the Botanic Gardens in Singapore and very soon afterwards commenced experimental tapping; but it was not until 1891 that the first sample of plantation Pará was sent to London from Malaya, and was favorably reported upon by experts. During the nineties, several gentlemen in Ceylon, and Mr. Derry and my learned colleague, Mr. Leonard Wray, in Malaya, continued the experiments.

The first actual sale recorded from Malaya was in 1899, from the trees planted by Sir Hugh Low, and realized 3s. 10d. a pound. The trees were then 22 years old. To the brothers Kindersley belongs the honor of first planting rubber on a commercial scale in our country. That was in 1895, and within three years the late Mr. W. W. Bailey and several other planters, including the humble individual now addressing you, had summoned up sufficient courage to plant a few hundred acres amongst them. To attribute this slow development to lack of enterprise would be unjust. If any explanation is required it must be attributed to lack of money. At the time of which I am speaking, we were all coffee or sugar planters, struggling for a bare, very bare, existence. Some of us may have had the privilege of being on terms of a nodding acquaintance with men of means, but not many of these could recollect that rubber was useful for any practical purpose, except for the erasure of pencil marks.

A favored few had seen or heard of a Mr. Charles Rolls, traveling in a horseless carriage preceded by an ancient man on foot, carrying a red flag as a danger signal; but, probably, none of these realized that this object of merriment was the forerunner of the greatest mechanical industry of the age, or if they did, would not, at any rate, have found it a reason for supporting the schemes of would-be rubber planters.

Rumors of remarkable results from the first planted *Hevea* trees of Ceylon and Malaya reached Europe, and as the years rolled on a few speculative—or may I call them, far-sighted—persons staked a portion of their savings on the new venture.

The extension of the area under *Hevea* in Malaya, which in 1905 amounted to about 38,000 acres, increased at an average rate from that year of about 70,000 acres per annum. The total area at the end of last year (1911) was 542,877 acres.

THE BOOM.

During 1909 the income from the older companies attracted the attention of the investing and speculating public of Europe in general—and Britain in particular—as being unusually large for an agricultural industry. At the same time the value of crude rubber went up by leaps and bounds, bewildering even to those acquainted with the elastic nature of the subject; and indiscriminate speculation was indulged in, of which the promoter of many a wild-cat proposition took full advantage.

It is said that the boom far exceeded that which heralded railway development 70 years ago and can only be compared with another that occurred in the reign of our late Queen Anne in connection with a venture known as the South Sea Bubble.

Well, *our* Bubble, has since deflated somewhat, I am glad to say, but it has not burst; and I think it may be said that the planters who had borne the burden and heat of the day generally kept their heads in spite of the somewhat embarrassing attention paid to their humble efforts, and this had much to do with steadying the market when the bubble was soaring, and also in stopping total deflation when investors rushed to the other extreme.

CLIMATIC CONDITIONS.

The reason the Malay Peninsula attracted most attention for this purpose was, primarily, its regular rainfall. It is commonly said that there are two seasons in that country. One is the wet, and the other is the d——d wet season.

This peculiarity is due to its unique situation as the meeting place of the N-E Monsoon of the China Sea and the S-W Monsoon of the Indian Ocean. After the subsiding of the rains of the

S-W Monsoon, the N-E commences and as the width of the Malay Peninsula does not exceed 170 miles in any part, the land on both coasts is affected by either monsoon.

I have kept the rainfall records at Jugra for 14 years and have never experienced a month without rain, and rarely a month below the average rainfall of Britain. It must be admitted that some of us, in cabling particulars of our monthly outputs, explain a shortage against the estimate by adding "owing to the drought"; but the truth is we have yet to experience the true meaning of the word "drought." There are very few days in the year when it is too wet to work, and this, of course, gives us a great advantage over the collector of wild rubber on the Amazon, where I understand there can be no tapping for several months of the year.

HEALTH.

A very considerable change has come over the conditions of life in Malaya. I regret to say that many of the plantations can hardly yet be described as health resorts; but there has been an immense improvement, and in view of the more or less recent discoveries of our medical men there is good reason to hope that the improvement will continue. To Sir Patrick Manson and Professor Ross we owe the original discovery that the *Anopheles* mosquito is the principal, if not the only, carrier of malarial infection, and the doctors of Malaya have amongst them done excellent work as a result of this discovery. I would single out Dr. Malcolm Watson for special mention, as his work as medical adviser to plantations has come, particularly, under my notice.

He has discovered that the variety of *Anopheles* which favors the coast districts, rarely, if ever, travels more than one-half a mile from the jungle, and there is practical immunity in dwelling places at this distance.

The valleys, in some of the inland districts, harbor another variety of the *Anopheles*, the spawn of which can exist in running water, and can only be got rid of by carrying the water away in enclosed drains. Interesting experiments in this direction are now being carried out by several rubber companies in Selangor.

Thanks to the natural richness of the soil, a considerable amount of capital was attracted to British Malaya from Ceylon, where there was comparatively little suitable land available, and our community owes something of its success to the cash and experience introduced from that colony.

GOVERNMENT AND PLANTER.

Although the new applications for land are still sufficient to tax severely the resources of our over-worked (and not over-paid) Survey Department, the increased rent and export duty has driven a certain amount of British capital to the Dutch Colonies of Java and Sumatra, and considerable development has recently been made in those islands, as well as in Borneo.

When stating these facts, I do not wish it to be understood that I am advocating the avoidance of British Malaya as a country for investment, or that I would belittle the fine work accomplished by my fellow countrymen who have been officially responsible for the development of that region.

On this occasion, I have the honor to represent the Planters' Association of Malaya, who amongst them manage a total of upwards of 600 plantations, with an invested capital of about fifty million pounds sterling, a value, which through their efforts, has appreciated to several times that amount. I am quite certain that I should not be correctly voicing that community if I conveyed the impression that we would prefer any form of government than that approved by our Sovereign Lord, King George.

The success of our industry is largely due to the confidence inspired by the existence of an absolutely honest and conscientious public service. Mistakes have been made, but these have been due, entirely, to the excessive zeal of those in authority, who desire that the whole country should participate in the prosperity of our industry; and judging by past experience in times of adversity, we may reasonably expect that if our burdens become too grievous to be borne, we shall obtain the relief necessary to meet the stress of competition.

CULTIVATION.

With your permission I will now direct your attention to a few details connected with our plantation work.

At first, the cultivation was almost entirely confined to interplanting *Hevea* trees through the old fields of coffee, but a few bold spirits ventured to clear the jungle for this product only. But it is regrettable to mention that some tempered their rashness by planting rubber and cocoanuts in alternate lines, and had to pay rather heavily for their caution, by being forced to cut out either one or the other when both required more room for expansion. I need hardly mention that it was usually the cocoanuts that were condemned. As one who does not believe in keeping two good things in a parcel not large enough to hold both, I have planted the two products in adjoining fields; and, perhaps, for that reason, my feelings have always been harrowed by the woeful spectacle afforded by the destruction of thousands of these valuable palms.

The interplanting of *Ficus Elastica*—the red rubber of commerce (this has no connection with the rubber shipped from the Congo)—was at one time popular, particularly on the estates of the coast districts; but although this variety yielded a fair quantity at the first tapping, it did not compare at all favorably with *Hevea* in continuous yield, and the tapping seemed to check its growth. A considerable area remains under this variety in Sumatra, but it has become a negligible quantity in the Peninsula and has never been in favor in Ceylon.

At the outset we obtained our *Hevea* seeds from the original stock, and this was an expensive item, which has gradually declined in cost, now that we have trees of all ages and have no certain knowledge of any difference in the quality of the plants, whether raised from seeds of old or young trees.

In the hilly districts ordinary surface drainage is required but near the coast great care has to be taken to select land which can be drained efficiently, and this work frequently involves considerable expense. Fortunately for us, Malaya is not subject to tidal waves, as large areas of our finest plantations are only a few feet above sea level. The drains are laid out with the compass, and cut through the living jungle before felling. The jungle is then cut down and the branches lopped to a level of about 4 feet from the ground. A few weeks later, the burning is carried out by a line of men walking at ten to twenty yards apart, with their backs to the wind; and in favorable weather, the undergrowth and smaller branches are consumed. Afterwards the unburnt branches and small trees are piled and burnt, and generally speaking, when this is done the field is described as cleared, although the stumps and trunks of the big jungle trees still remain on the land. Recently on some estates, heavy expense has been incurred in getting rid of these, before planting, as a precaution against the spread of root disease and white ants. It is a debated point as to whether the risk of loss by disease justifies such expensive precautionary measures, and whether it is not better to wait for three or four years when the few rotten logs that remain can easily be got rid of.

Planting is done either from stumps or seed at stake. In the former case, the plants are taken from the nursery, being then from 6 months to 2 years or even older, cut to a length of 3 to 4 feet, the roots hacked back and then planted in the holes previously prepared for them. It says much for the vitality of the *Hevea* that it usually survives this drastic treatment and starts to sprout afresh, within a month, if the weather is propitious. From this time on ensues a battle between the planter and the original jungle, which endeavors to regain possession of the land. Numerous kinds of obnoxious weeds—coming from Heaven knows where—also make their appearance.

From time to time there crops up something almost as bad as weeds. I refer to the wearisome controversy as to whether it is

not desirable to allow grass to grow or to cultivate some cover plant which will extinguish the weeds. There are one or two cover plants which do not cause any permanent damage and have even proved beneficial on some plantations, when they have lacked sufficient cash to maintain a proper upkeep and when the only alternative was abandonment. I have experimented with small areas under grass, but the results have not shaken my belief in clean weeding, to be followed by digging or ploughing whenever there is a sufficiency of funds and labor. With a sufficient supply of these sinews of war, the planter can hold his own, and after three or four years, aided by the shade then afforded by his trees, he becomes master of the situation.

THE HARVEST.

The longed-for harvest then occupies his attention; and nowadays his thoughts turn, naturally enough, to the curing factory. When I started tapping, the word factory had not been invented, or, at any rate, used in this connection. I began by settling the latex in my washing basin, rolling the rubber with a beer bottle (an empty one) and drying it on the veranda. Then acting under strong domestic pressure, I moved the scene of operations to the stables, and carried it on there until there was no room for the horse. Next I built a little shed and bought a hand mangle. The next move was to the factory of today.

COST OF PRODUCTION.

You will, I think, be interested to hear something about the cost of production. We planters are frequently twitted about our old promises of cheap production and these are compared with actual costs, which in some cases exceed 60 cents (U. S. A. currency) a pound. The twitting, curiously enough, was most severe when rubber was worth from two to three dollars, at which time we had to pay an ad valorem export duty and charges, based on these extremely high prices. Then, as there were not quite enough experienced planters to go round, assistants, as well as managers, thought they would like to participate in the general prosperity and expected either larger salaries or else commissions. Our coolies also felt that what was good for master must be good for man, and demanded either more pay or less work—generally both. Even the government suffered from the prevailing spirit and on new applications increased the rent and charged a premium on the land. Shareholders often seem to forget to study the other side of the profit and loss account and to compare the price actually obtained against the price we figured on when estimating the cost of production Moreover, we did not contemplate tapping our trees at four years old, at which age the rubber is naturally more expensive to collect.

I admit that I speak with prejudice, but it seems to me only right and proper that those responsible for supervision should enjoy some of the fruits of the industry, when the industry can well afford it. There are many other items of expenditure which will automatically decline when the value falls.

CLOSE VS. WIDE PLANTING.

I do not desire to encourage the expectation that the yields from our closely planted trees will approach that obtained from those first planted. The latter were usually planted at wide distances, and enjoy as much light and air as the heart of a tree can desire. Ten years ago, I collected 18 lbs. of rubber in 35 days from one of the trees planted by Sir Hugh Low; while from avenue trees of my own planting, 14 years old and 7 feet in girth, results have been obtained far in excess of those planted in the fields. It is for this reason that I am inclined to deplore references in published reports to yields *per tree*. All calculations should be based upon the yield per acre. Probably the average number of trees planted to the acre in Malaya is nearer 200 than 100, and thinning out is inevitable as the trees expand. Thus, your trees are an uncertain quantity, whereas the acre is always the same.

A well known botanist who studied the *Hevea* in its native land used to urge us strongly to plant at 40 x 40 feet, i. e., 27 trees to the acre.

The *Hevea*, like most quick growing trees, is extremely brittle; and, at this distance, would suffer severely from the wind, but if I allowed, for the sake of argument, that every tree reached maturity, I found by comparing the results from avenue trees against the results from closely planted fields that up to 8 years old I should have harvested less than half the quantity of rubber from the same area, had I adopted our botanical friend's advice.

It is true that I should have economised to a certain extent on the actual cost of collection but not sufficiently to compensate for the loss of rubber.

Thinning out as the trees get older and require more space, has been opposed on the ground that the dead roots encourage the spread of disease. I have pursued this policy for several years past and cannot find that the fear is justified. Indeed, as the years roll on, I become less anxious about plant diseases and pests of all kinds. *Fomes Semitostus* (our worst fungus disease) and white ants (the most destructive of our insect pests) have lost their terrors for me now that I know how to keep them in check; and as the loss from all causes on the plantations I am connected with does not average two per cent. after attaining maturity, I cannot, justly, be charged with "turning the blind eye" in that direction.

LABOR PROSPECTS.

The most plausible argument against the future output of plantations is that of shortage of labor. It is true that most plantations are at times short of labor, but I think this must generally be attributed to the manager's desire to keep down expenses. Out of a total of 227,985 coolies employed on Malayan plantations 126,665, or rather more than half, were imported from India. The average period of service on the plantation does not exceed two years—although many of these return after a holiday in their native land; and the difficulty is to engage during the recruiting season the exact number that are required to make good the probable departures during the rest of the year, without becoming burdened at the beginning with labor for which there is no profitable employment.

Within two years the plantation labor force has more than doubled. I do not believe that by increasing the rate of wages any great stimulus would be given to Indian emigration. Tamil coolies are more easily recruited for some plantations at half the wages paid on others which are unpopular, owing to unhealthiness or to some other cause; and this fact is becoming more clearly marked, since those employed at the lowest rates have found themselves able to remit more than half their earnings to India, and their savings in three or four years are sufficient to establish them as capitalists when they return to their native villages.

The future success of estates which are unpopular with Indians will depend on the attractions they can offer to Chinese or Japanese. To these, the rate of wages is of more importance than any other consideration; and there is practically no limit to the number that can be recruited—at a price.

It must be remembered that by doubling the cost of labor we do not double the cost of production. Generally speaking, the average cost of tapping is less than one-half the total cost of production, if we include home charges; and as the majority of the trees now being tapped have barely reached half their full yielding capacity, labor rates can, if necessary, be materially increased without raising the cost of production, when the trees attain maturity.

MANURING.

Recently, some consideration has been given to the question of manures. From Ceylon some interesting results have been reported, but in Malaya little has been done in this direction, except on some estates where the soil is excessively rich in humus, and lime has been applied to correct the acidity, with good results.

My own opinion is that for some years to come, at any rate, systematic cultivation of the soil will be of more value than any manure, but the experiments in Ceylon are deserving of atten-

tion; and the Agricultural Department of Malaya, if they have not already done so, might study the question with advantage.

FUTURE SUPPLIES.

It has been suggested to me that you will be interested in an estimate of the supplies that are to be obtained from plantation sources, and it is obvious that a paper of this kind would be incomplete without it. It is not easy to obtain reliable statistics of the cultivation in all the tropical countries in which rubber is grown. Naturally, the yields vary considerably and the high price has undoubtedly encouraged more vigorous tapping on many plantations than would have been considered advisable if the price had been less tempting. I know fields where from 800 to 900 pounds an acre have been collected for two or three successive years, but I question if such high yields can be maintained. A first-class, well-managed plantation may be expected to yield an average of 500 to 600 pounds an acre for as many years as our experience guides us, but we must assume a considerably lower average from all plantations. The area under rubber in the Malay Peninsula at the end of 1911 amounted to 542,877 acres, and as far as I can ascertain the total area under this cultivation in the world amounts to about 1,000,000 acres. We know that during the half year ending June 30, 1912, the exports from Malaya amounted to 9,038 tons, and from Ceylon to 2,252 tons. Allowing for the output from India, Sumatra, Java, etc., I estimate the total output of plantation rubber will be from 25,000 to 30,000 tons for the whole year. The annual increase will be fairly steady, and at about six years from date the production is likely to amount to 100,000 tons per annum or, in other words, equal the total consumption of rubber during the year ending June 30 last.

During the year ending June 30 (1912), with rubber averaging 5/2 (say a dollar and a quarter) a pound, consumption—according to the figures recently published by Messrs. Hecht—increased by 25,482 tons. I am aware that this statement has been challenged by other authorities. We are told that they are *eminent* authorities, but as they unfortunately published their views anonymously, we are obliged to take their word for it.

The most pessimistic of these that I have read, calculates the increase at about 14,000 tons, and if we accept this figure in preference to Messrs. Hechts' (I don't know why we should), and assume that this increase will be maintained, the requirements six years hence will amount to 184,000 tons, so that the struggle between plantation and wild rubber does not appear to be very imminent.

I have now told you as well as I can what I believe to be the immediate course of events. To you gentlemen, who are manufacturers, I would say this, whether our achievements will lead to prosperity for *our* industry will depend entirely on the growth of *your* industry. Speaking personally of my first few years' experience in tropical agriculture, I was engaged in planting coffee. At the outset of my career in this line, the price in local currency and weights was $40 a picul and I saw it fall to $16. This experience is put in the shade by that of my brother planters who were interested in pepper and cinchona. Our misfortunes were due to the fact that an increased supply did not lead to any considerable increase in the demand for these products. We have yet to hear of anyone who shakes the pepper castor more vigorously over his potatoes owing to a slump in the price of pepper, or increases his dose of quinine because the quantity of cinchona offered at the auction sale is in excess of anticipations.

The future of the rubber industry depends on whether the planter can confidently anticipate manufacturers digesting the increased supplies.

A well-managed, favorably situated, mature plantation can produce with a handsome profit at 2/6 (60 cents) a pound. It must be remembered that the increased demand depends on the new uses to which it may be put, the increased demand for uses to which it has hitherto been put, and the supply demanded by making good the losses by wear.

As an illustration of what I mean, I will take the case of solid and cushion tires which if not now, will perhaps shortly absorb more rubber than is used for any other purpose. If we assume that 1,000,000 of these tires are used through the world this year, and only the same number next year, the amount of rubber required on this account will, other things being equal, be only that amount necessary to replace the loss involved by wear and tear.

The irregularity of the cost has undoubtedly militated against its use in some directions. For instance, I am informed that whereas electric light mains and leads were in the past invariably insulated with rubber, paper insulation has been substituted in many cases. Experts tell me that rubber is preferable for this purpose, and no doubt a number of instances will occur to you gentlemen, where it would be preferable, if the price admitted of this use.

This brings me to the crucial question from the planter's point of view, and a question which my present audience is in a better position to make an authoritative reply to than any audience previously addressed by a planter.

We can guarantee an enormously increased supply of rubber and will in future years be content with a much lower price than now prevails. What we want to know is whether there is to be a glut in the market, and a scramble to sell, with every successive increase in the supply. Perhaps, gentlemen, you can allay the misgivings of those planters with the weaker faith in the future of the industry, and can send them, through me, assurances which will encourage them to hope for a continuance, even if in a modified degree, of the prosperity we have recently enjoyed—a prosperity which, I believe, has never been rivalled by any agricultural industry in all the history of the world.

MANURING RUBBER TREES.

EUROPEAN manufacturers and Asiatic importers of fertilizers have been zealously pushing their commodities with the planting public. The difficulty seems to lie in knowing which forms of manures are best suited to particular localities, and whether the outlay will be repaid by increased rapidity of growth or larger yield of latex. Experiments on the government plantations at Kuala Lumpur (Federal Malay States) established the fact that any kind of manure stimulated growth, and that lime was well suited for trees on the soil selected.

It is understood that further experiments are being conducted at Kuala Lumpur, and that a more extended series of trials will take place at Teluk Anson. While such experiments are of value from a general standpoint, the need has been pointed out of a certain amount of experimental manuring to ascertain the qualities best suited to individual estates. The opinion has been expressed that if fertilizers have anything like the effect on yield that they have been shown to have on growth, it may be anticipated that manuring will be largely adopted in Malaya.

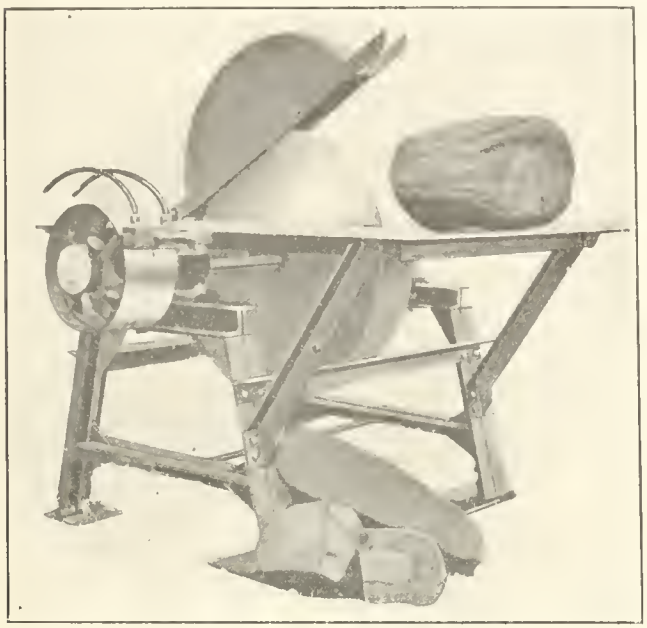
PARA RUBBER TREE IN CEYLON.

In the course of an interview with the Kandy representative of the "Times of Ceylon," Mr. H. A. Wickham, the father of the rubber planting industry, lately expressed himself as follows:

"The Pará rubber trees in Ceylon plantations are better than the trees in the Amazons, and I am not surprised at it. If you bring a product from one country to another possessing suitable conditions and cultivate it, the exotic will flourish in a remarkable manner. Take, for instance, coffee, an Eastern product which was introduced into South America. You will not get anything like the South American coffee in the East, and the yield is abundant. The coffee grows in Brazil better than in its native home. In the same way the Pará rubber tree introduced into the East from Western Equatoria, and finding favorable conditions, has developed in a remarkable manner. The trees here are much hardier than in their own country.

The Washing of Crude Rubber.

CRUDE RUBBER as it comes to the market appears in a great variety of forms—hams or pelles, balls, strips, sausages, lumps, flakes and all conditions of scrap. In all of these forms there is more or less foreign matter—matter that must be removed before the rubber can be used in manufactured goods. The foreign substances are bits of bark, leaves, splinters



KNIFE FOR CUTTING RUBBER BISCUITS.

of wood, sand, fibre, earthy matters, etc., etc. The only exceptions to this very general rule are deresinated and plantation rubbers. Many manufacturers find it worth their while to wash even these sorts, as the process seems to result in a better and tougher product. The primary process, whatever the line of rubber manufacture, therefore, is that of washing.

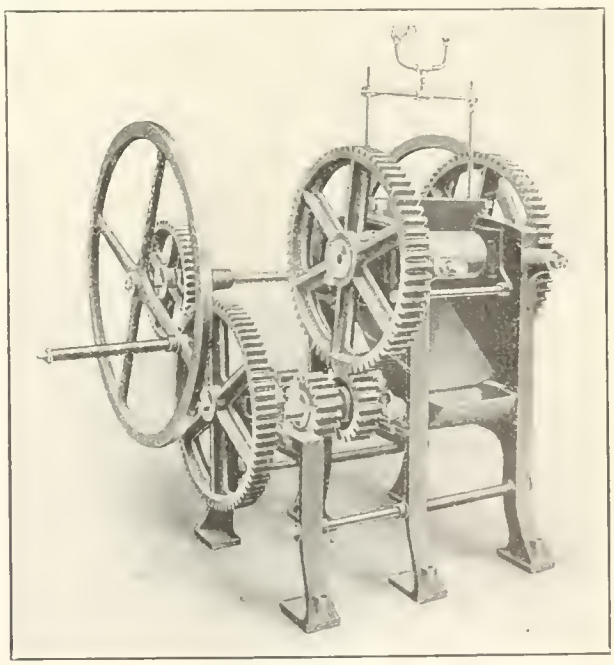
The gum is usually put into a pickling tank containing warm water, where it is allowed to soak. This removes foreign matter on the surface, softens the rubber and makes it more easily worked. This tank is usually sunk to the level of the floor near the washers to facilitate the handling of the rubber. For some grades, such as pelles of fine Pará, a power-driven circular knife is used for cutting the rubber into smaller pieces, that they may be more easily sheeted. The rubber thus prepared is fed into the first washing machine or cracker. The action of this machine is to tear or mangle the rubber, releasing the dirt and bark, which are washed away during the operation by a stream of cold water, which plays upon the mass. The cracker is a heavy, powerful, two or three-roll type of machine, the size and number of rolls depending on the quantity of material to be handled.

After a thorough washing in the cracker the partially cleaned rubber passes to the two-roll washer. The province of this machine is to complete the washing process and to sheet the torn rubber. Warm water is used on the tough mass to produce a degree of stickiness, that the action of the rolls may form it into sheets. Cold water is then turned on and the sheets passed through the rolls repeatedly until completely cleansed by the kneading action of the rolls and the running water.

There is a great variety of washers in use in the world's rubber mills, but a majority of them are of practically the same design; that is, they are usually two roll machines, the rolls geared in different speeds and running toward each other. In rubber plantations practically the same type of a machine is used, run either by hand or by power, and in some of the larger plantations batteries of machines are employed. As plantation rubber is washed very soon after coagulation, the machine may be quite light and does not take nearly the amount of power to run that the same types in rubber factories call for. When it is remembered that crude rubber shrinks anywhere from 12 to 50 per cent., that while a considerable percentage of the shrinkage is due to the water extracted from the rubber, a great deal is foreign matter, more or less injurious to the gum, it will be wondered at that manufacturers have not insisted upon rubber being washed at the source of supply and delivered clean and dry, thus saving much in the way of freights. The explanation is that as soon as rubber is massed and its physical aspect changed, it is so easy to amalgamate the inferior and superior qualities that manufacturers decline to take the risk of being cheated, and have consistently frowned upon all such suggestions. There have been, however, and still are, crude rubber washing companies in various parts of the world that have done a fair business, but none of them have been conspicuously successful as yet.

There are some forty companies in the world making roll washers, and their patterns are more or less similar. It will, therefore, be sufficient, in describing these machines, to take examples from the output of any of the higher class of machine manufacturers and describe them as practically typical of the whole.

Roll washers consist of heavy iron rolls running toward one another, set in substantial iron frames, fitted with piping so that hot or cold water may be sprayed over the rubber as it passes between the moving rolls. These rolls, be it remarked, are



PLANTATION HAND WASHER.

fluted or corrugated so as to bite the often intractable and slippery gum.

Regarding the kind of roll—corrugation, many experiments have been made to determine the best possible form. There is for example the saw-tooth corrugation, in some cases both

rolls being cut to this shape, while in others one roll is smooth and the other cut. Probably more rolls are made with the V-shaped corrugation than any other. Experiments have shown that this form will do quite as good work at least, as it holds its shape longer and is easier to recut than the other forms. It seems to be quite a question whether two cut rolls or one (one being a smooth roll) will give the better results. There are cases where two cut rolls with ordinary corrugations make good sheets, but in small mills where one machine is required to do all the work from breaking down the biscuit to sheeting out, the machine with one smooth and one cut roll with a friction of about 1¼ to 1 in the rolls, is the better.

Taking a two-roll washer of the standard type, it has about the following description. The frames are heavy in construction, accurately lined and firmly held in place by stay rods. The frames are side-capped. The caps are bolted in place with heavy bolts in order to resist the strain at this point.

The journal boxes are solid cast, designed to keep out water and dirt. The bearing surfaces are channeled to insure perfect lubrication and bronze-lined in the sections exposed to greatest wear. Oiling devices easy and safe of access are provided.

The rolls are hard gray cast iron. The grooves or corrugations of both rolls are planed in spirally about 4 to the inch. The front or driving roll revolves in stationary boxes. The follower roll is brought into adjustment by means of steel adjusting screws, working in bronze nuts set into the back of the frames.

The power is taken from the main shaft by means of a jaw clutch and pinion. The latter engages a spur gear, keyed to the driving roll. A gear is keyed to the other end of this roll and meshes with a larger gear keyed to the end of the follower roll, causing the two rolls to travel at different speeds. The following are standard sizes of two-roll washers and their ten-hour product:

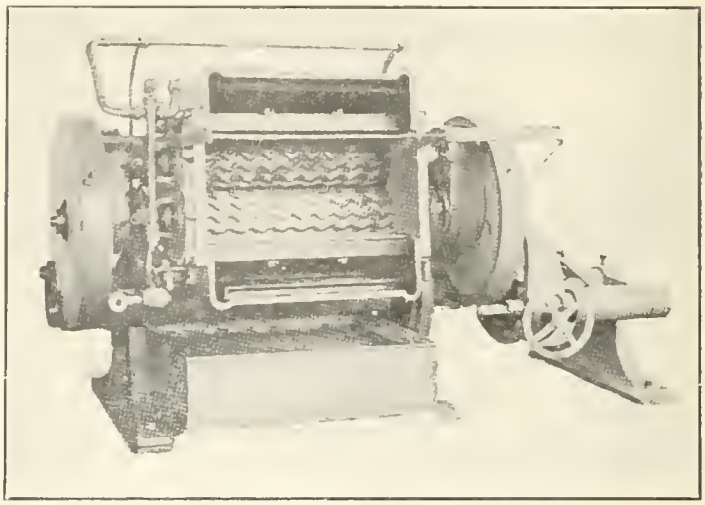
8 x 16"	2 roll	500	pounds	in	10	hours	7½ H. P.
10 x 20"	" "	750	"	"	10	"	10 H. P.
12 x 24"	" "	1,200	"	"	10	"	15 H. P.
14 x 28"	" "	1,500	"	"	10	"	20 H. P.
15 x 30"	" "	2,000	"	"	10	"	25 H. P.
16 x 36"	" "	2,500	"	"	10	"	30 H. P.

The cracker when used in washing is practically the same machine as the two-roll washer. It is, however, usual to have the rolls more coarsely corrugated, and of chilled iron. The rolls of the cracker run at the ratio of about 1 to 1½. A cracker-washer with rolls 15 x 24 should deliver 1,500 lbs. of stock in ten hours, and take about 25 H. P. to do it. One 16 x 30 should produce 2,000 lbs., and require 30 H. P. One 18 x 36 should deliver 2,500 lbs. and use 35 H. P.

The three-roll washer is designed to handle large quantities of rubber after it has been passed through the "cracker." It has a capacity nearly double that of a two-roll machine of corresponding size, while only one operative is required. The frames are heavy, strong, should be accurately squared as to each other and securely held in place by strong stay rods or bolts. The caps are located on the front of the frames to facilitate removal of the rolls. They are of heavy construction and provided with strong bolts in order to resist the powerful thrust directed against this part of the machine.

The journal boxes are solid cast, provided with oiling devices, easy and safe of access, and the inner or bearing surfaces are oil-channeled to insure perfect lubrication; so designed as to keep out water and grit. The bearing sections exposed to greatest wear are bronze-lined.

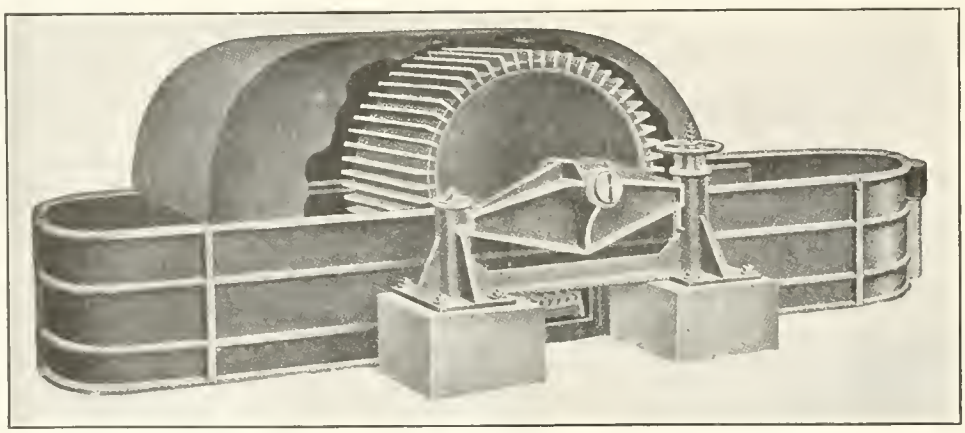
The rolls are usually solid cast of hard gray iron. The grooves or corrugations of all three rolls are V-shaped, planed in spirally about four to the inch. The front or middle roll is



MASTICATOR WASHER.

the driver and revolves in stationary boxes. The two follower rolls are brought into adjustment with the middle roll by means of steel adjusting screws, working in bronze nuts set into the back of the frames. Power is applied from the main shaft by means of a jaw clutch and pinion which engages a spur gear keyed to the middle or driving roll. A gear is keyed to the other end of this roll and meshes with gears of similar pitch and face, keyed to the ends of the two follower rolls; thereby all rolls are driven at the same speed.

Three-roll washers come in three sizes, weighing 15,000, 18,000 and 25,000 lbs. They have a capacity for ten hours' work in Pará rubber of 25,000, 35,000 and 45,000 lbs., using all the way from 50 to 100 H. P.



TUB WASHER.

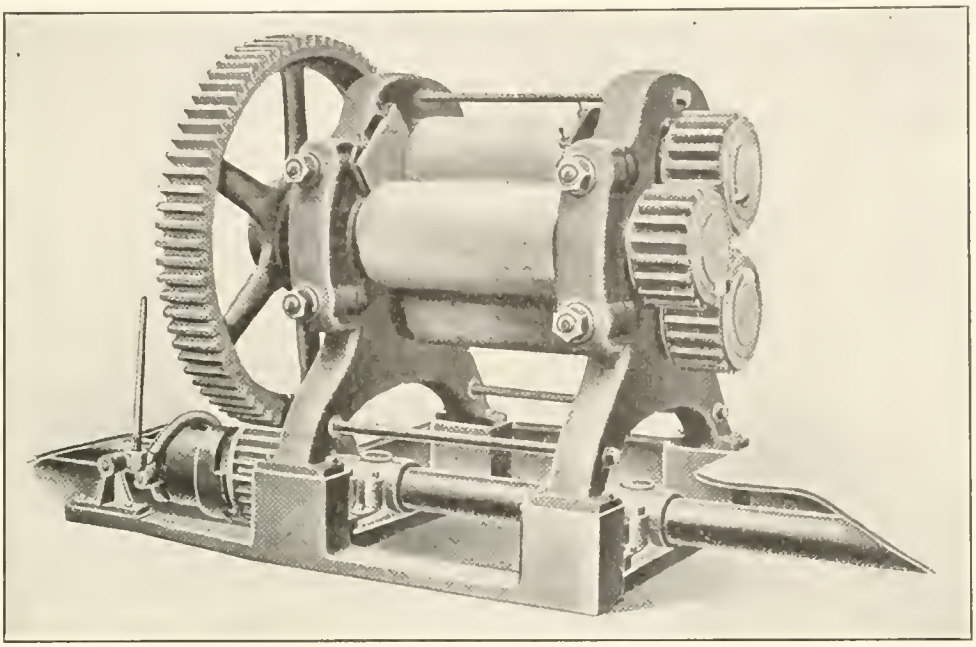
The three-roll cracker can be used as a cracker or a cracker-washer. For a cracker, the rolls are usually chilled and provided with coarse corrugations, such as the undercut or saw-tooth spiral shape with the face backed off, and the driving roll is geared to run 1 to 1½ or 1 to 2 as compared to the follower. A steel neck is also recommended for the driving roll.

The three-roll cracker-washer does the entire work from the biscuit or crude material to the clean sheet. The corrugations are usually the V-shape spiral on all rolls, but in some instances

the driving roll is corrugated and the follower rolls are smooth. The differential speed of the rolls is 1 to 1½.

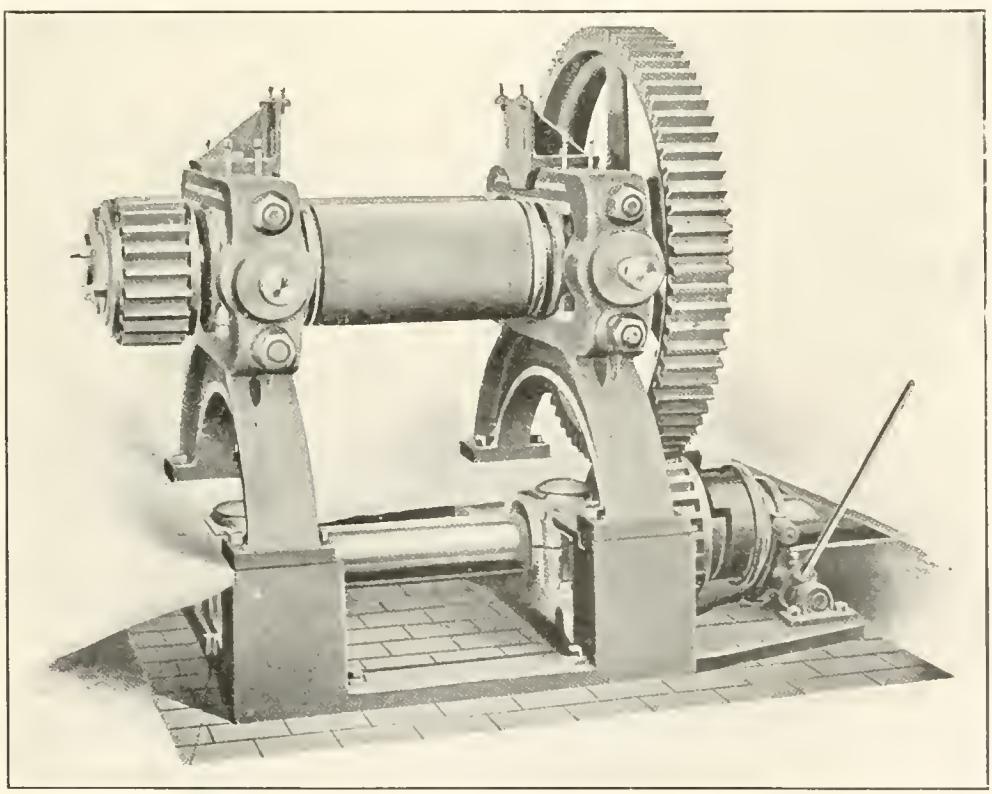
A distinct type of washer has grown up by the side of the roll machine, and is very generally used, particularly in cleaning the softer gums. It is known as the "Tub" washer and is very much like the so-called "paper engine."

It is in brief a tank anywhere from 2 to 16 feet long, with a beater wheel running in it. When filled with water and shredded material it runs the contents round and round the tank, beating and cleansing, and yet never crushing. In use the rubber is first run through a cracker of some sort and shredded. It is then put in the tub, which has been previously filled with water. When the machine is started the rubber is carried under the washing roll and over the bed plate at the bottom, which spreads and stretches the rubber and releases particles of sand or bark or other foreign matter. The bark, being lighter than the rubber, floats on top and is skimmed off, while the sand and gravel settle to the bottom out of the way and are removed after the batch is finished.



THREE ROLL WASHER.

For certain grades of rubber, where fine sand is present, this type of machine is indispensable. The type shown in the illustration is made of cast iron sections bolted together, and calked with lead. The bottom is built of cement or concrete, after the machine is placed in position. The bearings are set on piers outside of the tub with an adjusting screw on one side. The surface of the beating roll is fitted with steel-faced knives, set into cast-iron heads. The bed-knife is made of cast-iron and easily removed. The weight of a full-sized machine of this kind is about 12,000 lbs., and the beating roll 58" in diameter with 36" face. A tub of this sort will hold from five to six hundred gallons of water, carry from 300 to 500 lbs. of rubber per charge and take some 40 H. P. to run it.



TWO ROLL WASHER.

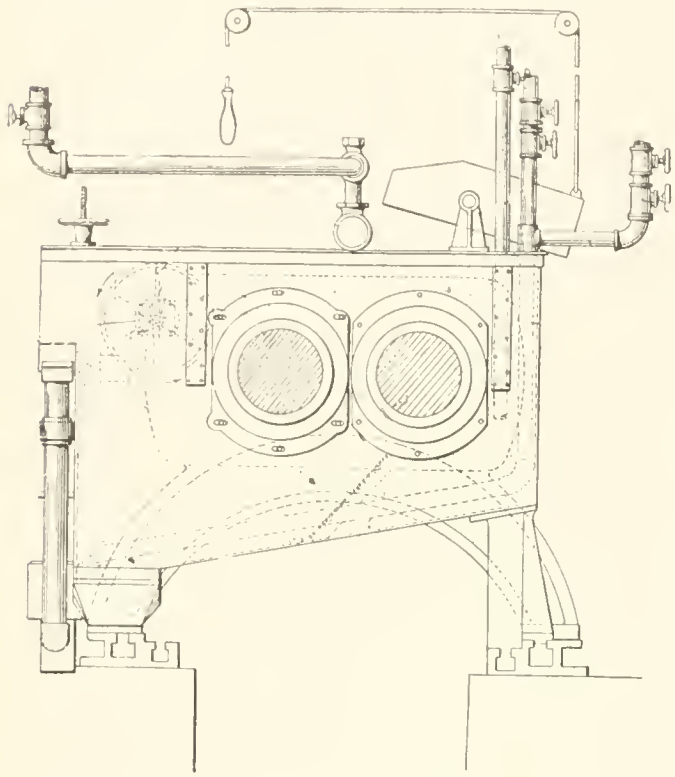
A type of washer which is essentially European, is an adaptation of a Masticator. The argument of the inventors of this type is that in ordinary washing with the two or three-roll machine, impurities are all crushed or splintered and held in the rubber, causing a much longer duration of washing than should be necessary, and that this impairs the "nerve" of the rubber. In the machine under consideration every particle of rubber is brought in contact with the water, and the water escaping carries the impurities away with it, at once.

The machine consists of a pair of deeply corrugated rolls, carried in a trough shaped at the bottom to follow the periphery of the rolls. The trough carries ledges at the back and front, which turn the rubber over and guide it between the rolls. The machine is furnished with gratings in the back and front of the trough, through which the lighter impurities escape.

This machine comes in three sizes, which take charges of rubber of twenty, forty and eighty pounds. The horse-power required is approximately 9, 15 and 25, and the time required per batch from ten to twenty minutes. The above relate to Pará sorts. For low grade gums

the charge may be as high as one hundred and fifty pounds.

What is known as the Hood washer is a two-roll machine set in a closed tank, so that the level of the water during washing



HOOD ENCLOSED WASHER.

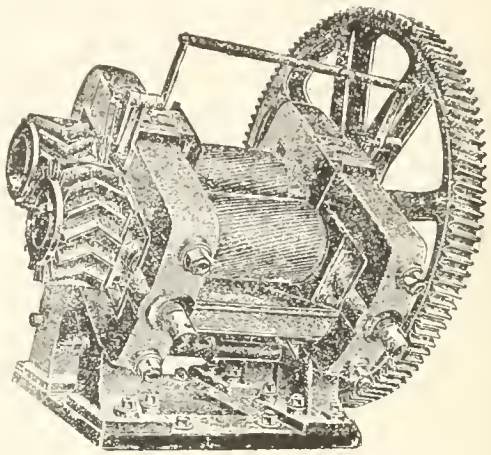
comes above the nip of the rolls. When at work the rubber sheet floats up to the surface automatically, and feeds through the rolls. Floating impurities are washed away, while the heavier ones sink to the bottom out of the way, and are removed periodically through a gate.

Another enclosed roll machine is the Dessau. It consists of a pair of rolls, corrugated and studded, revolving in a tank. The sides of the tank support a central screened box that immediately encloses the rolls. This gives a liquid space at the bottom and sides. There is arranged also at the bottom of the liquid space an agitating device which keeps the water in motion and is designed to prevent any particles of foreign matter from settling upon the rubber while it is being washed.

Still another enclosed washer is the Kempter, of German origin. This, like the Masticator washer, has bladed rolls, the bottom of the trough containing them being in the form of intersecting cylinders with a ledge in the middle. Water is forced in from the bottom. The rubber passes down between the rolls, is opened up by the ledge, and then up between the rolls and the sides of the trough. Foreign materials pass through perforations in the trough and over lips on either wall.

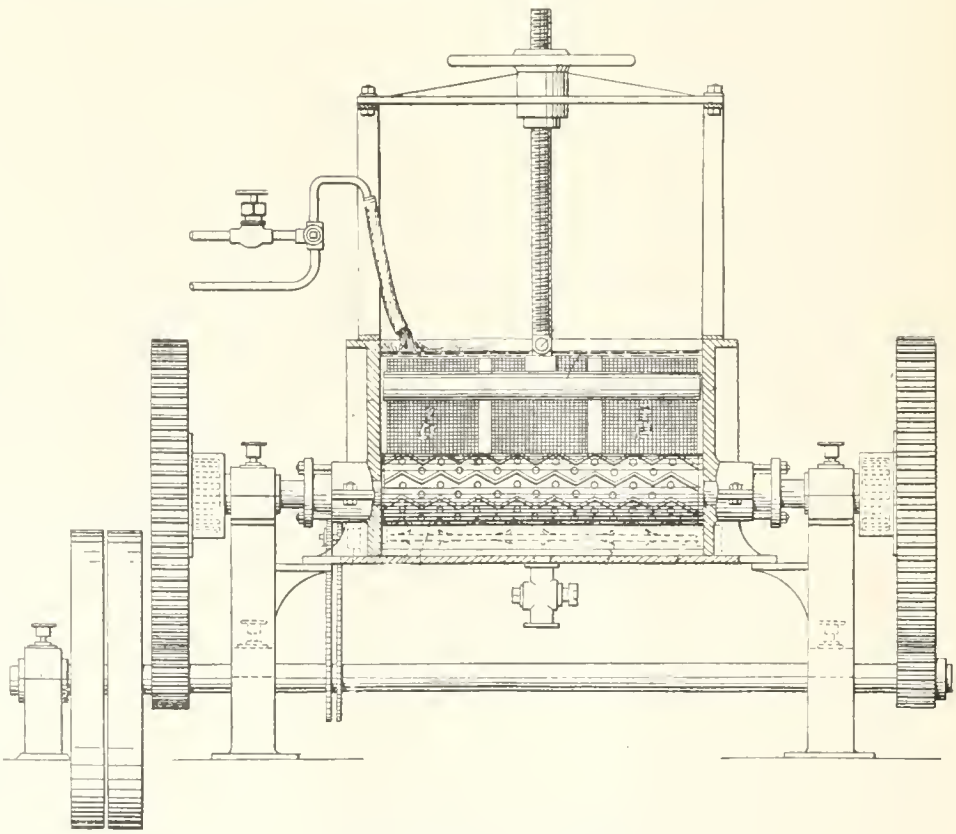
In addition to the foregoing there are sundry individual machines and processes in use in various factories for the further cleansing and treatment of crude rubber.

For example: In the production of a certain grade of rubber great difficulty was found in getting rid of the great amount of woody fibre that was present. After the rubber had been shredded, both rubber and wood floated on the surface of the water, and if put through ordinary roll washers much fibre was imbedded in the rubber. One solution of the problem was a method of dissolving the wood fibre by treating the mass with a strong alkaline solution. After many experiments a simple process for removing most of it mechanically was invented. It was this: to float the shredded rubber and fibre into a tank that could be hermetically sealed. Air was then forced in and the pressure freed the minute globules of air that clustered about each shred of fibre, and the shred, water-logged, sank to the bottom out of the way.



ANGLE TYPE TWO ROLL WASHER.

The above covers pretty fully rubber washing where water alone is used. Where rubber is washed free from resins, for example, and solvents are used, a radically different apparatus is necessary. That, however, is another story.



THE DESSAU "ROCK" WASHER.

Possible Rubber Producers in the Temperate Zone.

By Charles P. Fox.

A PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912

THIS paper has been prepared at the suggestion of Mr. H. C. Pearson, originating from comments made upon an editorial in a recent issue of the INDIA RUBBER WORLD.

The idea of producing rubber in commercial quantities within the boundaries of the Temperate Zone is not a new one. The increasing use of this commodity and the increase in cost are responsible for the occasional stimulation of interest in the matter. Thirty years ago the farmers of Canada were forming companies for utilizing the common milkweed for this purpose. The high price of rubber in 1910, caused some Summit County (Ohio) farmers to seriously think of the same thing.

While the proposition is quite possible, its probabilities are remote, and dependent upon many conditions, some of which are: demand, cost of production, grade of product, influence of supplies of natural and plantation-grown rubber and the ever-appearing spectre "synthetic."

We have several rubber-producing plants suitable for the various sections of the temperate zone. During the past fifteen years the author has examined a number of plants, the examination including almost every plant likely to contain rubber, from Carolina Palmetto to California Cactus. For convenience I have grouped these plants according to their nativity and climatic requirements.

Of the foreign plants we have *Atractylis* and *Eucommia*.

Atractylis gummifera is a thistle-like Composita of Southern Europe with enormous beet-like roots and thorny leaves. A few years ago European writers advocated this plant as a source of crude rubber. Our examination did not confirm this view.

Eucommia ulmoides, known as the "Chinese Rubber Tree," is a native of Northern China, a country very similar in soil and climate to Eastern Washington. According to the Arnold Arboretum, Harvard College, it is perfectly hardy in New England. Just what it will do in this section in the production of rubber either in quality or quantity, is not given out by the authority quoted. Under natural conditions, it produces a good rubber, the rubber appearing as long silky threads in the broken bark. This source of rubber has been known since 1882. It has been recommended for planting by the Indian Forestry Commission. According to Vilmorin, Paris, who propagated it for sale, there was never much demand for it. It is a fine appearing tree and well deserves a place in ornamental forestry.

Of our native plants those of possible value as rubber producers in the North are members of the *Asclepiadaceae*, *Apocynaceae*, and *Compositae* families.

Of the true milkweeds there is only one of any importance, *Asclepias cornuti*. This species is very abundant throughout the United States, growing upon almost any kind of soil and showing great drought-resisting qualities. This plant contains an abundance of milky juice containing 3% per cent. of fair grade rubber. The cost to collect this latex is, however, prohibitory. The amount of product given up by extraction of either the fresh or dried weed is too small, and its character too inferior to command much attention.

If by selection or transportation from one section to another, the quantity and quality could be increased and improved to a degree sufficient to make the production by extraction profitable, this plant would be the favorite, as perennial plantations yielding annually 2 to 3 cuttings of at least 10 tons each per acre of green weed, could be easily and economically established.

The common Indian hemp, *Apocynum cannabinum*, occupies about the same territory as the milkweed but is less abundant. It produces less latex than the milkweed, but the quality of rubber is better. The root of this plant contains rubber, and is very similar to that of the African *Landolphia*.

The native *Compositae* of this region give us several rubber producers. *Souchus* (Sow thistle), an introduced species now naturalized, is credited by Jumelle as the producer of an excellent grade of rubber. *Souchus* rubber is the subject of a German patent of 1885. This plant thrives on a dry, barren soil and is regarded as a troublesome weed.

We have two species of wild lettuce, *Lactuca Canadensis* and *L. virosa;* both very abundant, especially the latter, which is a terrible pest. Both produce thick rubber-containing latex and medicinal agents. *L. virosa* gives a water extract similar to chicory as a coffee substitute.

The arid section of the Temperate Zone is amply provided for with guayule, pingue, greaseweed and candelillia.

The value of the guayule (*Parthenium argentatum*) as a rubber producer is too well known to need a description. Prof. Lloyd is certain that guayule can be successfully grown in Mexico. Mexican conditions can certainly be duplicated in the Southwest.

Pingue (*Actinella Richardsonii*) is a related plant found in New Mexico and southern Colorado. While containing less rubber than guayule, it possesses some superior advantages in other ways. The root of the pingue is the producing portion. The top furnishes numerous shoots for propagating. The pingue requires a deep, sandy soil for the maximum development of its long tap root. Under these conditions the yield of rubber may reach 7 per cent. of good grade rubber equal to, if not better than, the guayule product.

While investigating the pingue, this peculiar condition was observed: As before stated, the pingue, under natural conditions, i. e. mountain slopes and dry sandy banks, develops a fusiform type of root, comparatively rich in rubber. On clay soil, in meadows along irrigating canals, the pingue root becomes fibrous and contains little or no rubber. This phase may have an important bearing upon the utilization by cultivation of the guayule and pingue for the production of rubber.

The neglected mariola, another *Parthenium*, occupying a wider range and much more abundant than guayule, may sometime be of value on account of its resin. Nevada greasewood contains rubber as shown by the Ellis & Werner patents of 1902. Mr. Sam P. Davis, Nevada Industrial Commissioner, advises that there is a large amount of this plant.

Another promising plant of the arid region is "Strockles Rubber Bush," a robust *Composita* growing abundantly throughout the Great Basin. While the rubber of this plant is inferior to that of the other two *Compositae* mentioned, it can be utilized. This plant also contains a large amount of valuable resin.

In North Mexico and the "Big Bend" country of Texas, there is an immense growth of Candelillia, an *Euphorbia* which contains rubber and wax. This wax is now a commercial product much used in Germany as a constituent of hard rubber. On account of its drought-resisting qualities and the facility by which it can be propagated by its bulbous root, it should be a valuable plant for the extremely arid, non-irrigated section of the Southwest.

The South has its special rubber producing plants. Some 15 years ago the growing of *Ficus elastica* for rubber was attempted in Florida. The point selected, unfortunately, was on Key West, a small island near the mainland, with shallow soil and dry meteorological conditions.

The venture was not successful. The ruins of the plantation with its dwarfed, straggling trees still remain. The trees are now 15 to 20 feet high and 6 inches in diameter. Some of these trees were tapped in April, 1910. Very little latex was secured and this was of poor quality. When grown on the mainland, in the deep, fertile and moist soil near Miami, it becomes a large tree.

There is a native fig (*Ficus aurea*) found growing abundantly throughout southern Florida. Large trees, 60 feet high and 2 feet in diameter, of this species, are to be seen on the grounds of Fort Dallas, once the prison home of the defiant Seminole chieftain, Osceola.

Mr. Flagler, the founder of Palm Beach, planted this species along the shores of Lake Worth for ornamental purposes. The tree gives an abundance of latex containing rubber, of quality

CHARLES P. FOX.

probably as good as the Amate rubber of Mexico. The tree will flourish in almost any situation found in South Florida.

That portion of Florida south of Homestead is a vast stretch of saw grass, with swampy clay of doubtful value for agricultural purposes, even after the "Everglade Reclamation" has been completed. The Florida fig will grow there. Considering the large area suitable, the rapid growth of the tree, and the possibilities of the yield of rubber, the proposition is not the worst one.

In the sandy and drier portions of the South, we have several species of *Bumelia*. Tropical relatives of the *Bumelias* are producers of gutta percha. Texas "stretchberry" (*Bumelia lanuginosa*) contains rubber. The "stretchberry" is a shrub of wide distribution suitable for much of the waste land along the Pecos.

In the arid portions of the South, especially on the Florida Keys, the hedge spurge (*Euphorbia triangufolia*) does entirely too well. Planted out originally for fencing, it has, in many localities, spread into the fields. This plant produces a small amount of rubber. Recently, it has been strongly advertised as "Cuban Rubber." Value of the plant as a rubber producer has been over-estimated.

Of the several plants mentioned for the possible production of rubber in the Temperate Zone, only two of them, guayule and pingue, have been found to contain enough rubber to insure a profitable working. The balance must be improved by careful "Burbanking." This work of selection and improvement lies within the scope of our experiment stations. Already the universities of New Mexico and Arizona have work in progress along these lines.

In the possible production of rubber in the Temperate Zone, the arid West has the better chance, with the South a close second. While the Temperate Zone may never do much in the way of producing first class rubber, the firm believer may find consolation in the prophecy that, if necessity demands, it can produce enough masticatory to keep busy a hundred million maxillae.

CHARLES P. FOX.

ONE of the most fascinating studies connected with the botany of the United States is the possibility of cultivating, on a commercial scale, some rubber-producing plant. Probably nobody has given more attention to this matter than Mr. Charles P. Fox, whose interesting paper, "Possible Rubber Producers in the Temperate Zone," appears above. Mr. Fox has studied the question of rubber producing plants in the United States for the last fourteen years, and studied it in a thoroughly scientific way. He is an Ohioan by birth, graduated from the Ohio State University in 1900, and very soon thereafter became Professor of Agriculture in the University of Idaho. From 1899 to 1912 he was chemist with the Diamond Rubber Co., and since the merger of that company with the Goodrich company has acted as chemist for the larger corporation.

He has devoted a great deal of time to investigating the source and preparation of Guayule, Jelutong, Colorado rubber weed, Castilloa, the Cuban cactus and Florida fig rubbers.

He is a member of a number of scientific societies, including the American Chemical Society, Society of Chemical Industry and the National Geographical Society; and he has published many pamphlets and articles relating to agricultural and rubber industries.

RUBBER SEED OIL.

UNTIL recently the demand for seeds for planting purposes has absorbed a considerable portion of the supply, but as the "Malay Mail" remarks, this is no longer the case, and every year will see a larger quantity produced. In order to make the industry remunerative, it would probably be necessary to extract the oil from the seeds in Malaya, which would involve the putting in of costly and delicate machinery. As the quantity of seeds on even a large estate would be relatively small, and as it would possibly not pay individual companies to buy and work the necessary plant, it is suggested that groups of estates, or a syndicate, might carry out the idea profitably.

CONGO CONDITIONS VASTLY IMPROVED.

The Congo Reform Association of London has recently presented a memorandum to the effect that the conditions in the Congo, barring one district, are greatly improved over those which prevailed under the administration of the late Leopold. The memorandum states that there is still one district where many barbarities are practised, and suggests that the present Belgian administration should send an official of experience and character to work in conjunction with the British Consul, to ameliorate the conditions in that district. The following paragraph taken from the report will be pleasant reading to all those whose sensibilities in the past have been so keenly aroused by the reports from the Congo:

"Systematized, officially directed and inspired enslavement of the people, accompanied by brutalities, violence and torture as a fixed, definite policy for purposes alike of public revenue and private profit, has disappeared from five-sixths of the Congo.

"That these results are due to the leading part played by his majesty's government and by the people of this country, in a wholly unselfish effort to restore to the unrepresented races of the Congo the liberties and rights of which they had been deprived, history will bear witness."

The Purchasing Agent.

*By Frederic Dannerth.**

IN this twentieth century, with our schools of scientific salesmanship and correspondence courses galore, for those who purpose selling commodities, may we not hope soon to have an institute for the training of buyers—the men who purchase the raw materials for our manufacturing establishments—the men who have so frequently been accused of receiving gratuities and similar forms of "rake-off." And if you examine closely you will probably find that the accusers are receiving more spoils and "graft" than the most prosperous buyer has ever dreamed of.

At a time when strikes are the order of the day, when the supply of coal, of textiles and iron products may be cut off without further notice within twenty-four hours, it becomes most necessary for this official to scent from afar-off the delays incident to labor troubles. He must take care to lay in a goodly store of those materials which his factory needs most, in order to keep its various shops in operation. Then again when his requirements are less than the monthly allotment called for in his annual contract, the buyer must be able so to conjure the situation that the vendors—his supply houses—do not hurry him or "saddle" him with excessively large shipments. Another point which must be constantly kept in mind is the large amount of storage space required for goods which are ordered in carloads and used by the pound.

One phase of purchasing which comes into play more frequently among importers and jobbers, is due to the quadrennial prospect of tariff changes. This possible revision makes it necessary to keep in touch with the new administration and the desire on the part of the party in power to raise or lower the import duties on certain commodities. The arrival of importations ten hours after the tariff act goes into effect is a familiar spectacle at custom ports, and one which brings forth sadness or cheer in the heart of the importer, depending upon whether the duty has been advanced or lowered. One other point which the buyer usually keeps before him when placing orders is: the possibility of delay in shipments due to spring floods and excessive snowfall on railroad lines, or fires and strikes at the shipping point.

A well organized purchasing department is characterized by the specialization of duties—an arrangement by which the shifting of responsibility is eliminated, or at least reduced to the minimum. Thus the chief buyer with his assistant counts among his duties:

Interviewing the representatives of vendors;

Visiting the trade markets and manufacturing plants;

Watching trade tendencies and prices of raw material,

Checking his monthly consumption of each raw product, and noting the daily consumption of the principal materials. The time spent on these "incidental" duties and the accuracy with which they are performed will determine to a large extent the efficiency of the purchasing agent's office. To purchase profitably, comprehensively and safely, the buyer must be not only a judge of values but he must likewise be familiar with every line in the market, for it is obvious that the farther his knowledge in this direction extends the greater will be the choice open to him. The buyer must be a man of judgment and convictions, for he is frequently consulted by the head of the firm and must be able to back up his opinions with good reasons. Thus he is constantly being put on the defensive, for no corporation head will be so irrational as to O. K. every expenditure, however large, without inquiring into its advisability. A buyer's duty is not to do the small things himself, but to see that they are done; and to that end he should hold the reins on all branches of his department. He can take nothing for granted; if he would know his materials he must see them, and even this is but a test of the shape, smell, color and taste of the article. In other words, he can determine off-hand only those properties which cannot be expressed by numerical values, properties which are ascertained by the senses of sight, smell, taste and touch. Hence we find that those materials which are used in chemico-engineering industries—materials which are valuable entirely or partly because of their chemical and physical properties, must be tested by one who is familiar with laboratory methods for making exact determinations.

Thus the amount of actual "tannin" in a tanning extract; the amount of free caustic alkali in a silk-dyeing soap; the amount of "active chlorine" in the paper-makers' bleaching powder; or the amount of adulteration in antimony for rubber goods manufactures—determinations such as these must of course be made in the testing laboratory, which is attached to all properly organized purchasing departments. These chemical tests are supplemented and sometimes preceded by the physical tests for specific gravity, viscosity, tensile strength, elasticity, hardness and dimensions.

In addition to the testing laboratory, the buyer has under his supervision the clerical room and the receiving room. In the first of these all requisitions for the purchase of machinery, chemicals, or departmental supplies are filed and passed upon. Bills of lading, invoices and statements are likewise inspected and passed upon in this branch of the department. Here also is kept an accurate card record of discounts, terms and the responsibility which each vendor guarantees or assumes. The original copy of "Specifications for Materials Purchased," which have been drawn up by the head of the testing laboratory, is likewise kept on file in this office.

In the receiving room we find the warehouse foreman and the receiving clerk, who receive shipments and make a physical inspection of each article with reference to dimensions, weight, number and size.

In the testing room or laboratory, samples of all shipments are received and subjected to such tests as will determine whether or not the delivery complies with the standard of quality set forth in the contract or specification. All these duties, as a rule, fall to the lot of the buyer's chemist, who in turn acts and cooperates with the factory chemist, the engineering chemist and the sales chemist.

After having thus briefly reviewed the duties of the buyer and the functions of his several assistants, it will be of interest to consider a few phases of his work, which at times bring him in closer contact with the laws of business and the courts of commerce.

A casual inspection of the court decisions in the various States of the Union shows at a glance the confusion which has arisen from the fact that buyer and seller did not understand each other, and it is for this reason chiefly that so much time and energy have been spent in recent years on the preparation of rational specifications for the purchase of materials. (See also THE INDIA RUBBER WORLD, January and February, 1911.) Among the topics which are of interest in this connection are: "What is the legal meaning of the word 'agreement'?" "What constitutes the acceptance of a proposition?" "What constitutes a sale?" "How should contracts be constructed and how are they

*Dr. Dannerth has for a number of years been acting as advisory chemist to various rubber goods manufacturers.

interpreted by the courts?" These points will be taken up in detail in the paragraphs which follow.

AGREEMENT.

In order to make an agreement which shall be valid in the eyes of the law, it is essential that all the parties to it agree upon the same thing in the same sense. For example, a promise to deliver "good quality Pará rubber" cannot be construed to mean "fine Pará rubber," as fine Pará implies a grade of rubber superior to those grades which might ordinarily be accepted as "good quality." Again, if a buyer orders ten barrels of antimony sulphide on 60 days' credit and the vendor or merchant sends two barrels on 30 days' credit, the goods if lost on the way need not be paid for by the person sending the order. In construing a contract, the court takes into consideration the honest and actual intention of the parties as expressed in the contract. The common law, or that which prevails on the authority of usage and the decisions of courts, plays a very important role in the adjudicating of disputes on contracts.

ACCEPTANCE.

The surest and most binding form in which to accept an offer is to use a simple affirmative, without stating any new conditions or terms. Thus, goods which were sent as directed by the buyer, and which were lost on the way, had to be paid for by the purchaser. In the matter of offers which are not accepted at once, Parsons notes that it is not necessary that the acceptance should follow the offer instantaneously. If "A" makes an offer to "B," the latter may take time to consider this offer, and, though "A" may expressly withdraw his offer at any time before acceptance, yet, if he does not do so, "B" may accept within a reasonable time. And if "B" accepts, "A" cannot say, "I have changed my mind." "A" may, if he so desires, stipulate a certain time for which his offer holds good; in fact, this is a safeguard very frequently adopted by merchants when offering materials for sale. A factor may offer goods for sale at a certain price, the offer to hold good for 30 days. This offer may be withdrawn at any time before the expiration of the 30 days, but if it is not withdrawn, the factor is bound to sell the goods at the price originally mentioned by him.

TRADE CUSTOMS.

A very large part of the mercantile law of the present day is the product of old established trade customs which have been recognized as valid by the various trades and professions, and which have been confirmed as reasonable by the courts. The Supreme Courts of several States have repeatedly refused to recognize as "trade custom" any practice which is opposed to the statute laws of the land, or which is oppressive and unreasonable. In the same manner, a custom which violates the principles of common honesty and the public welfare, will not be recognized by the courts. This, it will be seen, is of interest in cases involving such questions as: What is meant by a "barrel," or a "cask," or a "case"? Thus a contract for the delivery of "cotton" without any qualifying phrase made it possible for a mill to deliver a fabric made from "sick cotton" (abnormal cotton), as there did not appear to be any well-defined trade custom covering the point.

WHAT IS AN ACTUAL SALE?

An actual sale is always understood to be a contract which has been executed, although payment for the chattels or the delivery of the same may not yet have been made. A sale is the exchange of goods for money. An exchange is the transfer of chattels for other chattels. Thus, if the ownership in a thing be transferred to another person for money (or a price) a sale has taken place. Thus, if Smith agrees with Blank that the ownership in a certain property will be transferred to Blank for a fixed price, an agreement and a sale have been consummated and Blank owns the property wherever it may be.

"CAVEAT EMPTOR."

"Let the buyer beware": that is the warning which the law gives to all who trade and it is one which is only too often unknown, forgotten or neglected. If an article is offered and a sample of that article is submitted, the vendor thereby warrants that the goods will conform to the sample. If then the delivered goods do not correspond in quality with the sample, the buyer may sue for the breach of warranty. When the buyer orders an article and specifies the purpose for which it is to be used, the supply house which fills the order implies a warranty when it supplies the goods to the buyer. Thus if the buyer receives a sample of 98 per cent. magnesium oxid and places an order based on the sample, and then receives a shipment consisting of 25 per cent. magnesium carbonate and 75 per cent. magnesium oxid, the supply house is liable to damages for losses which may arise from the use of the impure magnesium oxid. In this case it is important that the buyer convince himself through a chemical test that the sample is actually 98 per cent. pure magnesium oxid. Again, if the buyer can show that the seller contemplated fraud when closing the contract, that contract will be held to be null and void. On the other hand, a thing which cannot be proved is equivalent to a thing which does not exist.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta percha for the month of February, 1913, and for the first eight months of five fiscal years, beginning July 1:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
February, 1913.....	$182,997	$103,906	$644,077	$930,980
July-January	1,583,069	973,423	4,695,696	7,252,188
Total, 1912-13....	$1,766,066	$1,077,329	$5,339,773	$8,183,168
Total, 1911-12....	1,491,121	1,139,181	4,640,177	7,270,479
Total, 1910-11....	1,354,060	1,699,371	3,899,406	6,952,837
Total, 1909-10....	1,233,910	1,437,252	3,053,753	5,724,915
Total, 1908-09....	896,362	1,013,544	2,454,707	4,364,613

The above heading, "All Other Rubber," for the month of February, 1913, and for the first eight months of three fiscal years, beginning July 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
February, 1913.....*values*	$276,253	$367,824	$644,077
July-January	2,050,843	2,644,853	4,695,696
Total, 1912-13.....	$2,327,096	$3,012,677	$5,339,773
Total, 1911-12.....	1,641,373	349,372	1,990,745
Total, 1910-11.....	1,194,720	368,029	1,562,749

BAKELITE PATENT RECOGNITION.

As a result of negotiations between the General Bakelite Co. and the Condensite Co. of America, the suits brought by the former against the latter and its customers for alleged infringement of the Bakelite patents, have been withdrawn, and the Condensite Co., recognizing the pioneer character of Dr. L. H. Baekeland's work, has acknowledged the validity of the Bakelite patents in suit and some others, and will pay substantial royalties thereunder.

The General Bakelite Co. will continue the manufacture of Bakelite under its numerous patents, and the Condensite Co. will manufacture Condensite under the Aylsworth patents, as well as the license just granted for such of the Baekeland patents as are broad enough to cover Condensite.

The Akers Rubber Commission in the Amazon Valley.

THE second volume of the English Akers Commission report, dealing with the Amazon Valley, forms a suitable continuation of the first volume (reviewed in the May issue of the INDIA RUBBER WORLD, page 417), which dealt with the work of the commission in the Orient. Many points treated in the earlier report were of a general character, requiring to be kept in view in the consideration of the later record; the two volumes forming an unusual instance of comparative investigation, at the chief points of rubber production of the eastern and western hemispheres.

From the commission's estimate of the world's rubber production for 1912, it will be recalled that the grand total of 105,000 tons included: Brazil, 46,600; other South American countries, 2,000; Mexico and Central America, 3,000; the total for the western hemisphere thus being 51,600 tons. The eastern hemisphere contributed about an equal quantity: Oriental plantations, 31,000; Africa, etc., 22,400; making an aggregate of 53,400 tons. These two amounts together constitute the grand total of 105,000 tons for 1912. An estimate for the ensuing seven years, presented at the same time, showed a prospective increase of the yield of Oriental plantations, from 31,000 tons in 1912 to 302,450 tons in 1919. Hence the question arises whether, and in what proportion, the Brazilian supply is likely to be increased during the same period. To define actual and prospective conditions, was the object of the visit to Brazil of the Akers Commission; in which that body must be considered as having achieved a relative success, seeing that its labors in the Amazon Valley only extended to a period of less than three months, from the beginning of last August to the end of October last. That its work was fruitful in results is shown by the fact that while the report of the four months spent in the Orient fills only 89 pages, that of the three months in the Amazon Valley takes up 164 pages, and is supplemented by 26 pages of illustrations, representing various features of Brazilian rubber cultivation and kindred subjects.

OBJECTS OF THE INVESTIGATION.

As stated in the May issue, the objects of the commission included the investigation of the general condition and prospects of agricultural industry, and the endeavor to find improved methods of administration, collection and preparation, in order to enable Brazilian rubber to compete with that from the Orient; as well as the placing of labor in the Amazon Valley on a cheaper and more effective basis. In connection with the last named question, were those of the colonization of waste lands, and the establishment of experimental plantations or farms.

The party left Pará on August 20 for their journey up the Amazon to the rivers Madeira and Purús, to carry out their investigations. They made the voyage in the new stern-wheel steamer "Curityba," of the Mosquito fleet, which had been specially fitted out for their use. Mr. C. E. Akers had already visited the rivers Mojú and Guamá, pending the arrival from Europe of his colleagues, Mr. H. C. Rendle and Señhor F. Lugones.

The voyage up the Amazon and many of its tributaries (practically as far as steam navigation was possible), was both interesting and instructive, the commission having covered about 7,000 miles of river, inspected close upon 50 estates, and seen rubber and cacao of all ages and sizes, growing under every conceivable condition.

THE LOWER AMAZON VALLEY.

The lower Amazon section of the Amazon Valley includes the district served by the Bragança Railway, all the islands of the delta, and the rivers Mojú, Guamá, Xingú, Tapajós, Maicuru, Canumá, Jary, Paru, Curua, Trombetas and many smaller streams; as well as the land on both banks of the Amazon as far as Manáos. This vast area can be divided into three distinctive zones: (1) The islands, where rubber is largely collected by residents or squatters on their own account, to enable them to purchase the necessaries of life; (2) the various rivers, where the rubber is collected on the system of half shares between the collector and owner of the lands; and (3) the country on the banks of the Amazon as far inland as Manáos, where the principal industry is cacao, rubber taking a place of secondary importance.

Dealing with the separate rivers, it is remarked that on the Tapajos all enterprises is practically confined to rubber production, the cry of agents and owners in Pará being always for "rubber and more rubber," and any form of cultivation of the land being discouraged from headquarters. One reason of this opposition is said to be the fear of the owners of large estates that their profits from the stores would be diminished if the laborers were allowed to cultivate mandioca, maize and beans on their own account.

Nowhere in the course of their investigations did the commission find a greater wealth of rubber trees than on the islands and shores of the Xingú, the proportion of untapped trees being very large. Fine old trees of big girth were to be found at no great distance from the banks of the river. An important factor in the trade of the Xingú, is the through traffic in rubber and caucho from Matto Grosso, which would be materially aided by improved means of transport, existing methods by canoes and on muleback being costly and slow.

Rubber is practically the sole industry of the Tocantins river, the facilities thus afforded for gaining a livelihood having driven out other forms of agriculture. Large quantities of rubber trees are to be found on the river banks and islands; a large proportion of which have been worked many years, and damaged by the use of the *machadinho* or rubber collector's axe. This damage has, however, been confined to a great extent to the lower part of the trunk, and it is anticipated that much latex can still be extracted by overhead tapping. As, moreover, a large number of young trees are approaching maturity, there is small likelihood of the supply of rubber being exhausted for many years to come.

THE UPPER AMAZON VALLEY.

The most important rivers of the Upper Amazon Valley are the Madeira and the Purús, and it is to these that the commission has devoted special attention in its report.

The river Madeira, which flows into the Amazon about 100 miles below Manáos, is formed by the junction of the rivers Mamoré and Beni, which flow through Bolivian territory. After the confluence of these two rivers into the Madeira, it forms the boundary line for about 100 miles between Bolivia and Brazil, and then takes its course in a northeasterly direction for 850 miles, until it merges into the Amazon.

At flood time it is navigable for ocean steamers of 22 feet draught as far as Porto Velho (a distance of 635 miles), and for those of lighter draught at all seasons. Above Porto Velho are a series of rapids, which only allow the passage of flat-bottomed boats or canoes. It was to facilitate communication with Bolivia around these rapids, that the Madeira-Mamoré railway was constructed.

Virtually the only industry on the river Madeira is rubber production, agriculture being discouraged by the proprietors of rubber properties, in order to force the rubber collectors to purchase all they require from the general stores, which yield enormous profits. Rubber plantations, in the proper sense of the term, can be hardly said to exist. The Madeira is the most

prominent factor in the prosperity of the Amazon Valley. Its territory contains great numbers of the best variety (black) of rubber trees, while the quantity and quality of the rubber exported from that district are most noticeable features in the markets of Manáos and Pará. It provides the outlet for rich districts of Bolivia, and the excellent soil on its banks is capable of development in many branches of agricultural industry in the future. The climate, moreover, is such that it presents no obstacle to European colonization.

The river Purús flows into the river Solimões, 200 miles west of Manáos; the distance from that point to the confluence of the river Acre and the Upper Purús being 1,065 miles. For the first 600 miles, it is navigable the year around for vessels drawing 15 feet.

Rubber forms practically the only industry of the Purús river. It is entirely collected from forest grown trees, the few attempts at planting having proved failures, or not having yet come to maturity. It is remarked that many of these rubber properties are of very great value, or would be so if developed on intelligent and reasonable lines. On one estate containing over 200,000 fully grown trees, only 25 per cent. are worked, and these are being hacked to pieces by the use of the *machadinho*. Such a property, it is added, in competent hands, could produce 2,000,000 pounds of rubber annually, while the present output barely reaches 150,000 pounds. There is not a property today on the Purús which could not be worked to at least twice its present capacity, under skilful direction and management.

CLEARING AND WEEDING.

Special attention was paid in the course of the recent investigation to the question of clearing. According to the opinion of the commission, there is not much to choose between the forest growth in Brazil and that of the rubber-growing districts of the Orient. The average tree may be slightly larger in the Amazon Valley, but not to an extent to make any appreciable difference in the amount of labor required for felling and clearing up afterwards. Any differences in cost would be solely dependent on the wage rate and not on variations in natural physical conditions.

It has been asserted that with expensive labor, the cost of weeding on cultivated land in the Amazon Valley makes plantation work on Oriental lines a practical impossibility. The results of the investigation show that less labor is required for this purpose in the Amazon Valley than in the East. This fact is attributed to the absence of pernicious grasses, such as lallang; nor are the rapidly-seeding weeds common on eastern plantations nearly so numerous in Brazil.

METHODS OF TAPPING.

A separate chapter deals with the general question of the rubber industry of the Amazon Valley. Among many other points treated in this chapter is the subject of tapping. The view is expressed that under the present system of using the *machadinho* (or small axe), there is not only the risk of serious damage to the trees in the present, but the total extinction of the industry in the future is likewise inevitable. In order to demonstrate the advantages of the herring-bone system of tapping rubber trees by the use of the gouge, the members of the commission gave between 45 and 50 such lessons in the districts of the rivers Madeira, Purús, Tapájos and Xingú, and in the vicinity of Maués and Obidos. In this way they claim to have created an innovation in tapping methods, and firmly established the principles which have been carried to such successful issue in the Orient.

THE LABOR QUESTION IN THE AMAZON VALLEY.

The problem of the labor supply in the Amazon Valley is not easy of solution, but on it depends the future development and prosperity of this section of Brazil. In an interesting table it is shown that the annual exports of the Amazon Valley are estimated for 1913 at:

	Approximate quantity, tons.	Approximate value f. o. b. Manáos or Pará.
Rubber and caucho	48,000	$72,000,000
Brazil and Sapucaya nuts	12,000	750,000
Cacao	3,000	900,000
Hides and skins	1,500	175,000
Miscellaneous	6,500	475,000
Tons	71,000	$74,300,000

It is asserted that with a sufficiency of labor there is no reason why this production of some 70,000 tons annually should not be increased twenty-fold. The forests are extraordinarily rich in natural wealth, but generations must elapse before any expansion of the present bare nucleus of population can be sufficiently extensive to develop the vast resources left dormant so long. Immigration alone, it is added, can remedy the difficult conditions now dominating the situation.

It is pointed out by the report that two widely distinct classes of immigrants are required to make rapid development possible, and at the same time establish a permanent peasant population, hereafter to become an integral part of the Brazilian nation. These classes are on the one hand colonists or settlers, and on the other paid laborers. Both have spheres of action to fill, and both are urgently needed to people and open to civilization, those great tracts of land that Nature has endowed with such generous munificence.

Certain qualities are necessary in regard to the immigrants. They should be selected on account of a knowledge of agricultural work in their own homes, such as that possessed by the peasants in many districts of Italy, Spain and Portugal. These go in thousands to North America, Argentina and Southern Brazil; and they would come to the Amazon Valley, once its fertility and resources were made known to them, and good land became available for their occupation.

The other description of immigrant required is the paid laborer, to meet the needs of the owners of landed estates, from whose properties come the rubber, which forms quite fifteen-sixteenths of the total value of the exports from the Amazon Valley and is the source of the bulk of the revenues of the States of Pará and Amazonas. At present these rubber estates employ about 100,000 men, recruited from the more southern states of Brazil at an expense of about $100 each, to bring them to the districts of the Madeira, the Purús, the Juruá and other centers of rubber production. These men have not been paid direct wages, having worked on the sharing system, but a crisis in the situation has now been brought about by the competition of the Orient, and a complete change in the method of production has become an imperative necessity. To meet altered conditions, another 50,000 daily wage laborers are required within the next twelve months.

Hence the question arises as to where they are to be sought, it being useless to look for this number in Brazil, and there being a doubt of a ready response in Europe, the alternative is to bring the men from the East. The recruiting of Indian coolies not being permissible, the question is reduced to the advisability of introducing Chinamen.

From every point of view, the report urges, the employment of Chinese laborers indicates satisfactory prospective results in the Amazon Valley. They can earn high wages at a lower cost to the employer than is the case at the present time, the work being light and leaving ample leisure for the cultivation of a garden or a patch of food stuffs. Finally, they would not supplant the existing labor force, but would add to its efficiency in many directions. The carrying out of this plan would be a matter for the Federal Government, which could subsequently recover the

cost from the employers. It is estimated that the initial expenditure for bringing 50,000 Chinamen from Canton or Shanghai to the upper Amazon would not be less than the equivalent of $5,000,000, but this sum would not be an abnormal obligation, in view of the vastly important interests at stake.

COST OF PRODUCTION.

As shown in the May issue, the report of the Commission on the Orient makes the present free on board cost of producing rubber in the Malay Peninsula to be 14½d. (29 cents) per pound, while the estimate for 1914-1919 is 12d. (24 cents.) In comparison with these figures may be quoted the following estimate of Brazilian cost f. o. b.

	Pence.	Cents.
Freight to Manáos or Pará	½	1
Commission charges	½	1
Administration	3	6
Cost (per lb.) of maintenance of collector	....	..
Delivering 1,000 lbs. of rubber	16	32
Duties	12½	25
Total	32½	65

The present f. o. b. cost in the Orient is thus estimated at 29 cents with a prospective reduction to 24 cents, while the commission expresses the opinion that a similar position can be attained in the Amazon Valley within five years; by improved methods of tapping, largely increasing production without additional labor; by more systematic administration; by opening up the reserves of untouched trees; by cheapening the price of living; by diminution or abolition of the export duties, and by the introduction of Chinese or European immigration. By such means only is it possible for Brazil to meet successfully the competition of the Orient in the world's markets. In conclusion the report states that there is no doubt such reduced costs can be brought about, if the measures recommended are adopted.

GENERAL RECOMMENDATIONS.

The general recommendations of the commission are summarized in twelve brief paragraphs under the caption "Some Suggestions for the Improvement of the General Conditions of the Brazilian Rubber Industry." These suggestions are as follows:

In order to meet successfully the growing competition of the Orient in the rubber markets of the world, certain innovations and reforms are necessary. The objects in view are a reduction in the cost of production, an increase in the annual output, the preservation of the trees from unnecessary injury, the gradual development of a plantation industry, and the general prosperity of the owners of rubber properties and the laborers employed thereon.

I advance the following suggestions after careful considerations as the most practical means of dealing with the existing situation:

1. The distribution of illustrated literature printed in Portuguese throughout the rubber districts, explaining the system of tapping with the gouge and the injurious effects of the use of the machadinho.

2. The establishment of an Agricultural School at some central point, hereafter to be selected, where practical instruction will be given in methods of tapping, care of trees, system of cultivation, mode of treating latex, and preparation of rubber for shipment.

3. The erection of adequate machinery at Pará and Manáos for washing and preparing scrap rubber previous to shipment.

4. The appointment of expert rubber planters to make constant tours of inspection through the rubber districts in order to advise owners of properties in all matters connected with the cultivation, tapping and preparation of rubber.

5. To advise the Federal Government and the governments of Amazonas and Pará to grant a reduction of export duty to the extent of 75 per cent. on all shipments of rubber when the work of the extraction of latex has been carried out with approved implements and in the manner generally prevailing in the Orient. This concession to remain in force for not less than seven years.

6. To advise the governments concerned to enact a law prohibiting the use of the machadinho under penalty of fine or other punishment.

7. To urge the Federal Government to carry out the establishment of central hospitals throughout the rubber districts as provided for in the terms of Law No. 2543 of January, 1912, and the regulations decreed April 17, 1912, and for which funds have been voted.

8. To take the necessary steps to establish centers of supplies where the employers of labor can purchase at reasonable rates all articles required for the maintenance of workmen in the rubber districts, and in this manner bring about a substantial reduction in the cost of living.

9. To establish one or more experimental plantations in order to demonstrate economical methods for the production of rubber, cocoa and foodstuffs.

10. To take measures to encourage immigration from southern Europe and to consider carefully the question of the introduction of Chinese laborers.

11. To make arrangements to facilitate at low cost a supply of tapping tools, machinery for preparing rubber and agricultural implements.

12. To introduce the system of planting food crops in the alluvial deposits on the river banks after the annual floods.

I consider the last suggestion most important. The custom prevalent in Egypt for thousands of years of growing crops at low Nile could be imitated with extraordinary advantage in the Amazon Valley, especially on the upper rivers. The waters fall at the end of April and rise again in October, thus giving five months for the harvesting of maize, beans, rice, millet (dhura) and other foodstuffs.

Moreover, on the river banks between flood level and low water, no clearing of timber is required. The land practically needs no cultivation beyond dibbling the seed into the rich alluvial mud, and then nothing remains to be done except a little weeding until the harvest is garnered.

ENCOURAGEMENT OF NEW USES FOR RUBBER.

A PROPOSAL recently broached in the English financial press suggested that the rubber plantation companies, acting in unison, should set aside 10 per cent. of their crops to be held at the disposal of certain English and American manufacturers, at the fixed price of 2s. 6d. (60 cents) per pound, to be used solely for purposes not hitherto exploited. In commenting upon the subject, Mr. E. L. Killick, the rubber expert of the "Financier," expresses the opinion that the proposal makes a stronger appeal to reason the more deeply it is considered, no single argument of any weight having been brought forward in opposition to it.

He adds that any method of rendering more certain an adequate future demand should be welcomed and put into practice. Consequently the proposal named is regarded as worthy of close attention, coming, as it does, from one who has a large stake in the plantation industry and is thus evidently acting in perfect good faith.

The instability of raw rubber prices has been a most serious handicap to manufacturers, while it is more than probable that if there were any assurance of rubber remaining stationary in price, the large manufacturers would not hesitate to enlarge their works and plants. Mr. Killick expresses the conviction that if a basis of 60 cents were established, American manufacturers alone could take the whole of the world's supply.

If adopted, this proposal would, it is added, place at the disposal of manufacturers this year about 4,000 tons of plantation rubber at 60 cents. As it would be used solely for new purposes, there would be no question of unfair competition on the part of the selected manufacturers employing the "bounty rubber"; at the same time a step would be made in the direction of keeping consumption in line with supply.

The Obituary Record.

EDWARD BEECHER KELLEY.

EDWARD BEECHER KELLEY, treasurer of the Mechanical Fabric Co., Providence, Rhode Island, died at his residence in Brookline, Massachusetts, May 13, 1913, of pneumonia. He was sick only five days.

Mr. Kelley was born in Canton, New York, July 22, 1859, the son of Joseph H. and Samantha L. Westcott Kelley. He was educated at the public schools of Canton and later attended the Hungerford Collegiate Institute, Adams, New York, and the Peekskill Military Academy, Peekskill-on-the-Hudson. Immediately upon finishing school he began work in the office of the Stedman & Fuller Manufacturing Co., Lawrence, Massachusetts, and removed with that company to Providence in 1885. When the Mechanical Fabric Co. was organized in 1890 he went with his brother as one of the managers, and in 1899, upon the death of the late George A. Fuller, was elected treasurer and served in that capacity and also as director to the time of his death.

EDWARD BEECHER KELLEY.

He came from a long line of New England ancestry. His father's ancestor, John Kelley, settled in Newbury, Massachusetts, in 1636, and Stukeley Westcott, his mother's ancestor, came to Rhode Island with Roger Williams and received the first deed of land granted in that colony.

He had a wide acquaintance with the customers of the Mechanical Fabric Co. both here and abroad, the necessities of the business taking him frequently across the water. He was a man of a kindly, sociable nature, making friends quickly and holding them through life. He will be greatly missed not only by his immediate associates in business, but by a very wide circle of customers and friends. He was a member of the Rubber Club and rarely missed attending its gatherings.

He is survived by his wife, Maud A. Kelley, and his only brother, Arthur L. Kelley, president of the Mechanical Fabric Co.

GEORGE PELLINGER.

George Pellinger, president of the Vulcanized Rubber Co., 251 Fourth avenue, New York, with factory at Morrisville, Pennsylvania, died suddenly Saturday night, May 24. The funeral took place Tuesday, May 27, at his home in Weehawken, New Jersey. A sketch of his career, together with his photograph, will appear in our July issue.

ALANSON D. BROWN.

Alanson D. Brown, for many years the head of the Hamilton-Brown Shoe Co., St. Louis, Missouri, one of the largest distributors of rubber footwear in America, died on May 10, at San Antonio, Texas, where he went some time ago owing to a nervous breakdown. Mr. Brown was one of the best known men in the entire footwear trade. He was a man of the most extraordinary personal energy and powers of application. Undoubtedly it was this intense devotion to business that finally undermined his health.

He was born near Albany, New York, on March 21, 1847. He went West to seek his fortune before he had attained his majority. In 1872 he formed a partnership with James Hamilton under the firm name of Hamilton & Brown—which was later changed to the Hamilton-Brown Shoe Co.—for the purpose of establishing a wholesale footwear business in St. Louis. About ten years later the firm began the manufacture of footwear, and in a short time had secured an enormous business in this line.

Mr. Brown was married in 1877 to Miss Ella Bills, of Waltham, Massachusetts. His brother, George W. Brown, is the head of the Brown Shoe Co., of St. Louis—another large distributor of rubber footwear.

Mr. Brown devoted himself, almost without respite or relaxation, to his business—and to his church. He was a profoundly religious man—as much so on Mondays and the following five days as on Sundays. Business and religion with him were constantly interwoven. He was a man of the highest integrity and the finest sense of business honor.

JAMES WALKER.

News has been received of the death on May 8 of Mr. James Walker, the founder and chairman of James Walker & Co., Limited, of London. Mr. Walker was in his seventy-fourth year. He was well known in the rubber trade because of the variety of machinery and appliances used in that trade made in the "Lion Works," Garford street, London, which he founded many years ago. He was a man of sterling character and universally respected.

The organization of the house will not be changed by his death. The management of the company will be continued under the direction of Mr. George H. Cook.

MR. KLEINERT'S WILL.

The will of Isaac B. Kleinert, the founder of the I. B. Kleinert Rubber Co., who died April 18, has been probated. The value of the estate is given as more than $100,000 realty, and more than $100,000 personalty. Bequests are left to the United Hebrew Charities, and the Home for Aged Hebrews. His widow is left a cash legacy of $75,000, together with an annuity of $6,000, and a life interest in his realty holdings. The greater part of the remainder of the estate is divided between his two daughters and the children of a third daughter, now deceased.

One exceedingly interesting paragraph in the will, characteristic of the man, and of the interest he took in those in any way associated with him, is found in the following provision for his needy relatives: "I give and bequeath in trust to my daughters, Mrs. Leonie B. Guinzburg, of No. 115 West Eighty-sixth street, and Hermone E. Kleinert, of No. 31 West Eighty-seventh street, the sum of $10,000, the interest of which shall be distributed among poor and needy relatives of mine, this to continue for fifty years."

THE INCREASING POPULARITY OF RUBBER-SOLED SUMMER SHOES.

WHAT is deemed a rather remarkable feature in the shoe trade is the sudden increase in popularity of rubber-soled footwear. The so-called cemented tennis shoe, which has been a regular summer seller for years, has evidently made many friends, and the coming summer season will undoubtedly show more people shod in these canvas-upper, rubber-soled shoes, than any previous season. Every rubber shoe factory which makes

FOSTER RUBBER SOLES AND HEEL.

these shoes is today running to full ticket on these lines, and in some overtime work is necessary to insure deliveries when required.

But with the increased call for cemented tennis shoes comes the report that the old-time, cheap McKay-sewed canvas-upper tennis shoe has declined in popularity, and many shoe factories where these were turned out in large quantities, years ago, have discontinued their manufacture.

This decline in popularity is mainly ascribed to the lack of style, and the poor quality of the rubber used in the soles. So many shoes thus soled were returned to the manufacturers, on account of poor service, that they abandoned the production of these "sneakers," and very few are now being made.

However, in place of these, an entirely new phase of the shoe business is noted, namely the manufacture of fine shoes with rubber soles and heels. To be sure, such footwear has been made for years in sporting shoes, for the tennis court and the golf links, but the present development is the demand for summer footwear of finer qualities with rubber soles. Nearly every manufacturer of fine shoes, both men's and women's, is making

REGAL SHOE CO.'S "COMMODORE."

low-cuts with rubber soles and heels, and the shoe stores catering to the fine trade are all carrying one or several lines of such shoes.

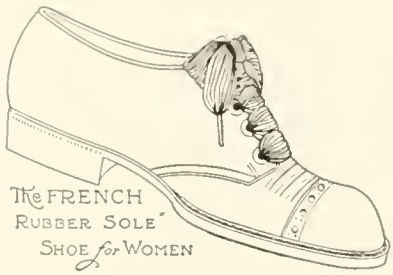
A former superintendent of a shoe factory in a western state is said to be responsible for the present popularity of rubber-soled shoes. Realizing that quality and service would result in bringing about a demand, he resigned his position in the shoe factory, and re-opened a rubber plant which had been forced to close because of the unsatisfactory quality of the rubber soles it turned out. It took him six years to restore the confidence of shoe manufacturers, but this was finally accomplished, and each succeeding year has shown a steady and large increase in the volume of business done. Other manufacturers have also succeeded in working up a large trade in rubber soles for shoes, and while

ONE OF THE ESSEX SHOES.

some are short-sighted, and make only low priced grades, of poor quality, by far the larger part of the sole now made are of excellent durability, well worthy the finer shoemaking of which they form a part.

Most of these shoes sold today are low cuts or Oxfords, and are in white or colored leather of dull or ooze finish. One of the principal uses for such shoes is for seaside resort wear, because of the obvious impermeability of the soles; and white or tan shades are most appropriate for wear with seaside costumes.

The fad—if such it may be called—came from England, where



MADE BY THE ESSEX RUBBER CO., TRENTON, N. J.

such shoes have been popular for several seasons, and many of the shoe stores selling to the finest trade have imported English shoes with rubber soles, though these are in no wise superior to American-made shoes of the same kind.

Manufacturers have found some difficulty in properly attaching the soles so as to insure against a separation of the rubber outer-sole from the leather welt, the inner-sole and the filler. A too fine stitch tends to split the rubber along the line of stitching, while silk and linen threads have been found to be less serviceable than long-staple cotton, treated with a special "wax" or

MADE BY THE ESSEX RUBBER CO., TRENTON, N. J.

cement, which so "fills" the interstices of the thread, and the holes made by the needle, that even when the threads wear off, the stitching still holds. This, with proper cementing, usually prevents peeling of the sole, which was one of the chief difficulties at first encountered. Some manufacturers double-stitch around the toe, and others insert metal clinch staples to prevent the start of such peeling.

Another form of overcoming the difficulty is the skiving off of the rubber sole at a point just in front of the ball of the foot, and piecing out the sole, from this line forward, with

leather. This has been done for several seasons in shoes intended for golf players, and having been found to work well, has been adopted in walking shoes, thus insuring the soft easy tread, yet protecting the most vulnerable point from undue wear or accident. In golf shoes this leather forepart is studded with hob nails to secure footing while making the stroke, but of course these are omitted in walking shoes.

Some English shoes have the soles cemented on, and present to the eye a plain unbroken surface, but American manufacturers all prefer to supplement the cementing with stitching, and on the finer shoes the Goodyear machine stitch is used, though, as is mentioned above, the number of stitches to the inch is far fewer than in leather shoes.

These soles are of white, grey or red rubber, and various finishes—smooth, corrugated, checkered, or with deep holes, which tend to form vacuums when the wearer walks over a smooth wet surface, like the deck of a yacht. One rubber company manufactures a widely diversified line of these soles, varying in price from thirty cents to three dollars per pair. Some have the sole and a solid rubber heel of the same shape as common leather heels. Others have the heels separate, and some place two "lifts" of leather above the thinner rubber heel. Most of the shoes now made in these lines, however, have the "wedge" heels such as are shown in the illustrations.

Great care is taken in the choice of the inner-soles and linings of these shoes, to mitigate or overcome the tendency of rubber to "draw" the feet. Where these are properly chosen, the shoes can be worn with the same comfort and ease as leather shoes, with the added advantage of silent tread and freedom from slipping.

A tan Russia calf blucher Oxford for all-around summer wear has a sole of red rubber, stitched to a leather welt. This is a specially stylish and serviceable shoe.

The outing Oxford of white buck with russet trimmings, made on a narrow toe last, is a striking style, to be worn with outing costume or morning dress.

The shoes shown here are made by the fine shoe manufacturers in New England and retail at from $4.50 to $6.00. English made shoes, quite similar in style and quality, are shown in some of the finer retail shoe stores in New York, Philadelphia, Boston and Chicago at $6.00 to $10.00 a pair.

Many manufacturers number among their samples canvas shoes in white and brown, some reinforced with leather, while among women's shoes there are combinations and colors as varied as are customary with leather-soled outing shoes.

This development of the use of rubber soles is not an ephemeral fad. The style is likely to standardize itself, and the use is likely to grow with each recurring season, and thus more and more demand will be noted in the consumption of rubber, which is already very large, in the shoe industry.

RUBBER GOODS MANUFACTURING CO.'S FOURTEENTH ANNUAL REPORT.

ON May 21, 1913, the Rubber Goods Manufacturing Co. held its fourteenth annual meeting at the registered offices of the company in Jersey City. The president presented the following report:

REPORT OF PRESIDENT WILLIAMS.

TO THE STOCKHOLDERS OF THE RUBBER GOODS MANUFACTURING CO.:

The report of the treasurer, appended hereto, gives the Consolidated General Balance Sheet and the Consolidated Income Statement of the Rubber Goods Manufacturing Co. and of its subsidiary companies, for the fiscal year ending December 31, 1912.

The net sales of the year are approximately the same as those of the previous year. The net profits, however, are less, owing principally to the sharp competition in tires, which has prevailed during the year.

The plants of the company have been maintained in good repair and in certain instances enlarged—the Morgan & Wright plant at Detroit being in process of enlargement to more than double its former capacity.

The selling organization of tires, conducted by the United States Tire Co., has been further developed until now it has reached great efficiency.

Respectfully submitted,
ELISHA S. WILLIAMS, *President.*

TREASURER'S REPORT.

RUBBER GOODS MANUFACTURING CO. AND SUBSIDIARY COMPANIES.
Consolidated General Balance Sheet, December 31, 1912.

ASSETS.

Property, Plants and Investments		$29,541,886.27
Inventories, Mf'd. Goods and Materials	$8,636,293.89	
Cash	2,407,332.36	
Bills and Accounts Receivable	12,634,719.90	23,678,346.15
Stock owned in General Rubber Co.	1,666,700.00	
Securities Owned	384,030.55	2,050,730.55
Sinking Fund Cash in hands of Trustee		382,759.61
Miscellaneous Assets		444,396.21
Total Assets		$56,098,118.79

LIABILITIES.

Capital Stock, Preferred	$10,351,400.00	
Capital Stock, Common	16,941,700.00	$27,293,100.00
Bonds of Mechanical Rubber Co. and N. Y. Belting & Packing Co.		1,005,500.00
Reserve for Redemption of Bonds		423,348.87
Bills and Accounts Payable		8,354,395.10
Accounts Payable to General Rubber Co.		7,752,724.70
Reserve for accidents to employees		40,940.47
Fixed Surplus (Subsidiary Companies)		2,499,218.65
Surplus		8,728,891.00
Total Liabilities		$56,098,118.79

Respectfully submitted,
EDWARD J. HATHORNE, *Treasurer.*

Of the above "Assets" and "Surplus" $197,126.13 represents the ratable interest therein of minority stockholders in a Subsidiary Company, of the Rubber Goods Manufacturing Co.

Contingent liabilities for certain guarantees, which are offset by corresponding contingent assets, are not included.

CONSOLIDATED SUMMARY OF INCOME AND PROFIT AND LOSS FOR YEAR ENDED DECEMBER 31, 1912.

Net Sales		$36,147,332.34
Earnings		2,885,883.27
Income from Investments		100,002.00
		$2,985,885.27
Less:		
Expenses of Home Office		221,396.78
Net Profits		$2,764,488.49
*Dividends	$2,280,601.00	
Reserve for Redemption of Bonds	15,873.75	2,296,474.75
Surplus for the Period		$468,013.74
Surplus and Working Capital, January 1, 1912		8,260,877.26
Surplus and Working Capital, December 31, 1912		$8,728,891.00

Respectfully submitted,
EDWARD J. HATHORNE, *Treasurer.*

*Includes $31,250.00 paid minority interests in one Subsidiary Company.

ANNUAL ELECTION.

At the annual meeting, on May 21, the following directors were reelected:

WALTER S. BALLOU	ERNEST HOPKINSON
ANTHONY N. BRADY	CHARLES A. HUNTER
SAMUEL P. COLT	LESTER LELAND
FRANK W. EDDY	RAYMOND B. PRICE
JAMES B. FORD	HOMER E. SAWYER

ELISHA S. WILLIAMS

The United States Rubber Co.'s Annual Report.

THE twenty-first annual report of the United States Rubber Co. was dated and distributed on May 1, three weeks ahead of the annual meeting, which occurred on May 20, at New Brunswick, New Jersey. The reports of the president and treasurer are given below.

REPORT OF PRESIDENT COLT.

TO THE STOCKHOLDERS OF THE UNITED STATES RUBBER CO.:

The past year has been somewhat eventful in the history of our company. Progress has been made along lines of efficiency in management with a proper expansion in operations, all having been kept within the sphere of sound and conservative business principles.

The report of the treasurer, appended hereto, gives the Consolidated General Balance Sheet and the Consolidated Income Statement of the United States Rubber Co. and subsidiary companies for the fiscal year ending March 31, 1913.

In view of the fact that the United States Rubber Co. now owns all but a fraction of one per cent. of the common stock and the great bulk of the preferred stock of the Rubber Goods Manufacturing Co., it has been thought that it would give our stockholders a more comprehensive understanding of our business to include this year in these consolidated statements the operations of the latter company. For the purpose of comparison, the statements of both companies as made last year should be considered. As now shown, the surplus includes the surplus of each company—that of the United States Rubber Co. of last year having been reduced by the common stock dividend, amounting to $5,000,000, and having been augmented by $2,254,700, gain by the conversion during the same period of second preferred stock into first preferred stock on the basis of four shares of second for three shares of first. In the Consolidated Statement the surplus is increased by $6,909,275, being the difference between the par value of the common stock of the Rubber Goods Manufacturing Co. purchased by the United States Rubber Co., and the price paid therefor; resulting, with the year's operations, in a present surplus of $23,545,629.32. From this surplus your directors have deemed it advisable to set up as a reserve $7,000,000.

The fixed surplus formerly appearing in the several statements of the two companies, which represented the surplus of each of their several subsidiary companies at the time of their acquisition, and which amounts to $14,504,714.54, not being subject to division, may be applied whenever deemed advisable in reduction of the valuation of property and plants.

The operations of the Canadian Consolidated Rubber Co., Ltd., the General Rubber Co., the United States Tire Co., and the Rubber Regenerating Co. (the latter recently acquired) are not included in the consolidated statements. The dividends, however, derived from the same go to make up the profits of the year.

CHANGE OF FISCAL YEAR AND OF DATE OF ANNUAL MEETING.

In view of the consolidation of accounts of the Rubber Goods Manufacturing Co. and its subsidiary companies with those of the United States Rubber Co. and its original subsidiaries, it became desirable that the fiscal year of both companies should be identical, and it has, therefore, been decided by the directors to have the fiscal year of the United States Rubber Co. end December 31, instead of March 31, to correspond with that of the Rubber Goods Manufacturing Co. and the Canadian Consolidated Rubber Co., Ltd., this being also the date when the reports have to be made up for the Federal Government. With this change in date of the fiscal year, it became desirable that the annual meeting should be held at an earlier date and an amendment to the by-laws has, therefore, been submitted to you, providing that the date of such meeting shall be the third Tuesday in March instead of the third Tuesday in May.

VOLUME OF BUSINESS.

As appears by the consolidated statement for the year, the net sales were $91,782,861.87; and in addition the net sales of the Canadian company for the year were $7,199,336.28. In most cases the selling prices were lower than the previous year. The sales of the General Rubber Co., United States Tire Co., and Rubber Regenerating Co. are not included, their product not adding to the aggregate product of manufactured goods.

PROFITS.

As shown by the consolidated statement, the net profits for the year were $7,544,217.67 after bringing down to market price the inventories of crude rubber and other materials. Of this profit, however, $219,131.31 pertains to the minority stock interest in the Rubber Goods Manufacturing Co. and a subsidiary. As heretofore all interest paid by the company upon both its funded and its floating debt is deducted as an expense before the net profit is shown. The net profits of the year exceed the dividend payments of the year by the sum of $1,730,755.36.

Both the net earnings and volume of business are the largest in the history of the company—the percentage of net profit on net sales being, however, but about 8 per cent.

DIVIDENDS.

The regular dividends of 8 per cent. upon the first preferred stock and 6 per cent. on the second preferred stock have been paid. There have also been paid to the holders of the common stock cash dividends at the rate of 4 per cent. for the first three-quarters and at the rate of 6 per cent. for the last quarter of the year, and also in July last a dividend of 20 per cent. in common stock.

CAPITALIZATION.

In June, 1912, by amendment to the charter, the authorized first preferred capital stock of the company was increased from $40,000,000 to $70,000,000, and the authorized common stock from $25,000,000 to $40,000,000, and the right was given to convert the second preferred stock into first preferred stock. Under the plan authorized $5,000,000 of common stock was declared from the surplus as a dividend to the common stockholders; $10,000,000 of first preferred stock was offered pro rata to the stockholders at par, of which $9,699,400 has been subscribed and paid for; and up to this time, $9,018,800 out of $10,000,000 of second preferred stock has been converted into first preferred stock. The company also renewed a former offer to exchange Rubber Goods preferred stock into first preferred stock of the United States Rubber Co., under which offer $817,800 has been exchanged during the year.

TIRE OPERATIONS.

At the last annual meeting your president called the attention of the stockholders to the desirability of enlarging our facilities for the making of tires, and suggested the building of an additional mill. In furtherance of this suggestion, the Morgan & Wright tire plant at Detroit, Michigan, which is a modern mill, is being enlarged to more than double its former capacity; and a new tire mill at Berlin, Canada, is about completed.

Our sales of tires for the first three months of this calendar year show an increase of about 40 per cent. over those of the corresponding months of last year.

ACQUISITION OF THE RUBBER REGENERATING COMPANY.

Next perhaps in importance to obtaining advantageously supplies of crude rubber is the obtaining of the regenerated product of the proper quality in order to derive the best results in manufacture. Though laboratory work in the proper compounding of rubber in this country is practically in its infancy, Mr. Raymond B. Price, president of the Rubber Regenerating Co., and his staff of chemists have demonstrated their marked ability in this line. Your board has no doubt that not only will the direct earnings of the Rubber Regenerating Co. fully demonstrate the wisdom of its purchase by our company at the price of $6,000,000 in our common stock, but that the indirect advantages to the United States Rubber Co. will far surpass even the direct returns.

CRUDE RUBBER—FAR EASTERN PLANTATIONS.

During the past fiscal year crude rubber has had a downward tendency, the extreme prices for fine Pará being $1.23 on August 22, 1912, and $0.90 on March 31, 1913.

The development of our plantations in Sumatra has continued during the year. We now have planted with *Hevea* rubber trees (fine Pará) 32,500 acres, or an area more than double that of Manhattan Island, comprising 3,900,000 trees. The growth of the trees has been more rapid than anticipated, so that we look for the first rubber from our own estates next autumn, a year earlier than expected. It would seem inevitable that our company must realize great benefit when the time arrives that we will obtain at least a large portion of our requirements of crude at its cost of production in Sumatra.

PROFIT SHARING.

The profit sharing plan, as adopted last year, met with much favor among our employes. It was taken advantage of very generally, and an earnest desire is shown to anticipate payments for the stock subscribed for. Your directors have de-

cided to make a similar offering this year, the price fixed for the stock, however, being $65, instead of $45, at which price with increased dividend the yield will be as great.

OUR OFFICE BUILDING.

Our new twenty story office building, corner of Broadway and Fifty-eighth street, New York city, was completed last summer. In point of location, beauty of architecture, utility of layout and thoroughness of construction, it is a most gratifying success. Our company itself occupies at present ten floors, as well as the basement and sub-basement, and all of this space is fully and economically utilized. Nearly all of the remaining space has been rented to good tenants and we expect that the unoccupied residue will also be let before the end of the present renting season. It is further believed that as the years roll around higher rents will prevail in our locality, thus making our investment increasingly profitable.

MAINTENANCE OF PROPERTIES AND RESERVE.

It has not been the custom of our company to make specific charges for general depreciation of properties, but on the other hand our many plants, here and in Canada, are maintained in the highest degree of efficiency, all repairs and replacements being charged to expense account. The setting up out of surplus of a reserve available for depreciation of $7,000,000, will, it is believed, commend itself to our stockholders, especially when taken in connection with the fact that the fixed surplus of $14,504,714.54 may be similarly applied when deemed advisable.

CONCLUSION.

Your president desires to express his appreciation of the ability and fidelity shown during the past year by the officers, heads of departments and employes of the company. The importance of this spirit cannot be overestimated, as it is only by the loyal co-operation of all connected with the company that the best results can be obtained.

It is with deep regret that we record the death of Mr. Edward R. Rice, who was an able and faithful officer of the company for many years and who was a member of the board of directors, and also held the responsible position of manager of sales at the time of his death.

The present condition of the business of the company is very satisfactory and the outlook for the future is most promising. Our sales of merchandise have substantially increased the past year over any previous year. The lower prices prevailing for crude rubber and the certainty of an ample supply of the crude product of the best quality from the cultivated plantations of the far east would indicate a future expansion of the rubber manufacturing industry to a far greater extent than would have been possible if the source of supply of the crude article had continued limited, as in past years, to the wild growth of the rubber tree in the forests of Brazil and elsewhere.

Confidence in the unselfish patriotism of our government creates the conviction that whatever shall be finally done by it with respect to the tariff or otherwise will be done for the welfare and prosperity of the whole people. Towards this prosperity your company must contribute a helpful part and of its benefits will have the full share that it will deserve. Respectfully submitted.

SAMUEL P. COLT, President.

TREASURER'S REPORT.

UNITED STATES RUBBER COMPANY AND SUBSIDIARY COMPANIES.

(Not including assets or liabilities of General Rubber Company, Canadian Consolidated Rubber Company, Limited, United States Tire Company and Rubber Regenerating Company.)

ASSETS.

Property and plant (including shares of Canadian Consolidated Rubber Co., Ltd., and Rubber Regenerating Co.)		$105,687,667.88
Inventories, manufactured goods and material	$30,384,520.03	
Cash	7,456,804.28	
Bills and loans receivable	1,281,808.97	
Accounts receivable	28,292,273.11	
Stock owned in General Rubber Co.	5,000,000.00	
Securities, including stock and bonds of U. S. Rubber Co. held by subsidiary companies	6,439,680.55	
Sinking fund cash in hands of trustees	382,759.61	
Miscellaneous assets	845,313.09	80,083,159.64
Total assets		$185,770,827.52

LIABILITIES.

Capital stock, first preferred	$57,281,300.00	
Capital stock, second preferred	981,200.00	
Capital stock, common	36,000,000.00	94,262,500.00
Minority Rubber Goods Mfg. Co., preferred stock	1,596,100.00	
Minority Rubber Goods Mfg. Co., common stock	60,000.00	
Minority stock subsidiary of Rubber Goods Mfg. Co.	37,500.00	1,693,600.00
Ten-year 6 per cent. collateral trust sinking fund gold bonds		18,000,000.00
Bonds of subsidiary companies		1,975,500.00
Loans and notes payable	17,750,696.03	
Merchandise Accounts Payable	2,840,191.02	
Accrued interest, taxes, etc.	759,054.50	21,349,941.55
Due General Rubber Co.		8,125,141.76
Reserve for dividends		1,700,344.00
Reserve for redemption of bonds		423,348.87
Reserve for depreciation		7,000,000.00
Fixed surpluses (subsidiary companies)		14,504,714.54
Surplus		*16,735,736.80
Total liabilities		$185,770,827.52

The contingent liabilities for certain guarantees, which are offset by corresponding contingent assets, are not included.

$2,000,000 of the original issue of $20,000,000 bonds have been canceled under Sinking Fund provision.

Those Companies whose fiscal year ends on December 21 are for the year so ended.

*Of this surplus $190,107.48 pertains to minority stock interests.

CONSOLIDATED INCOME STATEMENT FOR YEAR ENDING MARCH 31, 1913.

Net sales, footwear, tires, mechanical, misc.		$91,782,861.87
DEDUCT:		
Cost of manufacture, selling, general expenses and taxes		81,307,154.90
Operating profits		$10,475,706.97
Other income (net)		84,123.49
Total income		$10,559,830.46
LESS:		
Interest on funded and floating debt	$2,170,598.63	
Interest allowed customers for prepayment	736,459.35	2,907,057.98
Net income		$7,652,772.48
Deductions for bad debts		108,554.81
NET PROFITS		$7,544,217.67
Dividends—U. S. R. Co.	$5,594,332.00	
Dividends to minority R. G. M. Co. and Susidiary Co.	205,623.00	5,799,955.00
Surplus for period		*$1,744,262.67
Additions to surplus—adjustment R. G. Mfg. common stock from cost to par value	$6,909,275.00	
Capital gain in conversion of second preferred into first preferred stock	2,254,700.00	
Transferred from reserves to surplus	390,891.98	9,554,866.98
		$11,299,129.65
Surplus U. S. R. Co., April 1, 1912, and R. G. Mfg. Co., January 1, 1912		17,436,607.15
		$28,735,736.80
Common stock dividend		5,000,000.00
		$23,735,736.80
Deductions from surplus—reserve for depreciation		7,000,000.00
Surplus March 31, 1913		$16,735,736.80

Respectfully submited,

JAMES B. FORD, *Treasurer.*

*Of this surplus $13,507.31 pertains to minority stock interests.

BUSINESS OF THE COMPANY.

The following table showing the amount of net profits of the United States Rubber Co. and the amounts disbursed in dividends since the organization of the company, has been compiled from the printed reports of the successive treasurers of the corporation:

Year Ending—	Net Profits.	Dividends.
March 31, 1893	[Not Published.]	
March 31, 1894		
March 31, 1895	$2,716,370.00	$2,056,190.00
March 31, 1896	2,339,790.60	2,056,190.00
March 31, 1897	1,999,611.34	1,552,040.00
March 31, 1898	2,070,750.41	1,164,030.00
March 31, 1899	3,226,513.46	1,882,040.00
March 31, 1900	3,007,887.54	2,828,680.00
March 31, 1901	62,605.57	705,765.00
March 31, 1902	deficit	none
March 31, 1903	1,594,908.16	none
March 31, 1904	1,575,641.29	none
March 31, 1905	3,761,922.63	1,882,040.00
March 31, 1906	3,881,270.23	2,846,092.00
March 31, 1907	4,590,382.72	3,485,956.00
March 31, 1908	3,553,556.14	3,495,448.00
March 31, 1909	4,507,655.39	3,498,940.00
March 31, 1910	5,535,163.15	3,574,205.00
March 31, 1911	4,349,825.73	3,800,000.00
March 31, 1912	5,376,306.86	4,550,000.00
March 31, 1913	7,544,217.67	5,799,955.00 *5,000,000.00

*Common stock dividend.

THE ANNUAL ELECTION.

At the annual meeting, on May 20, the entire board of directors was reëlected. All of these directors have served for some time with the exception of Mr. Price, who was elected in February last, in place of Mr. E. R. Rice, deceased. They are as follows:

1. Walter S. Ballou, Providence, Rhode Island.
2. E. C. Benedict, Greenwich, Connecticut.
3. Anthony N. Brady, Albany, New York.
4. Samuel P. Colt, Providence, Rhode Island.
5. Harry E. Converse, Boston, Massachusetts.
6. James Deshler, New Brunswick, New Jersey.
7. James B. Ford, New York City.
8. J. Howard Ford, New York City.
9. Frank S. Hastings, New York City.
10. Francis L. Hine, New York City.
11. Henry L. Hotchkiss, New Haven, Connecticut.
12. Arthur L. Kelley, Providence, Rhode Island.
13. Lester Leland, Boston, Massachusetts.
14. D. Lorne McGibbon, Montreal, Canada.
15. Raymond B. Price, New York City.
16. Homer E. Sawyer, New York City.
17. Frederick M. Shepard, East Orange, New Jersey.
18. William H. Truesdale, Greenwich, Connecticut.
19. Theodore N. Vail, Boston, Massachusetts.
20. John D. Vermeule, New York City.
21. Elisha S. Williams, Nahant, Massachusetts.

OFFICERS OF THE UNITED STATES RUBBER CO.

At a meeting of the Board of Directors of the United States Rubber Co. for organization, held at the office of the company, 1790 Broadway, New York, May 23, 1913, the following officers were duly elected for the ensuing year: Samuel P. Colt, president; James B. Ford, vice-president; Lester Leland, second vice-president; W. G. Parsons, treasurer; E. J. Hathorne, assistant treasurer; Samuel Norris, secretary; John D. Carberry, assistant secretary; Homer E. Sawyer, general manager footwear business both manufacturing and selling; Elisha S. Williams, general manager tire, mechanical and miscellaneous business, both manufacturing and selling; and Raymond B. Price, general manager development department.

EXECUTIVE COMMITTEE.

Samuel P. Colt, James B. Ford, Lester Leland, Walter S. Ballou, Anthony N. Brady, Elisha S. Williams, Homer E. Sawyer.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

REPORTS differ as to business conditions, and manufacturers making similar lines are not entirely agreed regarding the state of trade. A review of the leaders here in the rubber industry, however, seems to show that while there is a moderately active business the orders appear to be conservatively small, seeming to indicate the policy on the part of customers to be safe rather than sorry. In clothing there is a good business doing in the finer qualities, while in the cheaper grades trade is far less active. In druggists' goods a rather lively demand is noted, many of the chain drug stores as well as the department stores doing extensive advertising and reaping the benefit of their publicity. The boot and shoe business is very far from satisfactory. The natural disposition has been to hang back and to delay ordering as long as possible without losing the benefit of the extra five per cent. for early orders. The rubber companies offered this extra discount on all orders coming into their hands prior to July 1, and on May 15 they notified their customers that this time limit would be extended—with the result that many customers are likely to procrastinate still further. The one really satisfactory branch of the rubber manufacturing business is tires, the demand for which is sufficient to keep every factory working over-time.

* * *

Speaking of the tire business reminds your correspondent that in front of the main office of the Tyer Rubber Co., at Andover, is a sign "Tires pumped here free." As this factory is on a main, traveled road, where thousands of automobiles pass, the sign brings many machines to a stand-still, and right there, outside the doorway, is a case containing a handsome, snow-white Tyrian Tire, conspicuously labeled. This case is strongly illuminated at night, and not only becomes a standing advertisement for these tires, but is also a prominent land-mark from which to compute distances and identify location.

* * *

Jenkins Brothers, manufacturers of the "Jenarco" sheet jointing and packing, are finding that their newly fitted up store and warehouse at 524 Atlantic avenue is none too large for the added business which has come to them since their removal to that address a few months ago. Manager Stiles wears a smiling face these days and presents to his customers a series of illustrated blotters, bearing the Jenarco trade-mark, and pictures of youthful base-ballists which bring back memories of boyhood days.

* * *

The Walpole Tire and Rubber Co. are removing their offices, which have for some years been in the Brown Building, corner of Sumner street and Atlantic avenue, where they occupied the entire fifth floor. The business headquarters will be located at the store opened a few months ago at 757 Boylston street, right in the heart of the automobile supply trade, and therefore especially beneficial to their tire business. The shoe supply department, however, will still be located in the shoe district, in the vicinity of Sumner and Lincoln streets.

* * *

J. W. Fenner, formerly with the W. Brigham Co., Cleveland, spent a portion of his pleasure trip east in this city last month, and while here called on many of his friends in the trade.

* * *

Hon. L. D. Apsley, president of the Apsley Rubber Co., with Mrs. Apsley, sailed on the *Canopic* from this port April 26, for a tour of Europe. Reports of their safe arrival and thorough enjoyment of their vacation have been received.

* * *

Charles A. Coe, eastern selling agent of the United States Rubber Co., has moved his family to Annisquam, where he has

a summer residence and a motor boat, both of which he thoroughly enjoys throughout the summer and early fall months.

* * *

Captain Francis H. Appleton (every rubber man in the country knows him) completes his year as commander of the Ancient and Honorable Artillery Company this month. On the first Monday in June he will march, at the head of this distinguished military company, to the Old South Church, thence to the world-renowned Boston Common, where, after a drum-head election, he will surrender his insignia of office to the Governor of Massachusetts, who will confer it upon his successor. But his duties will not yet be done, for there will be a monster banquet at Boston's newest hotel, where he will preside, in the evening. This will be an unusually brilliant function, for this year rounds out two and three-quarters centuries in the history of the company, and due cognizance will be taken of this event. Captain Appleton's year in command has been a notable one, and he retires with honors heaped upon him by his fellow officers and the rank and file of the organization.

* * *

George E. B. Putnam, editor of the rubber department of the "Boot and Shoe Recorder" of this city, sailed from New York on a vacation voyage to Panama and neighboring Central American and South American ports, and will be gone several weeks. During a service of nearly a quarter of a century this is the first time he has absented himself from duty for a longer period than two weeks. Mrs. Putnam accompanies him.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

ONE is reminded of the recent strike that lasted for a number of weeks in Akron by the letter which has recently been sent by Mr. E. C. Shaw, second vice-president of the B. F. Goodrich Co., to Mayor Rockwell of Akron, in which he encloses a check of $2,000 to be applied to the Police Pension Fund. In his letter Mr. Shaw writes as follows:

"Generally speaking, to no class of workers is less appreciation shown for fidelity and integrity in the performance of duty than to our public officers and servants. It is, therefore, with great pleasure that we, along with all other law-abiding and order-loving citizens, hereby express our approval of the manner in which the police department of our city, under the guidance and direction of yourself and the chief of police, and the sheriff of our county and his assistants, so ably protected life and property, preserved order and enforced obedience to law during the recent attempt on the part of certain irresponsible individuals to demoralize the usual good behavior of some of our citizens.

"We are enclosing a check, payable to the trustees of the police fund, as a slight token of our appreciation for the services rendered, not so much to ourselves as to the city generally. In so doing, we have no apology to offer to the breeders of discontent or to the preachers of anarchy, all of whom we are sure will have no hesitancy in criticising the police department for its conduct and our action in commending it."

The Mayor in his reply wrote: "I heartily agree with you that our police force deserves the hearty commendation of every law-abiding and order-loving citizen for the courageous and impartial manner in which the situation was managed, and thank you for the substantial manner in which you manifest your appreciation of their conduct."

* * *

The Akron rubber factories are running full force and are working day and night and need more help than they can secure. It is claimed that there is need of 5,000 workingmen in Akron at the present time.

* * *

Mr. E. C. Shaw, second vice-president of The B. F. Goodrich Co., is making a trip to Paris to inspect the Goodrich plant at that place. This plant is having marvelous success and although established in a foreign country and in the seat of the foreign tire business, has made great progress. It is manufacturing a full line of auto and truck tires and is pushing work in the line of mechanical goods manufactured by the factory in Akron. It is the first and only complete American plant in a European country. The foreign sales organization of the Goodrich company is now complete and radiates chiefly from London. A large number of the tires for this foreign trade are supplied by the Paris plant.

The B. F. Goodrich Co. has combined the old Diamond sales office and the service station with the Goodrich sales office and service station in Pittsburgh, and is moving into a large new building at 414 Craig street, erected for the Pittsburgh trade.

The Goodrich company's combined newspaper, magazine and outdoor advertising for a period of six months, if carried on one bulletin board, more than a mile high, would reach over ten miles, or from one end of Manhattan Island to the other. The lamps of their electric signs would illuminate the streets of a large city, while their road markers would cover over 30,000 miles of road.

* * *

Mr. Anthon Berg, a noted expert on balata belting and packing, has just completed the installation of the balata belting and asbestos sheet packing plant of The Goodyear Tire & Rubber Co., of Akron. Mr. Berg has installed several large balata belting plants in Europe and has spent more than a score of years in the balata belting business. He expects soon to return to Sweden, his native country, where he will spend the summer, returning in the fall to the United States.

* * *

On account of their increased trade, the Firestone Tire & Rubber Co. has been compelled to build a new service station for solid tires at West End avenue and Sixty-second street, New York City, which will be opened about July 1. It is of concrete fireproof construction, four stories and basement, and is built so that additional stories can be added as needed. The building will cover between 30,000 and 40,000 square feet. It is aimed to make this station complete in every respect, with facilities for the repair of 50 trucks at a time. It has a complete steel and woodworking shop, so that all parts of the wheel can be furnished immediately. In addition, this building will be used as a distributing point for New York and vicinity for all rim and solid tire equipment. The plant will be open 24 hours a day and seven days a week. No expense has been spared to make this a time saving service station. It is the plan of the Firestone company to connect a similar service station directly with its tire branches in all the larger cities. A year ago similar, though smaller service stations were built in Boston and Philadelphia.

The Firestone factory is running day and night, on account of the immense growth of business.

The rim plant of the Firestone company has shown a wonderful growth and is running day and night. During the past eighteen months the business has increased 600 per cent. It is claimed that more than half the new cars put out this year are equipped with Firestone rims.

The Firestone Tire & Rubber Co. has opened a new branch in Syracuse, N. Y., under the management of E. A. Huffman, at 502-504 East Genesee street.

A RUBBER COMPANY HELPING CIVIC WORK.

ON May 13 an entertainment, with an accompanying exhibition, was held in the assembly hall of the Hood Rubber Co. plant at Watertown, Massachusetts, under the auspices of the North America Civic League of that town. The exhibition showed the character of the work done at the League settlement house, and the entertainment consisted of music, dramatic selections and a stereopticon lecture.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

THERE has been no lack of demand for all lines in the rubber trade locally. In fact the activity has been such that the local houses are scarcely able to cope with the situation. This is particularly true of the tire business. This branch of the trade has just recovered from the demand for tires resulting from losses in the recent flood in the Ohio Valley, and the local branch houses have about completed the re-stocking process to meet the demands occasioned by favorable spring weather, when they are confronted with the present street car strike. The automobile and motor truck have come to the rescue. Every kind of vehicle has been pressed into service to help out the situation. Vehicles that have been tireless all winter, and some that have been stored away for several seasons, are being used to transport a portion of Cincinnati's 400,000 inhabitants from their homes to their work and business places. In consequence the rubber tire people are at this time the busiest persons in the city, supplying the demands. There is also a good demand for rubber footwear for immediate shipment, most of the orders coming from the recent flood district and representing complete stocks.

* * *

It was cheerful news to automobile tire manufacturers that was sent out from Columbus by the Register of Automobiles when it was announced that Ohio's automobile record for 1912 had already been passed. With license tags issued to May 10 the total reached 63,720, compared with 63,117 for the entire year of 1912. It is predicted that the year's business will reach 85,000.

* * *

The Lee Tire and Rubber Co. has opened a branch house at Eighth and Main streets. The new branch is in charge of E. M. Henderson as manager. The company carries a large stock of tires and other rubber automobile accessories.

* * *

If the present street car strike continues for any length of time Cincinnati will be the silent city. Since walking has become the habit in this city there has been a great demand for rubber heels, and cobblers together with shoe dealers have been obliged to employ extra forces to tack on rubber heels and rubber soles. It is estimated that the first two days the strike was in progress over 5,000 pairs of rubber heels were sold; and the rubber heel business has come to stay locally, as the strike has been a pronounced educator as to the value of rubber heels and soles. It goes without saying that dealers are making every day of the strike count.

* * *

H. Bumiller and M. E. Remelin, of the firm of Bumiller & Remelin, local agents for the Seamless tire and dealers in rubber automobile and motorcycle accessories, were the hosts of about 100 motorcycle owners at a recent chicken dinner in the country. This firm has done much to bring the motorcycle into general use in this city and it constantly entertains riders in one fashion or another.

* * *

The Ohio Rubber Co., operating houses in Cleveland and Cincinnati, and dealing in rubber clothing, footwear, belting and rubber sundries is about to branch out in the wholesale line on an extensive scale. This company now occupies a seven-story building at 612-614 Race street, where it has been located for about 20 years, conducting a retail business principally. The company has just entered into a lease for a new seven-story concrete building which is nearing completion at 228-230 West Seventh street. The company announces that the tremendous growth of its wholesale business prompts it to devote its entire attention to this department. It is the intention of the company, as soon as the new quarters are completed, to close out its retail department which is one of the largest and most complete in the state of Ohio. The company's business in this city is in charge of Howard J. Howard, who is general manager of the firm.

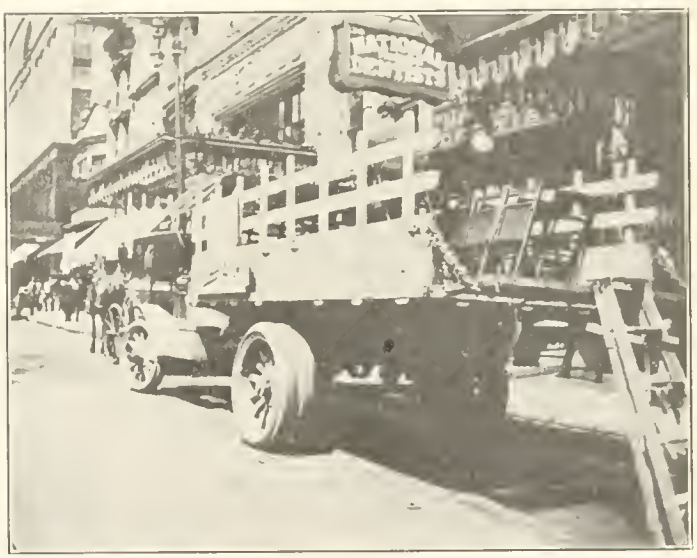
* * *

A meeting of the Executive Council of the Ohio State Pharmaceutical Association has been called for the purpose of outlining plans to have the postal laws applying to the trade more clearly defined. Because of the reading of the law druggists are afraid to send certain of their wares through the mails. It is the purpose of the meeting to prepare a list and present it to Congress.

THE RUBBER TRADE AND THE CAR STRIKES.

WHILE in Cincinnati and adjacent territory recently the population, as a whole, has been groaning beneath the imposition of a street car strike because of which for over a week not a car ran in this "City of Distances," the dealers in automobile supplies, and particularly in tires, found much to their liking.

To begin with, everyone who had a car used it to the utmost. Cars were employed to get the household help and to take them home; cars were sent to the grocery, where the grocer had none of his own or found his wagon service insufficient. The family automobile was used by the head of the household for business purposes to round up his own employes and to help in delivering goods; all of which used up tires and sent the owners of the cars to purchase more, materially assisting the work of tire consumption. Obstructions placed in dark nooks of the streets by



TEMPORIZED PASSENGER SERVICE DURING CAR STRIKE.

street car sympathizers, slivers from boards, sharp bits of rock, nails and tacks placed where they would be effective, helped the tire business greatly. Of course the auto tire and repair concerns got a share of the extra profits, receiving from a quarter to seventy-five cents a puncture per tube, and from three to seven dollars for fixing a casing; but generally tires would be so badly damaged as to require a new supply.

Again, while forty-six hundred automobiles are registered in and about Cincinnati, the strike caused many a non-motorist to invest in a second-hand car. From this he will get the habit, later buy a new car, and so increase the demand for tires.

It is not to be wondered at, therefore, if the automobile dealers and the sellers and repairers of rubber tires are able to view a car strike with a very moderate amount of distress.

The accompanying photograph shows how passenger service in Cincinnati was taken care of during the car strike. It shows a four-ton truck in which chairs have been arranged along the sides, reached by a step ladder from the back.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

THE most noteworthy feature in the rubber trade is the activity noted in the mechanical line. Almost every dealer in the Chicago market reports business in this particular branch of the trade as active. Many of them say they are working their factories night and day in the effort to keep up with their orders. Another line that has been fairly active is rubber clothing, but it has been a poor season for rubber shoes. Garden hose has had a good season, far better than last year, which was a wet year; and many people put off buying garden hose until it got so late that they concluded to do without. The tire business has also been good, and all houses report an increase in sales.

* * *

The Salisbury Co. held its annual meeting recently. All of the old officers were re-elected. The annual report showed one of the best years that concern has had. Its wholesale business showed an increase of more than 56 per cent. over that of a year ago. This remarkable increase was attributed to a large contract received from the Rumely Co. for a special patented belt.

* * *

E. F. Lindley, of the Raven Mining Co., is spending a good deal of time on the road. After returning from a trip of inspection of the company's mines he left for an eastern trip, from which he has just returned.

* * *

William E. Barker, manager of sales of the United States Rubber Co., visited the local offices of the company about the middle of May. R. F. Spencer, comptroller of that corporation, visited the local offices during the first part of May.

* * *

Dealers in local rubber circles are greatly incensed by the increasing number of "fly-by-night" rubber coat concerns which are springing up over the "loop" district and which have done a great deal of injury to the legitimate rubber coat business.

These unsavory companies generally use old-established and well-known rubber names, in order to mislead the people, who, naturally, seeing a familiar name on the store front and in the advertising, assume that the store is connected with the well-known company bearing that name—or, bearing one so similar that the ordinary purchaser would not notice the difference. It is stated that both the Goodrich and the Goodyear companies have brought court proceedings against these people, but have so far been unable to get any redress.

Another feature of the situation that makes it possible for these illegitimate concerns to thrive is the fact that the papers of large circulation seem to be willing to accept their advertisements.

The way these concerns operate is what hurts the legitimate trade. They rent a store in close proximity to a legitimate house, usually on a short-time lease—say, a month or two, or sometimes longer. They then load up their show windows with good-looking coats and advertise ridiculously low prices for their goods. Of course the nature of the show attracts attention, and once a prospective buyer is in the place the salesmen almost lock the store rather than that he should get away. Indeed, a very small percentage of them ever get away without making a purchase. Of course after the coat is worn through one good rain the purchaser discovers that it leaks like a sieve, and some of the cheaper kinds all but fall apart. By the time redress is sought the firm has moved away, and frequently the buyer goes into the legitimate concern close by and raises trouble, and it is with difficulty that he is convinced that he did not buy the coat in the latter place.

An incident which recently occurred serves to illustrate their operations. A man who was a close personal friend of an official in one of the large local rubber concerns received a present of a coat bought in one of these will-o'-the-wisp stores. His wife was going to treat him to a mild surprise and purchased the coat as a birthday present. The gentleman in question went to his friend and asked him what he thought of the coat. After closely examining it the rubber dealer stated that his house sold the same coat for $5. The owner then stated that his wife had paid $12 for it. He found where the coat was purchased, went to the store and tried to recover his money, but naturally did not succeed.

How to get rid of these pests and save the legitimate dealer from injury is a problem which remains to be solved. Local dealers would welcome any plan which would curtail, or better still, eliminate, these objectionable concerns.

A law similar to that put in operation in Minnesota recently would be one way in which some relief could be obtained. This law prohibits any firm from misrepresenting its goods in any advertisement. If the local rubber dealers would get together and petition their legislators to secure legislation of this sort it would tend to minimize this evil.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

A LARGE new addition to the administration building is being constructed at the plant of the Revere Rubber Co. on Valley street, Providence, that will be up-to-date in every particular. A refrigerator system is being installed which will complete the cooling system for the warehouses where the product of the plant is stored. A large force of workmen is engaged in completing the battery of new boilers which are being installed. The entire establishment is being operated day and night, ten hours to each shift, and the management reports that it is finding great difficulty in caring for its constantly increasing orders.

The demand for solid tires for motor trucks continues to increase with great rapidity, so much so that the capacity of the plant is unable to keep pace with the demands made upon it. The orders on the company's books for solid tires are reported as being very much ahead of the number for pneumatics, due to the sudden big demond for motor trucks for delivery and heavy work.

* * *

The wire drawing department at the factory of the National India Rubber Co. at Bristol is to be enlarged, because of the increased business. A room 40 by 60 feet, east of the present wire drawing room, is to be equipped with several of the finer wire drawing machines. A new roof has been put on the building and concrete floors are being laid, so that when completed it will present a very modern appearance. A new smoke-stack is also being installed.

* * *

Would-be thieves entered the plant of the Air Lock Rubber Co., 42 Thurston street, Pawtucket, a few days ago, but were evidently frightened away before they could steal anything, as nothing was missed from the premises. A pedestrian passing the plant heard noises inside that attracted his attention and he notified the police. It was found that a side window had been entered, but no one was found in the building.

* * *

The Atlantic National Bank, of which A. T. Baldwin, of the Walpole Rubber Co., is a director, and which was recently closed by order of the Comptroller of the Currency, is declared, in the report of Bank Examiner Schofield, to be insolvent, and Receiver Curtis has been instructed to liquidate as soon as possible.

Percy W. Gardiner, who was one of the committee of investigation into the affairs of the Consumers' Rubber Co. in January, 1912, is president of the Atlantic National.

An excellent photographic picture of the Banigan Rubber Co.'s factory at Woonsocket appears in the back of that concern's new catalogue, recently issued.

* * *

LeBaron C. Colt, manager of the National India Rubber Co., at Bristol, has been elected captain of the new honorary veteran military organization in that town.

* * *

Just at this time, when innumerable schools and colleges throughout the country are preparing to send forth their annual quota of young men into the business and professional world to carve out a future, it is very interesting and instructive to hear from men who are at the head of large business enterprises or commercial establishments some of their personal experiences in attaining these high standings.

Not many young men fitting themselves for teaching would think of giving up that vocation and taking to another calling, much less in the humbler position of errand boy. Isaac Crocker, of the Hope Rubber Co., did this when he was 21 years of age. He is now president and treasurer of a system embracing ten rubber companies.

"Leaving my school work," said Mr. Crocker recently, "I went to Lowell, Mass., where I let myself out at $4 a week as an errand boy. It was just such a position, nothing more. I was employed by the Lowell Rubber Co., a retail concern. The first thing I had to learn was how to sweep a floor properly. I delivered packages all over the city, helped move big cases of goods, made myself generally useful, and, being the 'office boy,' was at general beck and call.

"There were no parcel deliveries in Lowell at that time, and not all the retail stores owned delivery wagons. That was thirty-three years ago. I had to work from 7 o'clock in the morning until 7 o'clock every night, with 11 o'clock as the closing hour on Saturday nights.

"I must have made good, as the expression is now, for in a short time I was entrusted with the making of sales, and when I had become familiar with the business and the trade I was sent out on the road. In 1889 I had advanced to the point where I was made manager of the Lawrence, Mass., branch, and in 1898 I came to Providence to take charge of the shop in this city. I purchased the business in 1903, thereby controlling a chain of eight stores."

* * *

The American Electrical Works at Phillipsdale, East Providence, report an increasing demand for their products, and are adding to the number of their employes. Recently they have been calling for men in their wire drawing department, offering 20 cents an hour while learning, with an average of $14 to $16 weekly thereafter.

* * *

The State Board of Control and Supply, of which Gilbert R. Parker of Providence is secretary, is making up the forms for bids for supplies for the various institutions throughout the State for six months, commencing July 1. The list includes all the rubber goods of every description used in the institutions.

* * *

John J. Kelley, paymaster of the National India Rubber Co., who has been confined to his home in Warren for the past six weeks with a severe attack of inflammatory rheumatism, has resumed his duties at the Bristol offices. He was warmly congratulated by his friends on his recovery. Frederick Wilson, of the paymaster's department, was acting paymaster during the time Mr. Kelley was absent.

* * *

A new one-story brick building, about 260 feet in length and 160 feet wide, is to be erected within the next few months at the plant of the National India Rubber Co. at Bristol, and three buildings are now being demolished to make room for the new structure, which will be located east of the wire-drawing plant. The new building will be used for the wire-stranding machines. The buildings which are being razed are the old one-story press room, part of the old druggists' sundries room, the one-story building which contains the curing heats, and part of the old two-story calender and gum rooms.

Ground has also been broken for a new one-story shipping shed to extend 146 feet west of the present shipping shed northwest of the wire department. The building will be 70 feet wide and built of wood. A new naphtha storage reservoir, made of cement below the surface of the ground, is being constructed. This will be divided into four compartments or tanks, each of which will have a capacity of 5,000 gallons, so constructed as to be entirely independent of each other.

* * *

The Bourn Rubber Co. of 58 Warren street, this city, has been granted permission by the inspector of buildings to erect a one-story brick workshop in the rear of Westfield street, adjoining the present plant.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

TRADE has quieted down somewhat during the past month, owing to a variety of causes. In the first place there is the tariff. Then the State Legislature has passed measures which big corporations feel to be restrictions on their enterprises, and one measure the liability of employers for injuries occurring to employes—has also tended to make some big industrial companies feel uneasy. The law as it now stands gives compensation (in all mechanical industries) in cases of those who are injured or killed, even though the injury be the result of the negligence of a fellow employe. This law will affect many employers who are allied with the rubber business, and they are naturally interested in the outcome. The theory of the law is to shift the burden of the financial loss, in the case of accidents, to the employer instead of to the employe, upon the theory that the employer will for this reason be much more concerned for the protection of those in his service.

* * *

Mr. R. H. Pease, president of the Goodyear Rubber Co., of this city, has returned from his eastern trip. He has renewed his contract as Pacific Coast selling agent of the United States Rubber Co. He reports that he found conditions in the East about as they are here. R. H. Pease, Jr., treasurer of the company, is now in Paris, and will return early in June. Upon his return from Europe it is likely that he will take charge of the company's branch in Portland.

* * *

Mr. Brady, general sales manager of the Gorham-Revere Rubber Co., has returned from his trip to the northwest, where he found business very good, especially in Seattle. Mr. W. H. Given, the former manager of the company's branch at Spokane, has resigned, and Henry Thompson has been placed in charge of that store. Mr. Thompson was formerly manager of the Portland branch store. The new manager of the Portland branch will be W. G. Roope.

* * *

M. E. Morris, recently appointed Pacific Coast district manager of the Goodyear Tire and Rubber Co., of Akron, succeeding W. T. Powell, has arrived in this city, accompanied by his wife and daughter. This being district headquarters, Mr. Morris has been getting acquainted with the big establishment on Van Ness avenue. He is accompanied by C. W. Martin, manager of the truck tire department of the company, and also by L. C. Rockhill, manager of the pneumatic tire department. The latter two will make semi-annual trips to this territory. They have been busy conferring with Manager Frank Carroll of the local branch, and are about to start for a trip through the cities of the northwest.

Mr. H. T. Dunn, president of the Fisk Rubber Co., has been visiting in San Francisco, and while here is making his headquarters with Mr. Pratt, manager of the local branch. Mr. Dunn is very well pleased with the progress which the tire industry is making on this coast. In his belief, the automobile industry must thank the tire manufacturers to a large extent for the increasing popularity of the automobile, which is largely due to the increased efficiency and better service of automobile tires.

* * *

W. H. Bell, Pacific Coast manager of the Firestone Tire and Rubber Co., reports that the tire business is keeping up to its high standard of activity on this coast. Mr. Bell keeps well posted not only on the commercial demand for tires, but also on all improvements in tire construction, and is a strong believer in the idea that the longer a manufacturer can make a tire last the greater will be the ultimate demand for its general use. Improvements on the rims, to keep the dust and rocks out, are important, he says, and also improvement may be looked for in the matter of fibres of which the fabric is composed. The best that are now to be obtained are the fibres of natural grown plants, and it is really the toughness and efficiency of the fabric which goes to make up the life and efficiency of the tire.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

C. H. OAKLEY, president of the Essex Rubber Co. and William G. Grieb, of the Ajax-Grieb Rubber Co., local concerns, were two of the committee of four representing the rubber manufacturers of this country which presented to Congress a joint memorandum on the Underwood tariff bill, as to the necessity of granting a measure of protection in the matter of tariff considerably in excess of that contemplated by the Democratic administration.

Other Trenton rubber manufacturers who assisted in the preparation of the appeal to Congress were: W. H. Sawyer, of the Mercer Rubber Co.; R. J. Stokes, Thermoid Rubber Co., and J. K. Pellinger, Morrisville Vulcanite Rubber Co.

The Finance Committee of the Senate received the committee at the hearing, which lasted about two hours. Mr. Oakley and Mr. Grieb both spoke against the contemplated action of the administration. The memorandum presented represented factories producing an annual output of $75,000,000 worth of rubber goods, a great portion of which is manufactured in this city.

* * *

Tibor Miklos, administrator of the estate of John Mikulas, has instituted suit in Mercer Supreme Court to recover $10,000 damages for the loss of the life of the deceased. Mikulas was killed in one of the rubber mills some months ago, as the result of the explosion of a vulcanizer. It is charged that the machine was defective, and that it was improperly and unskillfully operated.

The reputation of Trenton as the home of expert tire makers is again borne out by the effort to induce local men to accept positions in other sections of the country. The Akron Rubber Co., Akron, Ohio, has run large advertisements in the local newspapers calling the attention of workmen to the advantages of locating in the Ohio town. A rubber company at Rutherford, New Jersey, another in New York State and a New England concern have advertised in the local newspapers for tire makers, offering all kinds of inducements.

THE SENATE HEARING ON THE TARIFF.

About the middle of May there was a meeting of rubber manufacturers held in New York City, and a committee of four was appointed to present a memorandum on the Underwood Tariff Bill before the senate committee, which was holding Tariff hearings at that time. The committee consisted of F. A. Seiberling, president of the Goodyear Tire and Rubber Co., Akron, Ohio; Geo. B. Hodgman, president of the Hodgman Rubber Co., New York; William G. Grieb, of the Ajax-Grieb Rubber Co., and C. H. Oakley, president of the Essex Rubber Co., of Trenton.

These representatives of the rubber trade were cordially received by members of the senate committee, and were given an opportunity to state their reasons for opposing the reduction in duty on manufactured rubber goods from 35 to 10 per cent. Besides these four members of the committee, a number of other manufacturers, including several of the leading Trenton manufacturers, were present and took part in the discussion.

PROPOSED REDUCTIONS IN DUTIES ON MANUFACTURES OF RUBBER.

BY the annexed table the differences between the present and proposed duties on rubber manufactures are shown in more complete form than in the table published in the May issue of THE INDIA RUBBER WORLD (page 404). There is a sweeping reduction to the extent of about 70 per cent. of present duty on rubber manufactures in general, a reduction of 60 per cent. on cables, of 50 per cent. on belting of cotton and rubber and on waterproof cotton cloths, and of 45 per cent. on tire fabrics.

Webbings containing india rubber would pay duties as now according to the other materials of which they are composed. Wool webbings have hitherto paid a compound rate equalling a figure (according to cost per pound) from 68.94 per cent. to 148.40 per cent., nine-tenths of the quantity paying 84.13 per cent. The proposed reduction to 35 per cent. will be a serious one for makers of this class of web, who, however, would benefit by the free wool clause of the new tariff.

India rubber enters into the composition of so many articles that it is difficult to define just how far the effects of the new tariff would reach. But the annexed figures show its incidence as affecting the principal branches of manufacture.

COMPARISON OF PRESENT AND PROPOSED DUTIES ON MANUFACTURES OF RUBBER.

Present (Payne) Rates.		*Proposed (Underwood) Rates.*	
		Paragraph.	
Manufactures of india-rubber	35 per cent.	378—Manufactures of india-rubber or gutta-percha	10 per cent.
Rubber sponges	40 per cent.	379—Manufactures of vulcanized india-rubber known as "hard rubber"	25 per cent.
Manufactures of gutta-percha	35 per cent.		
Cables, etc. (1c. per lb. + 40 per cent.)	51.86 per cent.	116—Telegraph, telephone and other wires and cables composed of metal and rubber, or of metal, rubber and other materials	20 per cent.
Cotton and rubber belting for machinery	30 per cent.	267—Belting for machinery made of cotton or other vegetable fiber and india-rubber	15 per cent.
Waterproof cotton cloth (10c. per sq. yd. and 20 per cent.)	50.56 per cent.	259—Waterproof cloths composed of cotton or other vegetable fiber, whether composed in part of india-rubber or otherwise	25 per cent.
Suspender webbing—*Cotton*	45 per cent.	267—Fabric, suitable for use in suspenders and braces, of cotton or other vegetable fiber and india-rubber; not embroidered	25 per cent.
Fibres other than cotton	45 per cent.		
Composed of wool, etc, chiefly	84 per cent.	287—Webbings of flax, hemp, or same and india-rubber	30 per cent.
Of silk	50 per cent.	301—Webbings of wool, etc	35 per cent.
		324—Webbings of silk, etc	40 per cent.
Tire fabrics	45 per cent.	267—Tire fabrics, etc	25 per cent.
Cotton ducks (minimum)	45 per cent.	271—Cotton cloths (minimum)	30 per cent.
Clothing of silk and india-rubber	60 per cent.	325—Clothing of silk and india-rubber	50 per cent.

New Rubber Goods in the Market.

THE TYER "HOLD-TITE" TIRE.

THE Tyer Rubber Co., of Andover, Masachusetts, makers of the Tyrian rubber goods, have incorporated the letter T in the tread of their "Hold-Tite" anti-skid automobile tire. There are two rows of these T-shaped depressions. The heads abut a strip of uncut rubber which extends around the tire at its greatest circumference. As the greatest amount of wear comes on this point it should have excellent wearing qualities.

SHAVING WITHOUT SOAP OR CUP.

Simplification is the great law of civilized conveniences.

Here is a shaving brush called the "Selfeedo" that combines in itself the work of a brush and the offices of a shaving cup. The handle, which is made of hard rubber, is hollow and is in two parts, the outer part working on a screw over the lower. In the hollow handle enough shaving cream

THE SELFEEDO SHAVING BRUSH WITH HARD RUBBER CASE.

can be stored for 100 days' use. When the shaver is ready for operations he simply dips the bristles into water, give the top of the handle a quarter turn, and that forces a sufficient amount of cream down into the bristles for the morning's shave.

The brush is put up in a hard rubber case, so that a man can carry his shaving outfit in his waistcoat pocket. (Baird-North Co., Providence, Rhode Island.)

"SOLID AIR."

A new tire filling compound is mentioned in the French technical press, which can be injected in a liquid state into tires at different degrees of tension, to correspond with the weight and normal load of the vehicle, as well as the size of the tire casing. After a few hours the injected liquid becomes plastic, generating gas in millions of cells. It is said to be compressible and inextensible, differing from rubber, which is incompressible and extensible.

Replete with Information for Rubber Manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

NEW STYLES OF WATERPROOF GOODS FOR WOMEN.

THE latest catalogs issued by the most progressive New York manufacturers and dealers in women's waterproof goods contain some very attractive designs, three of which are here reproduced:

No. 1 shows a raincoat of rubberized silk mohair and is very light in weight. It has a high standing turnover collar and a slot pocket on each side. Accompanying this raincoat there is a convenient auto hood, as shown in the picture.

No. 1. No. 2. No. 3.

SOME NEW PATTERNS OF WATERPROOF GARMENTS.

No. 2 shows a more mannish design. This is made of English worsted cashmere with fancy plaid rubber back, and comes in castor, tan, navy or black. It has patch pockets, inlaid velvet collar and loose-belted back.

No. 3 is a raincoat of light weight spun silk Ottoman cloth with rubber back. This is made in castor, taupe, navy or black. It has a soft, convertible collar, patch pockets and a detachable half belt at the back.

A NEW PREPARATION FOR AUTO TOPS.

Rubber has contributed not only in a thousand ways to the comfort of living, but it is continually contributing to the wealth of our vocabulary. Every day some new word born of rubber appears in print. Here's one of the latest—"RUB-R-TITE." It is the name of a preparation for use on worn-out and leaky automobile and carriage tops. It is alleged to renew and render waterproof any sort of fabric, whether mohair, pantasote, leather or cravenette, re-filling and re-surfacing the fabric. The manufacturers do not tell what it consists of, but they say that it is neither a paint nor a varnish, and that it puts an elastic, durable coating on the auto top. Its name seems to warrant the assumption that it contains at least some suggestion of rubber. (Rub-On Manufacturing Co., Buffalo, New York.)

News of the American Rubber Trade.

McGRAW CAPITAL STOCK $1,000,000.

THE McGraw Tire and Rubber Co., of East Palestine, Ohio, has been incorporated, with a capital stock of $1,000,000, to manufacture rubber tires and various other rubber goods and automobile accessories. The incorporators are: E. C. McGraw, Lenore H. McGraw, Robert W. McGraw, James C. Chaplin, C. H. Bolton, John S. Wilson, George Flaccus, John Morgan, R. F. Taggart, R. B. Taggart, J. C. Chamberlin, H. C. Fraser and C. L. Merwin.

18 NEW MOTORS FOR BOSTON WOVEN HOSE COMPANY.

THE Boston Woven Hose and Rubber Co., Cambridge, Massachusetts, will put into operation in its plant eighteen new motors ranging from 15 to 400 horsepower, oil switches with transformers and controller panels. All this equipment will be furnished and installed by the General Electric Co. The General Electric Co. will also install very soon in the plant of the Empire Gypsum Co., Garhutt, New York, a new electrical drive apparatus consisting of one 10 kv-a. and three 150 kv-a. transformers, fourteen motors ranging from 5 to 100 horsepower, switchboard apparatus and accessories.

RUBBER AND GUAYULE AGENCY, INC.

A COMPANY has been incorporated under the laws of the State of New York with an authorized capital of $60,000, under the name of "Rubber and Guayule Agency, Inc.," for the purpose of doing business as brokers, agents and importers of crude rubber, guayule, balata and kindred products. Edward Weber will act as the general manager of the concern, and the board of directors will consist of Edward Weber, president and treasurer, Cornelius Schroeter, and Albert F. Hill, secretary.

The Rubber and Guayule Agency is acting as sole agent for a number of leading firms in Hamburg, Antwerp, London and other European markets, as well as for Colombo and Singapore firms. It is also sole agent for Madero's Sol & Gallo brand guayule, and for the Toro brand of the Cia. Mexicana Explotadora de Hule.

THE GORDON RUBBER CO. ADDS TO THEIR PLANT.

The Gordon Rubber Co., Canton, Ohio, manufacturers of seamless and hand-made rubber sundries, is adding two large buildings to its plant—one being 200 x 40 feet, the other 165 x 40 feet. These will be used in the manufacture of druggists' sundries, auto tires, tubes and other specialties.

WHY THE PRICE OF FEDERAL TIRES WAS REDUCED.

ON the 4th of May the Federal Rubber Manufacturing Co., of Milwaukee, advertised a reduction averaging rather over 10 per cent. on the "Rugged Tread" Federal tire in sizes running from 32 x 3½ inches to 38 x 5½ inches. Because of their quality, these "Rugged Tread" tires had previously been sold at a somewhat higher price than other tires, but owing to increased manufacturing facilities and the larger demand for these tires it was found possible to lower the price somewhat while still maintaining the quality; consequently the company decided on this reduction.

$5,000 IN PRIZES TO TIRE USERS.

THE Ajax-Grieb Rubber Co. has offered 208 prizes, amounting all told to $5,000, to the chauffeurs who will make the best record with their tires during the year ending March 31, 1914. The first prize amounts to $500, the second $300, and the third $200. Then there are five prizes of $100 each, and numerous smaller prizes. Those who want to enter the competition should secure the proper blanks from the company, which will show them just what it is necessary to do in order to compete successfully.

THE RUBBER CLUB OUTING.

The midsummer outing of the Rubber Club of America is set for the 15th of July. It will be held as usual in or near Boston, and the committees are preparing a program that bids fair to be by far "the best yet."

ONE WAY TO AVOID LABOR TROUBLES.

On Saturday morning, May 10, Mr. J. K. Williams, president of Williams Foundry and Machine Co., Akron, Ohio, assembled all the employes of his factory and presented each one of them with an envelope containing a sum of money, and a card with the following matter:

"The Williams Foundry and Machine Co. has completed another successful year, and its directors, knowing that its prosperity is largely due to the efforts of its faithful workmen, have decided to recognize their services in a substantial manner."

After explaining the method of distribution the card continued: "We trust that we may have your help in making the year 1913 even more successful, and that future disbursements of this kind will be possible."

While this distribution was a surprise to the employes, still they had had some previous preparation for it, because last year a similar though smaller distribution was made. It might be added that labor troubles are practically unknown in this shop.

THE MONATIQUOT BIRTHDAY MAT.

The Monatiquot Rubber Works Co., which manufactures in its factory at South Braintree, Mass., various brands of "Naturized Rubber" with good old historic Indian names, celebrated its third birthday-anniversary, which occurred on April 19, by presenting its customers and friends with a fine specimen of "Naturized" rubber in the form of a useful and convenient rubber mat. It is eight inches in diameter, artistic and attractive in design, and of a copper-red color, which goes appropriately with the celebrated Indian names used by the company. It can be used as a pitcher mat, coin mat, or in a hundred other ways.

THE CANADIAN CONNECTICUT COTTON MILLS, LIMITED.

THE Canadian Connecticut Cotton Mills, Limited, recently incorporated, will start soon on the work of erecting a plant at Sherbrooke, Quebec. It is expected that the plant will be completed and in operation by the first of next January. This company has authorized capital stock of $1,750,000. The president is H. L. Burrage, the vice-president R. J. Caldwell, and the treasurer and buyer Tracy S. Lewis. Mr. Lewis is president and Mr. Caldwell vice-president of the Connecticut Mills Co., of Danielson, Connecticut, which manufactures automobile tire fabrics. The new Canadian company will manufacture special cotton fabrics, presumably for automobile tires.

ALLIANCE RUBBER CO. ALREADY MANUFACTURING.

THE April issue of THE INDIA RUBBER WORLD contained a statement regarding the incorporation of the Alliance Rubber Co., of Alliance, Ohio, giving the names of the incorporators, the amount of capital and a brief description of the building plan. This building has not yet been completed, but the company hopes to have it in condition to occupy by July 15. It will be used for the manufacture of inner tubes, druggists' sundries, hand-made, molded and dipped; gloves for the surgical, household and electric trade; toy balloons and mechanical goods. The company is already doing some manufacturing in the line of dipped goods, in a temporary factory which will be used until its new plant is completed.

MR. R. L. CHIPMAN BECOMES A BROKER.

Mr. R. L. Chipman has opened an office as a crude rubber broker at 290 Broadway, New York. Mr. Chipman was for 14 years connected with Geo. A. Alden & Co. and the New York Commercial Co. and has a very wide acquaintance in the rubber trade. He graduated from Harvard in 1898 and for the next two years was in the Boston office of Geo. A. Alden & Co. Then he represented that concern for two years at their Akron office,

R. L. CHIPMAN.

where he became acquainted with the Western and Canadian trade. He then returned to the Boston office and remained there until January of the present year, when he joined the forces of the New York Commercial Co. Since this company went into the hands of a receiver Mr. Chipman has been assisting Mr. De Long in untangling and adjusting its affairs—until the opening of his own office about the 20th of May.

Owing to his experience and the large number of friends he has made in the trade it is quite safe to say that Mr. Chipman will enter at once upon a successful career.

MR. SYMINGTON'S VISIT TO AMERICA.

Mr. William Symington, head of the firm of William Symington & Co., Ltd., London, sailed for home from New York, May 10, on the *Caronia*, after a visit of two or three weeks in this country and in Canada. The firm of Wm. Symington & Co., Ltd., handles the crude rubber business of the United States Rubber Co. in London, and Mr. Symington came over, primarily, to confer with the officers of that company and also of the General Rubber Co., through which the United States Rubber Co. purchases its crude rubber supply. The "Boston Financial News" contained a very interesting interview with Mr. Symington a few days before he sailed, in which he gave his views relative to the rubber outlook in the Middle East and in the trade generally. He is quoted as follows:

"In the Middle East all told there were about 1,500,000 acres planted at the close of 1912, which will be in full bearing in 1919. So far as we can estimate, the total annual output of that planted acreage will be 300,000 tons of crude rubber. The world's consumption now is approximately 120,000 tons. Of course, between these two sets of figures there is still a rather wide margin, but it must be remembered that the output is increasing at a very rapid rate.

"The exports of plantation rubber from the Federated Malay States and Straits Settlements for the first quarter of this crop year showed an increase over the corresponding three months of last year of 70 per cent. On this basis this year's crop will be 50,000 tons, which will represent a very substantial increase over last year's. This estimated output of plantation rubber for the current year will be in excess of the Amazon crop, which was 43,000 tons for the calendar year 1912."

Mr. Symington, speaking of the tremendous increase of plantation rubber, says that unless new uses are found for it, production will soon greatly exceed consumption; and he states that in Europe representatives of some of the large producing companies are offering manufacturers a certain amount of crude rubber free of charge, to be used for experimental purposes with a view to finding new uses for the product. But he is not at all a pessimist on the situation, for he calls attention to the fact that the crude rubber supply of the world ten years ago was only 50,000 tons, while now it is 120,000 tons. That is, in ten years' time the production of crude rubber has increased nearly two and a half times and yet the consumption has fully kept pace with this increase, so that rubber is selling no lower now than it was ten years ago.

MR. GILBERT LEAVES TIRES FOR AUTOS.

The resignation of Mr. J. M. Gilbert from the general managership of the United States Tire Co.—which occurred the last of April—came as a surprise to most people in the trade. This step however, was fully explained when immediately after his resignation he was elected president and general manager of the Lozier Motor Co., of Detroit.

Mr. Gilbert has been a prominent figure in the tire industry for a number of years. He has been associated with rubber manufacture for the last twelve years. Two years ago he was general manager of the Continental Caoutchouc Co., one of the constituent companies of the Rubber Goods Manufacturing Co. At that time—in March, 1911—the United States Tire Co. was formed, embracing the Continental Caoutchouc Co., Morgan & Wright, the G. & J. Tire Co., and the Hartford Rubber Works Co., all belonging to the Rubber Goods Manufacturing Co. It was currently reported that Mr. Gilbert was largely instrumental in bringing about this consolidation of interests and in gradually supplanting these four individual brands of tires by the United States Tire Co. brand.

The annual reports of the Rubber Goods Manufacturing Co. show that the business of its tire department during the last two years has been most successful, and it is stated that the first months of the present year indicate an increase of over 40 per cent. in volume of sales over the corresponding months of last year.

After the announcement of Mr. Gilbert's resignation there was much speculation as to who would succeed him as general manager of the tire company, but this speculation has been quieted by the action of the directors of the United States Rubber Co., who, at their annual meeting for the election of officers—held May 23—elected Elisha S. Williams—president of the Rubber Goods Manufacturing Co.—to be "general manager of the tire, mechanical and miscellaneous business of the company, both manufacturing and selling."

A testimonial dinner was tendered Mr. Gilbert early in May, at the New York Athletic Club, by his former associates in the tire company, and he was presented with a handsome combination cellarette and humidor.

RUBBER REGENERATING CO. TO HAVE A NEW YORK LABORATORY.

The Rubber Regenerating Co., recently purchased by the United States Rubber Co., is to have a well-equipped laboratory in New York City, and the four-story-and-basement building, located on the northeast corner of Eleventh avenue and Fifty-eighth street, has been leased for a term of years for this purpose.

TRADE NEWS NOTES.

A branch of the St. Louis Tire and Rubber Co., of St. Louis, has recently been opened in Chicago. It is located at 2027 Michigan avenue and is in charge of Mr. Alexander Hendel.

Walpole tires will be distributed in the southern part of New York State and the State of New Jersey by Meyers & Grayson, 1008 Broadway, New York.

The Goodyear India Rubber Glove Manufacturing Co., one of the constituent plants of the United States Rubber Co., is making arrangements to increase its office space by a two-story addition.

The F. S. Carr Co., of South Framingham, Massachusetts, has just started on a four-story brick and cement building 150 x 75 feet, and a one story frame building 200 x 60 feet. These additions will practically double the capacity of the plant.

One of the most successful lines of fire hose now on the market is the wax and Pará gum-treated cotton rubber-lined fire hose made by the Fabric Fire Hose Co., with factories at Sandy Hook, Connecticut, and offices at 127 Duane street, New York. The manager of this company, Mr. William T. Cole, is one of the best known rubber men in the trade, and his administration of this company is responsible for one of the most complete and effective organizations of its kind in this country.

Theodore Hofeller & Co., of Buffalo, large dealers in old rubber, have distributed some color barometers in the form of little cards to be hung upon the wall, which, by the changing color in the piece of sensitized cloth, indicate whether we may expect fair weather, rainy weather or a change of any kind. It is perhaps not quite as accurate as the government barometers, but it serves its purpose.

W. F. Gammeter, of Cadiz, Ohio, who manufactures Universal Steel Calender Stock Shells, had a very wide distribution for his product in the last week in May. He not only made shipments to Boston, Lowell, Woonsocket and various other New England points, and to Buffalo, Wilkes-Barre, Trenton, Akron, Cleveland and other middle state and middle west localities, but he sent shipments to various places in Ontario, some to California and some as far away as St. Petersburg, Russia.

The Mexican Mutual Planters Co. has moved its offices from 167 West Washington street to 123 West Madison street, Chicago, Illinois.

COSHOCTON TO HAVE A RUBBER PLANT.

THE town of Coshocton, Ohio, is to have a rubber factory. The S. & M. Tire and Rubber Co., capitalized at $400,000, has signed a contract with the representatives of the Coshocton Board of Trade to locate a factory in that town. The town contributes two acres of land with a factory building formerly used for another purpose, and it is expected that the citizens of the town will subscribe to $100,000 worth of stock. The company expects to remodel the factory building at once, and hopes to be manufacturing tires within three months. It intends at the start to employ 200 men, and expects within the next two years, at any rate, to increase this number to 500.

THE COLUMBIA RUBBER CO.

THE Columbia Rubber Co. has been incorporated, the promoters being the owners of the L. & M. Rubber Co., of Carrollton, Ohio, to manufacture rubber tires in a factory now being built at Columbiana, Ohio. It is expected that the factory will be completed by July 1, with a capacity of 300 tires per day. The capital stock is $1,000,000, and the officers are: E. L. Henderson, president; A. E. Albright, secretary, and J. H. Richards, treasurer.

The directors of the Boston Woven Hose and Rubber Co. have declared a semi-annual dividend of three dollars per share on the preferred stock, and a quarterly dividend of three dollars per share on the common stock, both payable June 16, 1913, to stockholders of record June 5, 1913.

THE RUTHERFORD CO.'S NEW BRANCH.

THE Rutherford Rubber Co., Rutherford, New Jersey, has just opened a new branch in Boston, at 53 Church street, near Park square. In addition to this Boston store it has branch stores at 438 West Forty-second street, New York City; 240 North Sixteenth street, Philadelphia, and in Bridgeport, Newark and Reading.

An item has recently appeared in some of the papers to the effect that the Rutherford company is increasing its capital stock. This, however, refers to an increase which took place last December, when $200,000 additional preferred stock was issued, making the present capitalization consist of $500,000 preferred 7 per cent. cumulative stock and $300,000 common stock. This increased stock was issued to take care of certain extensions in the business and for the purpose of opening further sales branches.

A VERY CONVENIENT SHIPPING BOX.

"The Behrendt Knock-Down Shipping Box" ought to be a great convenience to almost every shipper. It is constructed entirely of galvanized sheet iron (24 or 26 gg.), and while it weighs only half as much as the ordinary wooden box, it is strong enough for the heaviest merchandise or machinery. In its collapsed state it stands only 4 inches high and can be put together by a boy in a few minutes. It can be locked up in a minute and opened just as quickly. It has no visible nails, screws or bolts. It can be skidded around like any ordinary box, and can be used over and over again, as it is practically indestructible. It is made by the Metal Package Corporation, of Newark, New Jersey.

REPORT OF THE CONSOLIDATED RUBBER TIRE CO.

The annual report of the Consolidated Rubber Tire Co. of New York for the year ending December 31 last, recently published, shows that during the year $4,276,993 worth of goods were sold, an increase of $893,461 over the previous year. The total income of the company from all sources during 1912 was $4,513,358, while the expenses amounted to $4,399,338, leaving a net profit of $114,020.

THE ECONOMY OF THE AUTO ENGINE.

In an address given by Ex-Chief Loller of Youngstown, Ohio, at the recent semi-annual meeting of the New Jersey Fire Chiefs' Association, he made this statement, showing the comparison between the horse drawn steamer and the auto engine:

"The first motor engine placed in service in Ohio was of the Webb type. During the recent flood it worked from 7 o'clock on Sunday morning until the following Monday night, taking suction from the river, which was covered with oil and other waste. The same engine was used to pump out cellars, and I do not think a steam engine could have done any better. In fact, I think the automobile engine proved to be a little better than the steamer. From the point of economy it is far ahead. Three men are required to operate a steamer and take care of horses, besides the expense of fuel, while only one man was needed for the automobile engine, and half the time he was strolling around with his hands in his pockets. From the point of operation, the auto engine costs about one-sixth of the amount needed to run a steamer. The tire question is the largest item in the automobile expense list, although I had a machine equipped with one set of tires which lasted three years, and they were pneumatic tires at that. Several solid and cushion tires are now being manufactured which nearly approach the pneumatic in resiliency."

THOSE RUBBER EARS AND NOSES.

THE "New Goods" department of this publication described and illustrated in the May issue the rubber ears and noses manufactured by a surgical appliance house of New York City. These artificial members were ascribed, in that article, to the well-known New York surgeon, Dr. William B. DeGarmo. That was an error. They should have been attributed to the G. J. DeGarmo Co., 33 West Forty-second street.

WILLIAM E. BARKER MANAGER OF SALES.

Those students of human affairs who champion the theory that only homely men ever get very far, thought that their case was proved for all time when Mr. Wilson went to the White House and Mr. Sulzer was sent up to Albany; but they have since received a tremendous set back, for on the 8th of May their theory was utterly exploded by the appointment of Mr. William E. Barker to the position of Manager of Sales of the United States Rubber Co.

Mr. Barker is not so very venerable—some little time has still to elapse before he reaches the half century mark—but notwithstanding that fact he is one of the veterans of the rubber industry, for his rubber career runs back to the early 80's, when he became

WILLIAM E. BARKER.

connected with Charles M. Clapp & Co., who had a large and successful store on Devonshire street, Boston, and who were, in addition, proprietors of the Aetna Rubber Mills of Roxbury, Massachusetts.

Mr. Barker stayed with this company for seven years and when he left had reached the position of general manager. It would have been impossible to select at that time, or in fact at any time since, any place in the rubber trade where seven years could be more profitably spent. Mr. Clapp was not only a very successful manufacturer and merchant, but he was a man of large vision and held an important position in commercial and civic affairs. Anyone who spent seven years with him without having all that was good in him made still better would be a psychic phenomenon.

After leaving this company Mr. Barker was for a year with the selling agents of the Pará Rubber Co., and then, in 1891, he started the Enterprise Rubber Co. of Boston, being made its president, a position which he still holds after 22 years of office. In 1909 the branch store system of the United States Rubber Co. had grown so large and was such an important channel of distribution, that the management decided that it was desirable to have some capable person take full charge of all the merchandise distributed through these stores—and Mr. Barker was put in that position, with the title of Merchandise Manager of Branch Stores. This practically made him a sort of first lieutenant to Mr. E. R. Rice, the manager of sales. It was natural, therefore, that the directors, on Mr. Rice's death, should look upon Mr. Barker as his logical successor.

The position of Manager of Sales of the big corporation is a highly important one. It has been filled in the past by such notable figures in the trade as Charles L. Johnson and Eben H. Paine.

MR. MAYO APPOINTED TO AN IMPORTANT POSITION.

Mr. Geo. H. Mayo has been made "Merchandise Manager of Branch Stores" of the United States Rubber Co., in place of Mr. Barker, who has recently been promoted to the position of manager of sales.

Mr. Mayo was born in Chelsea, Massachusetts, in 1875, which, it will be noticed, places him on the safe side of the line at which Dr. Osler says men should normally be chloroformed. Though born in Chelsea, Mr. Mayo evidently never came under those devitalizing influences which—around Boston, at any rate—are so generally attributed to the city of Chelsea, for he was only 19 years old when, having graduated from the famous Boston English High School, he was hard at work in the large and important wholesale distributing house of Wm. H. Mayo & Co., of which his father was the head. At that time they distributed leather footwear and rubbers, but in 1900 they devoted themselves exclusively to rubber footwear, and from that time on handled all the damaged goods of the United States Rubber Co., which had previously been sold at auction. It is currently reported that the Mayo company has done not so badly in this exclusive field.

GEORGE H. MAYO.

Five years after entering the rubber business, and at the age of 24, Mr. Mayo had become a partner in the firm, and his work there made such an impression upon the selling department of the United States Rubber Co. that when it was found desirable to add three new branch stores to the company's list, to sell the new "Hub-Mark" brands in Boston, New York and Detroit, these stores were put in Mr. Mayo's charge. This was a year ago. Evidently he has given a good account of himself in the management of these three branch stores, for he is now promoted to the general management—as far as control of the merchandise is concerned—of all the company's branch stores, which fairly comfortably cover the map of the United States—at least that part of it where rubbers are chiefly sold and worn.

If the charge should be brought against Mr. Mayo that he has climbed rather rapidly, the defence could be made for him that he was compelled to, being constructed exclusively on climbing lines.

The United States Tire Co. is making rapid progress in the transformation of its big Detroit plant, and expects to make it the largest tire factory in the world.

NEW INCORPORATIONS.

Couch-Georger Tire Agency, Inc., May 3, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: C. A. Couch, E. F. Howell and Frank P. Georger—all of Buffalo, New York. Location of principal office, Buffalo, New York.

Gaulois Tire Corporation, April 24, 1913; under the laws of New York; authorized capital, $20,000. Incorporators: Jean Grenier, 49 West 64th street, Victor W. Cutting and Maurice Leon—both of 60 Wall street, New York. Location of principal office, New York.

Globe Rubber Tire Manufacturing Co., May 6, 1913; under the laws of Delaware; authorized capital, $1,500,000. Incorporators: Harry B. James, Sherman Square Hotel, 72nd street and Broadway, New York; Joseph P. Hall, 60 Hawthorne avenue, East Orange, and Spencer Weart, 273 Washington street, Jersey City—both of New Jersey. To manufacture rubber tires and inner tubes for automobiles and other vehicles.

The H-H-H Tire and Manufacturing Co., Inc., May 3, 1913; under the laws of New York; authorized capital, $50,000. Incorporators: John Dravis, William C. Burroughs and John J. Coyle—all of 1777 Broadway, New York. Location of principal office, New York. To manufacture and deal in rubber tires, etc.

The Harper Tire and Rubber Co., March 3, 1913; under the laws of Ohio; authorized capital, $100,000. Incorporators: Warren D. Harper, James Thomas, and Albert H. Vayo. Location of principal office, Canton, Ohio. To manufacture and deal in automobile tires.

Interchangeable Rubber Heel Co. Inc., May 10, 1913; under the laws of New York; authorized capital, $50,000. Incorporators: H. W. Crane, Hotel Windsor, Philadelphia, Pennsylvania; George A. Mathesius, 108 West 90th street, New York, and John F. Krolm, 834 Hudson street, Hoboken, New Jersey. Location of principal office, New York.

The McGraw Tire and Rubber Co., April 8, 1913; under the laws of Ohio; authorized capital, $1,000,000. Incorporators: E. C. McGraw, Joseph C. Chaplin, and C. H. Bolton. Location of principal office, East Palestine, Ohio. To manufacture and deal in rubber tires, rubber goods, etc.

Northwestern Tire Co., April 19, 1913; under the laws of Illinois; authorized capital, $2,000. Incorporators: George A. Chritton, N. B. Dearborn and L. Holzhalb. To make and deal in automobile tires and accessories, and to do a general vulcanizing business.

Para Rubber Manufacturing Co., Inc., May 2, 1913; under the laws of New York; authorized capital, $2,000. Incorporators: Victor Lowenberg, 1980 Seventh avenue; Simon Lifshitz, 1557 Second avenue, and Nathaniel Loewenberg, 980 Simpson street, New York. Location of principal office, New York.

The Quality Tire and Rubber Co., May 9, 1913; under the laws of Ohio; authorized capital, $10,000 Incorporators: E. E. Smith, J. D. Guthrie, and E. D. Smith. To manufacture and deal in tires, tubes, casings, etc.

Rubber and Guayule Agency, Inc., May 14, 1913; under the laws of New York; authorized capital, $60,000. Incorporators: Albert F. Hill, 44 Cottage Place, Englewood; Cornelius Schroeter, 123 Shippen street, Weehawken Heights—both of New Jersey, and Edward Weber, 3495 Broadway, New York. Location of principal office, New York.

Specialty Insulation Manufacturing Co., Inc., May 6, 1913; under the laws of New York; authorized capital, $30,000. Incorporators: Michael Casey, 164 Bartlett avenue, William P. Wood, 48 Onota street—both of Pittsfield, Massachusetts, and Clinton Bateholtz, Hoosick Falls, New York.

The Swinehart Tire and Rubber Co., of New Jersey; March 11, 1913; authorized capital, $10,000 Incorporators: Irving D. Stone, Yale Club, New York; Charles S. Kingsbury, 260 16th street, Brooklyn, New York, and Francisco L. Godinez, 123 Duncan avenue, Jersey City, New Jersey. Location of principal office, 211-213 Halsey street, Newark, New Jersey. To acquire, take, and hold the absolute wholesale and retail agency of the Swinehart tire for the State of New Jersey.

United Rubber Tire Co., March 20, 1913; under the laws of Illinois; authorized capital, $1,000. Location of principal office, 1427 South Michigan avenue, Chicago, Illinois. To manufacture and deal in automobile tires, tubes and other accessories.

BRISTOL'S RECORDING DIFFERENTIAL PRESSURE GAUGES.

A NEW and comprehensive line of Recording Differential Pressure Gauges has been developed by the Bristol Co., of Waterbury, Connecticut. Some of these recorders have been in successful service continuously since the preliminary models were first sent out in 1908, and the design and construction of the line of these instruments now being placed on the market is based on results obtained in actual service during the last four years. These recording differential pressure gauges are adapted for use in connection with venturi meters, pitot tubes, orifices, combinations of orifices and pitot tubes; to record velocities and volumes of air, gas, steam, water and other liquids flowing through mains and pipes. These recorders may also be used to advantage for recording differences and variations of liquid level in steam boilers, pressure tanks, filter beds and process kettles.

BRISTOL'S PATENT RECORDING DIFFERENTIAL PRESSURE GAUGE.

Important patents dated September 12, 1911, and September 17, 1912, have been issued to Prof. Wm. H. Bristol, president and founder of The Bristol Co., covering novel features resulting from his pioneer work in developing differential recorders in addition to the other numerous lines of well known Bristol recorders which he has originated during the twenty-four years which have elapsed since his first patent was allowed on a recording pressure gauge.

The fundamental principle employed in the construction of this differential pressure gauge is that one pressure is applied to the inside of the operating tube, while the other is applied to the outside of the same pressure tube, within a closed casing. In order to record the movement of the pressure tube it becomes necessary to transmit its motion to the outside of the pressure tube casing. As the differential pressure to be recorded is usually small as compared with the static pressure, the operative force is correspondingly small, and it is quite evident that it would be impracticable to use a stuffing box around a shaft passing through a pressure casing, because of the friction which would be produced. To obviate the use of a stuffing box a unique frictionless selling device is employed. The illustration shows the exterior of one type of these recorders.

PERSONAL MENTION.

Mr. W. J. B. Stokes, of the Thermoid, Home and Joseph Stokes rubber companies, arrived from Europe, June 1—having visited the European agencies of the companies named.

Mr. E. E. Wadbrook is back at his place in Arnold & Zeiss' office, fully recovered from his recent indisposition.

Mr. Charles E. Stokes, general manager of the Home Rubber Co., Trenton, New Jersey, has been elected a director in the Trenton Life Deposit and Trust Co.

Mr. I. W. Penniman, formerly with the Goodyear Tire & Rubber Co., has become New England sales manager, with offices at 757 Boyleston street, Boston, for the Walpole Tire & Rubber Co.

Mr. Herbert P. Choate, formerly connected with the Empire Rubber & Tire Co., of Trenton, New Jersey, has recently become sales manager of the Star Motor Car Co., of Ann Arbor, Michigan.

Mr. George Campbell, representing the McIlroy Belting & Hose Co., of Hammond, Indiana, manufacturers of Rubber-lte Fibre fire hose, left recently for a business trip to European cities, with a view of establishing agencies for the sale of their new style of fire hose.

Mr. Arthur L. Kelley, who, in addition to being a director in the United States Rubber Co., has also for some time been a director in the Rubber Goods Manufacturing Co., resigned from that position at the last annual meeting of the company, owing to considerations of health.

MR. PEARSON LECTURES AT YALE.

Mr. Henry C. Pearson, Editor of THE INDIA RUBBER WORLD, delivered a lecture on May 27 before a body of students of the Sheffield Scientific School—the scientific department of Yale University—on his travels up the Amazon. He delivered this lecture by special request of Professor Hiram Bingham, who has a class which is making a study of South America, its products, development and commercial possibilities.

This lecture was arranged for through Mr. H. Stuart Hotchkiss, vice-president of L. Candee & Co., and himself a Sheffield graduate. Mr. Hotchkiss is deeply interested in this particular class and has favored it with several talks on his travels through rubber countries.

MR. BROADWELL BACK WITH THE FISK CO.

Mr. E. H. Broadwell, who was formerly connected for quite a long time with the selling department of the Fisk Rubber Co. of Chicopee Falls, Massachusetts, and who later went with the Hudson Motor Car Co., of Detroit, has returned to the Fisk Co. and has been elected to the position of vice-president. He will have full charge of the sales of the company.

ALFRED SLACK, GLOBE-TROTTER.

Mr. Alfred Slack, who has been connected with the foreign department of the Tyer Rubber Co. for the last 20 years, with headquarters at San Francisco—but devoting the greater part of his time to traveling over the world at large—arrived in New York May 21 on his way to Andover, after a 13 months' absence, during which he visited practically all the trade centers of the Orient. While Mr. Slack is a selling man and visited the Middle East and the Far West to place orders for tires and the other products of the Tyer Co., he managed to acquire a vast fund of most interesting information regarding the plantations in that part of the world. Incidentally it might be mentioned that Mr. Slack speaks German, French, Spanish, and Portuguese—not to mention several minor languages—as fluently as he does English; and his English is exceptionally fluent.

ALGOT LANGE TO REMAIN IN BRAZIL.

Mr. Algot Lange, author of the book "In the Amazon Jungle," which came out about a year ago and attracted a vast amount of attention, and who also will be remembered for the entertaining lectures which he delivered last fall at the Rubber Exposition, on his travels up the tributaries of the Amazon, has been appointed to a position in the civil service of Brazil, by Dr. Pedro de Toledo, the Brazilian Minister of Agriculture. Mr. Lange was at one time associated with the expedition sent out by the University of Pennsylvania to explore the Upper Amazon, but he resigned from that enterprise some months ago and expects to devote his energies particularly to the "Defesa da Borracha," the important work recently undertaken by the Brazilian government.

MR. JOHN C. COLE IN EUROPE.

Mr. John C. Cole, one of the vice presidents of the Fisk Rubber Co. of Chicopee Falls, Massachusetts, and one of the most popular of the New England rubber men, sailed, with his wife on the "Cedric," May 1, for a two or three months' visit to England and the continent. He will divide his time between advancing the business interests of his company and sight-seeing.

A WELL-KNOWN RUBBER MAN.

The subject of this sketch, W. G. Brown, of W. G. Brown & Co., Cincinnati, Ohio, brokers and dealers in rubber manufacturers' supplies, is one of the best known men in his line, west of Pittsburgh. Mr. Brown has had extensive and successful experience, having started in 1880, with Bart & Hickox, Cincinnati agents of the Boston Belting Co., with whom he remained until 1885, in which year he became connected with the Globe Rubber Works, of Trenton, New Jersey. Subsequent to this Mr. Brown was identified with the Cleveland Rubber Co., as Cincinnati sales agent. In 1893 he became affiliated with the Mechanical Rubber Co., of Cleveland, Ohio, where he opened and managed a branch store covering Ohio, Indiana, West Virginia, and Southern States. In 1902 Mr. Brown discontinued this connection to take charge of the rubber department of Whitman & Barnes Manufacturing Co., Akron, Ohio, and during the last two years of his stay with this house became its general sales manager. In 1905 Mr. Brown organized the Cincinnati Rubber Manufacturing Co., Cincinnati, Ohio, and became its vice-president and general manager, which position he occupied until 1908, when he started the present successful house of W. G. Brown & Co. Mr. Brown is considered an expert judge of crude rubber, and is frequently called upon as an appraiser in the adjustment of crude rubber difficulties. He is also a recognized expert in rubber compounding. Personally, W. G. Brown is of a genial and helpful disposition, and has a host of friends, not only in the trade but in his home city, where he is a prominent member of the Business Men's Club, and until recently was the chairman of the well-known Cincinnati Santa Claus Committee.

W. G. BROWN.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE BYRNE PROCESS OF CURING RAW RUBBER.

THE Byrnes—there are four brothers—have in the past played an important part in the rubber trade of Birmingham, their interests as manufacturers having been now for some years merged in the Dunlop Rubber Co., one of the family being now prominently connected with the Leyland-Birmingham Co., which absorbed their merchant business so long carried on in Birmingham. I mention these facts by way of indicating that an acquaintance with rubber is no modern acquisition by Messrs. E. J. Byrne and F. A. Byrne, whose names may not be so familiar to many young planters as they are to older manufacturers. Mr. E. J. Byrne has patented a process for curing plantation rubber on the lines so long employed by the rubber gatherers of the Amazon, the process briefly described being the treatment of the coagulated latex with certain wood vapors prepared in a concentrated liquid form, thus being easy to handle and use. This liquid is volatilized in a special portable apparatus, the resultant vapor being passed into the curing chamber where the rubber is subjected to its influence.

The patent is now the property of the Rubber Curing Patents Syndicate, Limited, of Norwich Union Buildings, St. James' street, London; the Messrs. Byrne continuing actively concerned in the management thereof. Following a previous visit of Mr. E. J. Byrne to the Far East, Mr. F. A. Byrne is at present in the Federated Malay States, superintending the installation of the process on many plantations where it has been decided to adopt it. I understand that laboratory tests have proved the superiority of rubber cured by this process over that which has been cured by the other methods in common use, and further, that prominent rubber manufacturers in England have expressed the same opinion as a result of practical tests. While the patentees apparently hold the opinion that the superiority of wild over cultivated Pará rubber is entirely due to the process of curing adopted, I do not understand that they assert that all the plantation rubber cured by their process is equal to fine hard Pará, though they claim in no doubting language that it is superior to all other plantation rubber.

This process does not call for the abolition of the ordinary acetic acid coagulation of the latex, but it is recommended that the amount of acid ordinarily used should be reduced, the coagulation to be effected only in part by the acid and finished by the antiseptic smoking process. The method thus is a combination of the Brazilian and Eastern methods in order to obtain a product with the properties of the former minus its usual large content of moisture. A further object of the patentees is to ensure the production of plantation rubber of uniform quality, which it is apparent can only be done by the general adoption of a standard method. It is stated that after the smoke cure is finished the rubber may contain 8 to 10 per cent. of moisture, and no attempt is made to remove this, it being found in general practice that the moisture evaporates during the time of transit from the plantation to the European mill. In addition to the specific properties conferred on the rubber by the adoption of this process, claim is also made for a reduction of working costs on the estates, as the entire operation from tapping to despatching is reduced to a period of four days.

RUBBER TANNED LEATHER

Many of the flotations connected with rubber brought out three years ago have had a checkered existence, to put it mildly, while others have come to an untimely end. With regard to rubber tanned leather, however, although from the actual dividend paying view the company has not proved satisfactory to the shareholders, it would be quite erroneous to think that its claims were entirely fallacious. It has taken time and more money than at first anticipated to get the rubber recognized on the market, but this may now be said to have been accomplished, and the present position is that the factory at Ross, Herefordshire, is unable to meet the demand for belting, now that repeat orders from various countries are coming in. At a recent meeting of the company the chairman, Mr. J. M. Craig, outlined a scheme for the formation of a subsidiary company, whereby the further working capital now absolutely necessary could be obtained. No resolution, however, on the point was passed. At the meeting the important statement was made that the company now has 500 customers on its books.

NEW RUBBER GOODS IN THE MARKET.

As some of the novelties referred to under this head in the April issue of the INDIA RUBBER WORLD had a strong domestic touch, I referred the pages to a lady who has favored me with her views on matters with which I cannot claim any special acquaintance. Her fancy was particularly taken by the "Yankee Girl Dish Washer" made by the Davol Rubber Co., Providence. I was informed that most improved kitchen appliances come to England from America, where servants are more scarce and independent than they are here. Here perhaps I ought to use the past tense, because the servant question is becoming increasingly acute in England, with the result that ladies who have not hitherto been accustomed to work in the kitchen are now often driven to do so. The main objection to this seems to lie in getting grease on the hands in the humble task of "washing up"; hence the interest in any development which tends to obviate this.

Apropos of this topic I may say that our iron-mongers' shops are now selling rubber gloves to ladies for the purpose of washing drawingroom china, etc. These gloves are made either of pure vulcanized rubber or of white compounded rubber. Each pair is put up in a red card-board box containing instructions to avoid getting grease on them. Each glove is stamped "Made in U. S. A.," the label on the box reading, "Peerless gloves seamless." I hear that these gloves are having a good sale, though they would be more popular still if it were not for the grease embargo. Proceeding now to another matter of novelty, the baby's bath tub arrangement of the Heaton Manufacturing Co., Chicago, is reported to me as being an excellent idea, and as likely to fill a want that has long been felt.

THE RAW RUBBER SITUATION.

The fall in the price of rubber and its maintenance at a comparatively low level is not unnaturally a source of disquietude to plantation shareholders, whose fears the chairmen at various annual meetings of Eastern companies have sought to assuage by explaining the why and wherefore of the fall in price. The various statements made on this head are by no means in strict agreement, and it would be more desirable to have an authoritative pronouncement from some manufacturer of standing. There is no doubt that too much stress has been laid upon the strikes at Akron, and too little upon the large increase in supplies of plantation rubber. One manufacturer here says the simple explanation is that there is so much rubber about, and it is no question of buyers holding aloof as this is now the busy season in the motor tire trade and rubber must be had.

According to a leading article in a prominent financial paper the manufacturers are not doing well, and this accounts for a decreased demand. This statement was described by one of our leading manufacturers to whom I submitted it as all nonsense. The manufacturers, he said, are doing very well, a statement which he qualified by adding—"at least all those who know their

business are." One certainly hears that certain firms are not as busy as they have been; but taking things all around, in the light of the continuance of the trade boom, it cannot be said that any falling off in the demand for rubber is to be expected. No one expects the price to fall below 3*s*. per pound during the present year, though 2/6 is freely mentioned for next year. Of course we are told that with a fall in price to that level new uses for rubber will arise; well, they may, but this cannot be expected all at once, and it must not be overlooked that among the various other components of the goods destined for new uses there may be rises in price sufficient to discount the advantage of cheap rubber. As far as the investing public is concerned the rubber boom is quite dead, and its immediate successor—oil—is in much the same state.

The next boom is likely to be coconuts, now that the demand for coconut oil as a basis of margarine has outgrown the supply. I know something of what is going on and expect to see the public scrambling for coconut company shares in the near future. Those rubber companies, therefore, whose properties contain coconut trees, can look upon the future with more complacency than those which depend entirely upon rubber to come to fruition during the next two years.

NEW FLOTATIONS.

Under the title of Stelastic Tyres, Limited, a company was formed in April with a capital of £200,000 in £1 shares, to take over the interests of the Torkington tire. The prospectus was issued to the public, with what rejoinder I have not yet heard. Among the various agreements ratified in accordance with the Companies Acts is one between Torkington Tyres, Limited, the vendor syndicate, and Chas. Macintosh & Co., Limited. This tire has been on show at the principal motor exhibitions of late, and its tests on the road appear to have quite fulfilled expectations. The issue has been favorably received by the press, one of the leading papers, which has a reputation for criticism, describing it as fair industrial investment. In contradistinction to the Wood-Milne tire which has its tread compounded with finely powdered steel the Torkington employs a network of steel fibres.

On May 1 was issued the prospectus of the Associated Rubber Manufacturers, Limited, a company formed with a capital of £100,000 to take over the business of Almagam, Limited, which concern was formed three years ago to work the Harpenden mills associated with the new Motor & General Rubber Co., and the Warwick tire. The new company is to manufacture general rubber goods, as well as to carry on the retreading of tires with Almagam (whatever that may be). This part of the business seems to have made great strides and to be now of considerable importance; a fact which those interested in taking advertisements can point to as an object lesson for hesitating advertisers. Four out of the five directors of the new company were directors of the old one and the flotation generally seems to be practically an appeal for further capital under change of name.

COMMERCIAL MOTOR VEHICLE EXHIBITION IN LONDON.

Interest in the United Kingdom as to commercial motor vehicles has been developed to such an extent that a special exhibition devoted to that branch will be held at Olympia, London, from July 15 to 30. Its title will be "The Heavy Motor Vehicle Show."

RUBBER CLUB PROPOSED FOR LONDON.

THE idea of a rubber club for London has been ventilated. It has been suggested that those interested in rubber, coffee or copra should be eligible, while planters at home for a holiday would enjoy the privileges of the institution.

VISITS OF COMMERCIAL EXPERTS TO GERMAN INDUSTRIAL CENTERS.

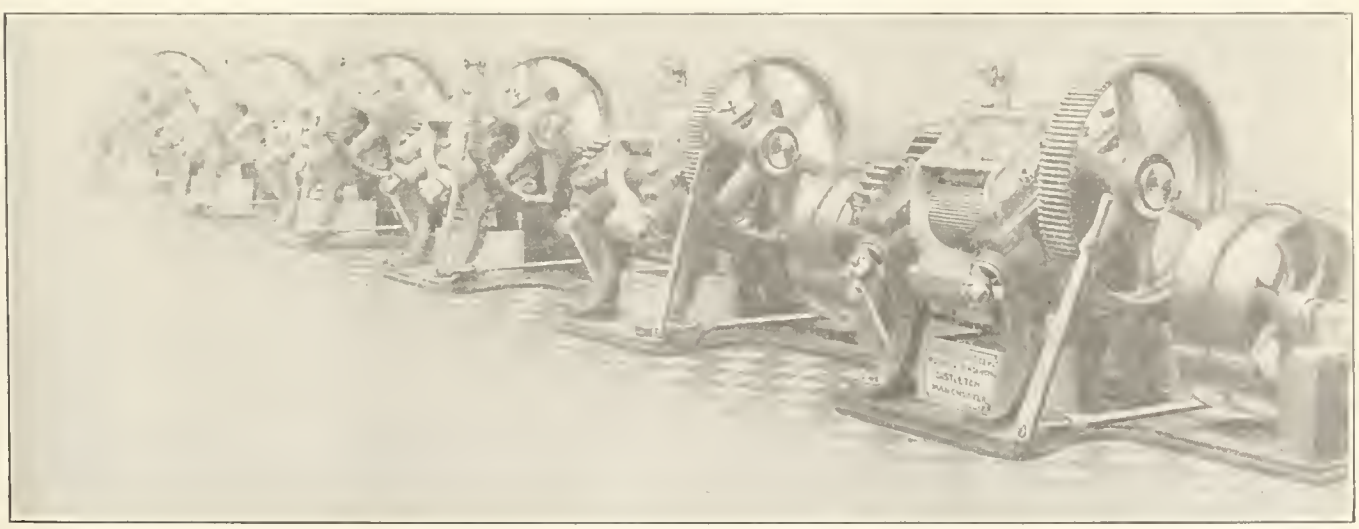
AN important feature of German export development consists of the periodical visits to German industrial centers of the commercial experts belonging to the Imperial Consulates in foreign countries.

Herr de Haas, who is attached to the Consulate General, Sydney, is now visiting the principal centers of the national industries, commencing at Breslau, May 2, and terminating at Magdeburg, June 30. During his tour he will visit thirty important cities, where he will be accessible to manufacturers at the local Chambers of Commerce.

ENGLISH OPINION OF THE PROPOSED NEW TARIFF.

In discussing the proposed new American tariff, the "India Rubber Journal" remarks that on the face of it, British manufacturers stand to gain a good deal from this reduction if carried out. But, it is added, whether the material reduction in the tariff now proposed will really enable British manufacturers to re-enter the American market is uncertain.

Scottish manufacturers are considered likely to make special efforts to profit by such reduction as may eventually be made in the duties on rubber goods.



BATTERY OF "ANGLE" BELT-DRIVEN WASHING MACHINES.
Made by David Bridge & Co., Limited, Castleton, Manchester, England.

NOTES FROM BRITISH GUIANA.

(By our Regular Correspondent.)

ALTHOUGH the actual production of rubber is still conducted only on a small scale in British Guiana, the planting of Pará rubber trees is going on steadily. The latest report by the Colonial Office shows that over eighteen hundred acres are now under cultivation in the colony. Trees planted as recently as 1907-8 and 1908-9 are now being tapped, and the results are said to be satisfactory as regards yield and quality. Good progress is being made on the Hills Estate at Bartica in the Massaruni district. Felling of trees, underbushing, planting of rubber and sisal hemp are being continued. The growth of the rubber trees is vigorous, and tapping will commence in a week or two.

The balata industry in the colony is in a much more healthy state than it has been for some time past. Whereas in the first four months of last year only 25,557 pounds of balata were exported, in the corresponding period of this year 221,652 pounds have been shipped, and week by week the exports continue to show increased growth. Last year's small figures were accounted for by the serious drought through which the colony was then passing. This year the rains have been plentiful in most districts, and bleeding is a success. From one or two of the outlying localities, however, come reports of dry weather, numbers of laborers having returned from grants in the Corentyne district, stating that owing to a shortage of rainfall it had been found impossible to bleed the bullet trees.

At the present time it is illegal to recruit laborers in British Guiana for work in a neighboring colony, and those engaged in the collection of balata in Surinam (Dutch Guiana) have been agitating for some time past to bring about a change in the conditions. It is a well recognized fact that without the laborers from British Guiana it will be impossible to work balata concessions in Surinam, and in the past it has been a somewhat difficult task to successfully secure the men from British Guiana without in a measure infringing the laws of the colony. Now, however, there is a ray of hope for those engaged in the industry in Surinam, by the fact that in a recent minute to the British Guiana legislature, the Governor, Sir Walter Egerton, advocated the passing of a law which will make it legal to contract laborers in this colony for work in the neighboring Dutch territory, after the contractor has satisfied the government of his *bona fide* intentions, and ability to comply with certain conditions which are to be embodied in the law.

It is understood that the Dutch balata companies would be willing to accept any reasonable conditions. In the course of an article on this subject, the "Paramaribo Times" says: "Sir Walter Egerton evidently holds a different opinion from his predecessor, who would not listen to such a proposition, and is unquestionably a very keen observer, and no doubt has been prompted in his action by the enormous amount of money orders and other money sent over yearly from Dutch Guiama by the laborers to their families on the British side. It is a well known and accepted fact that the majority of the houses built on the Corentyne coast were built with the money that the men worked for in Nickerie, and now that they propose to build a railway from New Amsterdam to Springlands it will mean a great deal more trade and closer connection between the British shore and the thriving and prosperous town of Nickerie.

"If this law is passed, as we have no doubt it will be, a great change will take place, which cannot but prove a boon to the balata companies, as the curse of the whole balata business is the absconding of the laborers, who as soon as they receive their advances simply cross over to the British shore where they are safe, while with this prospective law, the contracts entered into in British Guiana to work in Dutch Guiana will be binding on both colonies, and they could be held in either colony. Hence the absconding disease would be completely eradicated. British Guiana has always got one hundred times more out of her relations with us than we with her. For instance, Nickerie is not only populated with people from the British shore who get the majority of their supplies from Demerara, but is an English-speaking community, and it is therefore gratifying to see that at last they are willing to do something to give us a little protection. We know that in the past that powerful body known in British Guiana as "the Water Street Merchant" have objected to such a law, but we think that if they will investigate conditions carefully they will find that it will be materially to their advantage. The laborers only come over to Nickerie during the season and take their money over to spend it on their families on the British side."

The same paper finds fault with the government of the Dutch Colony, which it is felt ought to devise some economical plan to increase the labor population by means of land grants, etc.

There is a feeling among a number of those in British Guiana interested in the balata industry, in favor of the abolition of the existing law which prohibits the felling of the bullet trees. In Venezuela the felling method of collecting the milk is invariably practised. This method, though at first used in British Guiana, is now against the law here, as it also is in Dutch Guiana, and the method of allowing the trees to stand is now adopted in both these colonies, certain restrictions being placed upon bleeders with the object of safeguarding the life of the tree. In the opinion of the majority of balata experts here the felling method is a very wasteful one, as the forests are thereby denuded of valuable trees. As a contributor to the journal of the Royal Society says, "there are no reliable data available as to the yields obtained on the successive tappings made after the tree has first been bled, the class of men employed as bleeders and the condition under which the work is carried on being such as to render it difficult, if not impossible, to obtain such data. Yet the indisputable fact remains that tracts of Crown lands on which the balata trees were first tapped a quarter of a century ago are still being worked and continue to yield supplies of balata.

"Beside the balata trees there are other trees in the forests of British Guiana which produce latex in appreciable quantities. The most important of these is the 'Swamp Mabua' or 'Mabwa' of the Arawaks, also known to the Cari Indians as the 'Touchpong.' This species yields a rubber of good quality which has been exported for many years. It is usually classed on the market as 'Orinoco Scrap' and frequently brings good prices. Specimen biscuits of it prepared for the rubber exhibition held in London in 1908 were exhibited there."

The balata industry of the colony has lost one of its most prominent members by the recent death of the Hon. George Garnett, C. M. G., head of the firm of Garnett & Company, Limited, a firm which for many years has carried on a variety of business. Mr. Garnett was one of the pioneers of the balata industry here. He joined the firm in the early eighties, and shortly after his advent he and his partners launched into the balata industry, with which the firm has been connected for many years. A start was made in the collection of balata some thirty odd years ago in Nickerie, Dutch Guiana. Subsequently grants were obtained in Berbice, after which the firm's activities in this direction were pursued in the Cuyuni, Essequibo, Demerara river, and other districts. In Nickerie a very flourishing business was done at first, two sloops being regularly engaged in running there from Georgetown with provisions and other supplies for those engaged in the work. Ultimately, however, the Dutch government imposed enormous obligations, which greatly hampered the business, and eventually rendered it unprofitable. In this colony, however, the firm's activities in the balata industry have continued successfully.

Some Rubber Planting Notes.

HINTS TO RUBBER PLANTERS.

ONE of the features of the new "International Rubber Review," edited by M. G. van den Kerckhove, of Brussels, is the personal manner in which he addresses his readers, condensing into a few sentences the pith of the information he wishes to communicate. In regard to the relative merits of chemical coagulation and smoking he addresses his "Friends *Hevea* Planters," reminding them of his previous recommendation of coagulation by smoking, even if this should involve discarding an existing installation intended for the use of chemicals. He further urges that this step is necessary to insure plantation rubber maintaining its price with its prospective increased production in 1916-17.

In addressing his "Friends, the Castilloa Planters," he comments on the fact that the special composition of the Castilloa bark does not permit of working with an ordinary knife. For this tree the first requirement is for the tool to be as sharp as a razor, so as to properly cut the bark without crushing it.

Finally, in speaking to his "African Friends," M. van den Kerckhove dissuades them against the methodical growing of *Funtumia*, that tree not withstanding regular tappings, and not being capable of giving continuous yields.

GOVERNMENT PLANTATIONS IN THE FEDERATED MALAY STATES.

In addition to the experimental gardens at Kuala Lumpur, the government of the Federated Malay States now has the Castleton estate at Teluk Anson. It recently acquired possession of the Tanjong Pondok plantation, at Bagan Serai, in the north of Perak, containing 200 acres planted with 12 year old *Hevea* trees. Other experimental gardens belonging to the government include that of Kuala Tembeling, in Pahang, as well as Batu Tiga and Gunong Angsi. According to some opinions the results obtained by these experimental plantations are not regarded as sufficiently important.

COLLEGE OF TROPICAL AGRICULTURE FOR MALAYA.

ALTHOUGH the question of the systematic study of tropical agriculture has for some time been under consideration in Malaya, the proposal now under discussion is of far wider scope than anything before suggested. It is no less than the question of establishing a College of Tropical Agriculture, with an efficient staff and equipped with the necessary apparatus. In dealing with this subject, the "Malay Mail" refers to the advantages Japan has derived from institutions of this character. The cooperation of the District Planting Associations is suggested as one of the means likely to strengthen the hands of the government of the Federated Malay States in its efforts to promote agricultural education.

RUBBER PROSPECTS IN MALACCA.

DURING his recent visit to Ceylon the Hon. F. W. Collins, estate manager of the Malacca Rubber Plantations, Ltd., gave some interesting particulars as to Malacca in the course of an interview with a representative of the "Times of Ceylon." He stated that his company owns 24,000 acres and has about 80 Europeans employed on the property. The other laborers are Chinese and Javanese, the former proving careful and economical tappers and capable of doing a harder day's work than the Tamils.

The rubber, he reported, is doing excellently, disease being practically non-existent. Malacca, he added, is rapidly coming to the front as a rubber producing country. While the trees take longer to come into bearing than those of the Federated Malay States, the yield, once tapping has started, is well up to the general average. The whole of the Malacca properties are in a high state of cultivation, being thoroughly clean weeded. The limit of planting in Malacca is 20 x 20, diagonally, or 100 trees to the acre, which is proving exceedingly satisfactory.

It is of interest to note the favorable report of Mr. Collins on Chinese labor, in connection with the recommendations of the Akers Commission as to its adoption in Brazil.

NINE MONTHS' STATISTICS OF PLANTATION RUBBER.

DURING the nine months ending March 31 last, the London receipts of plantation rubber amounted to 19,700 tons, and the deliveries to 18,300 tons, compared with receipts of 10,600 tons and deliveries 9,500 tons for the corresponding period a year earlier. Stock of plantation rubber on March 31, this year, was about 2,800 tons, as against 1,850 tons in 1912, and 770 tons in 1911. From the above figures it will be noticed that the receipts and deliveries have both nearly doubled in the period ending March, 1913, as compared with the figures of a year earlier.

SOME RUBBER NOTES FROM PARA.

By a Special Correspondent.

MR. AKERS has arrived in Pará, and the Booths, accompanied by practical instructors in tapping, have also come from Europe to join him on his trip up the Madeira. He gave a practical demonstration of tapping at the Botanic Gardens at Rio, in the presence of the President of the Republic, assisted by Dr. Willis. But Dr. Willis seems cautious about saying that this system should be adopted in the case of old trees, whilst Mr. Akers' report suggests that the old system should be prohibited and the herring bone alone permitted. Another demonstration took place in Pará, the public invitation being given by M. J. Guerin, of the Port of Pará Port Works.

Dr. Huber has been working for several years on an instrument for tapping, which he claims will be "fool proof" and absolutely true to 1/128 of an inch in its setting. This is a handy tool, and any workman might be induced to use it; but the use of the gouge which Mr. Akers means to put into the hands of the *Seringueiro* is resented off-hand—and unless one can get such ignorant men to use a new implement with pleasure and good will there will never be a change in the methods of tapping.

Attempts are also being made to get the government to introduce 50,000 Chinese immigrants and take off all duties on both exports and imports of first necessaries of life, implements, etc. I believe popular sentiment is being aroused to the pitch that the government must yield to this elimination of duties, but I doubt whether it will concur in the introduction of Chinese. I also believe that the Chinese will come of their own accord as soon as the Panama Canal is opened and communications between the east of Asia and north of Brazil become established.

It is now seen that it was suicidal not to have begun to plant six or seven years ago, to meet the East Indian competition on equal grounds. But, nevertheless, not a single practical step has yet been taken to carry this out. A mass meeting was held at the Chamber of Commerce, to telegraph to the Federal government to adopt measures of relief for the industries in the Amazons, but nothing will be done beyond what has been projected through the "Defesa de Borracha," and this is doing its best to show its utility—but things cannot be done as hastily as people wish.

The fall of rubber to 3*s*. 4*d*. and the keeping of this price for some time longer will be fatal to the industry in the Amazons, unless the duties are removed. Whether these can be removed without violating the Constitution is a question open to debate. But if the interests of the nation exact this violation it should be done in the most open and frank manner.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED APRIL 1, 1913.

NO. 1,057,398. Vehicle tire. G. C. Allison, Louisville, Ohio.
1,057,439. Tire patching device. G. J. Martel, Chicago, Ill.
1,057,440. Tire patching device. G. J. Martel, Chicago, Ill.
1,057,451. Tire filling machine. E. Oliver, Daytona, Fla.
1,057,467. Vehicle tire. C. S. Turner, assignor to The Firestone Tire & Rubber Co.—both of Akron, Ohio.
1,057,486. Milking device. T. Kupper, Madison, Wis.
1,057,562. Pneumatic cushion for stump legs. J. G. La Point, New Albany, Ind.
1,057,580. Tire. E. C. Rhodes, Chicago, Ill.
1,057,672. Automobile tire. J. Ruppert, Jr., and Ernest Siegel, New York.
1,057,676. Pneumatic tire. George A. Shaw, Barberton, Ohio.
1,057,680. Production of isoprene. K. Stephan, Charlottenburg, assignor to Chemische Fabrik auf Actien (vorm. E. Schering), Berlin, Germany.
1,057,746. Emergency tire. F. W. Kremer, Carlstadt, N. J.
1,057,846. Automatic pneumatic vehicle wheel. G. Kanter, Murton, Victoria, Australia.
1,057,848. Boxing glove. D. J. Kennedy, Yonkers, N. Y.
1,057,911. Portable vulcanizing device for tires. C. F. Adamson, Akron, Ohio.
1,057,946. Puncture proof tire. C. De Hibbs, Fort Worth, Tex.
1,057,959. Vacuum pump. W. A. Hearn, Baltimore, Md.
1,058,005. Wheel for motor and other vehicles. R. W. Sewell, assignor to Sewell Cushion Wheel Co., Brooklyn, N. Y.
1,058,006. Vehicle wheel. O. K. Sletto and W. J. Shannon, Bend, Ore.

Trade Marks.

44,456. The Beacon Falls Rubber Shoe Co., Beacon Falls, Conn. Maltese cross emblem. Boots, shoes, arctics, etc.
65,402. "Flexitallic" Gasket Co., Camden, N. J. The word *"Flexitallic."* Gaskets and packings.
66,593. Continental-Caoutchouc-und Gutta-Percha-Compagnie, Hanover, Germany. Picture of man's arm holding tire in air.
68,722. Hood Rubber Co., Boston, Mass. The word *Holiday.* For boots, shoes, etc.

ISSUED APRIL 8, 1913.

1,058,029. Tire protector. M. D. Besse, Dayton, Ohio.
1,058,030. Resilient tire for vehicle wheels. W. S. Brooks, Akron, Ohio.
1,058,151. Resilient tire. John H. Cebolt, Indianapolis, Ind.
1,058,173. Massage instrument. H. A. Grass, Chicago, Ill.
1,058,186. Art of refining rubber. W. A. Lawrence, New York, assignor to Intercontinental Rubber Co., Jersey City, N. J.
1,058,189. Attachment for hose nozzles. J. McBoyle, Oakland, Cal.
1,058,273. Massage device. C. E. Thompson, assignor to Luxury Sales Co.—both of Troy, N. Y.
1,058,316. Portable vulcanizer. C. E. Marshall, Indianapolis, Ind.
1,058,358. Side wire tire. H. S. Firestone, assignor to The Firestone Tire & Rubber Co.—both of Akron, Ohio.
1,058,399. Demountable rim. R. W. Ashley and F. Oberkirch, assignors to General Rim Co.—both of New York.
1,058,400. Demountable rim. R. W. Ashley and F. Oberkirch, assignors to General Rim Co.—both of New York.
1,058,433. Pneumatic tire. F. B. Huckstep, Des Moines, Iowa.
1,058,517. Spring wheel. F. H. Allen, McNabb, Ill.
1,058,518. Vehicle wheel. L. Anderson, Lake Creek, Tex.
1,058,527. Appliance for securing ladies' veils. A. Barnett, London, England.
1,058,528. Device for securing ladies' veils in position. A. Barnett, London, England.
1,058,538. Hose rack. W. Boss, St Paul, Minn.
1,058,557. Tire deflating tool. M. L. Connor, Pony, Mont.
1,058,559. Cushion tire. G. H. Dalton, Chester, Pa.
1,058,560. Fountain comb. L. H. Dancy, Holly Springs, Miss.
1,058,571. Automobile tube and tire signal. J. E. Featherston, Valley City, N. D.
1,058,593. Spring tire. A. Jenness, Boundbrook, N. J.
1,058,619. Tire rim tool. A. L. McMurtry, Sound Beach, Conn.
1,058,683. Rubber packed coupling for lock bar pipe. G. P. Boothe, assignor to S. R. Dresser Mfg. Co.—both of Bradford, Pa.

Trade Marks.

68,222. Vulcan Asbestos Mfg. Co., New York. The word *"Vaco."* Fibrous rod packing, cotton rod packing, rubber rod packing, etc.
68,653. Hood Rubber Co., Boston, Mass. Picture of part of shoe. Rubber boots and shoes, etc.

ISSUED APRIL 15, 1913.

1,058,749. Hollow work support for leather working machines. H. A. Holder, Lynn, Mass., assignor to Holder-Perkins Co., Woburn, Mass.
1,058,848. Pavement and process of making same. Arthur B. Cowdery, Boston, Mass., assignor to Barrett Mfg. Co., New York.
1,058,857. Rubber heel lift. A. A. Glidden, Watertown, assignor to Hood Rubber Co. both of Massachusetts.
1,058,937. Chemical fire extinguisher. E. C. Barron, West Kensington, London, England.
1,058,961. Bicycle pump. E. N. Garrison, assignor to The Coe-Stapley Mfg. Co.—both of Bridgeport, Conn.
1,058,973. Non-refillable bottle. J. Herboldt, Woodside, Idaho.
1,058,998. Wheel. M. B. Okun, Seattle, Wash.
1,059,009. Wheel. L. E. Strietelmeier, assignor to the Ideal Wheel Co.—both of Cincinnati, Ohio.
1,059,026. Vehicle wheel. G. D. Bulmer, Duquesne, Pa.
1,059,100. Clasp for hose racks. W. D. Allen, assignor to W. D. Allen Mfg. Co.—both of Chicago, Ill.
1,059,115. Punctureless vehicle tire. P. H. Calmus, Birmingham, Ala.
1,059,122. Cushion tire for vehicles. J. Dana, Burwell, Neb.
1,059,138. Tire tool. C. S. Edwards, Prineville, Ore.
1,059,182. Tire chain. D. L. Martin, New York.
1,059,183. Tire chain. D. L. Martin, New York.
1,059,194. Vehicle wheel. B. B. Moss, Salem, Ind.
1,059,207. Pneumatic tire and armor therefor. J. A. Posey, Waxahachie, Texas.
1,059,215. Swimming suit. S. Roth, New York.
1,059,222. Air pump. C. M. Scott, San Angelo, Texas.
1,059,282. Comb. V. de Bassini, New York.
1,059,291. Garment stay. S. H. Fleming, Chicago, Ill.

Design.

43,849. Bathing cap. J. R. Parker, New York.

Trade Marks.

66,200. Sagamore Rubber Mfg. Co., Saugus, Mass. Illustration of bowling ball. Bowling balls.
67,011. Ste. Anc. Pour Le Commerce & L'Industrie du Caoutchouc, Brussels, Belgium. Tiger's head in circle over the word *Royal.* Rubber atomizer and syringe bulbs.
68,000. The Seamless Rubber Co., New Haven, Conn. Illustraton of fleur de lis. All kinds of druggists' sundries.
68,376. Sears, Roebuck & Co., Chicago, Ill. The word *Justice.* For rubber tires.

ISSUED APRIL 22, 1913.

1,059,344. Pneumatic tire. J. F. Casteran, St. Georges les Bains, Charmes, France.
1,059,382. Clamping device for demountable vehicle rims. F. H. Moyer, assignor to The Firestone Tire & Rubber Co.—both of Akron, Ohio.
1,059,392. Life preserver. J. J. Puskanen, Chisholm, Minn.
1,059,401. Vehicle wheel. C. Sjogren, Wessington Springs, S. D.
1,059,437. Resilient tire for vehicles. J. T. Clark, Provo, Utah.
1,059,442. Life preserver. A. Cseki, Cleveland, Ohio.
1,059,444. Life preserver. A. Cseki, Cleveland, Ohio.
1,059,455. Massaging implement. R. W. Griffith, Milwaukee, Wis.
1,059,543. Boot and shoe. S. L. Kelley, Grand Junction, Colo.
1,059,575. Vehicle wheel rim. E. C. Shaw, assignor to The United Rim Co. both of Akron, Ohio.
1,059,587. Vulcanizer. B. M. Allen, Des Moines, assignor to Diamond Mfg. Co., Polk County, Iowa.
1,059,603. Trousers supporter. A. R. Fritz, Waverly, Iowa.
1,059,612. Weather strip. J. Kammerer, New York.
1,059,616. Spring wheel. F. Klitchko, Cleveland, Ohio.
1,059,627. Surgical blanket. A. R. McClimans, Burwell, Neb.
1,059,736. Gun for killing flies and other insects. T. H. Kilduff, Brookline, Mass.
1,059,753. Hose nozzle. W. O'Brien and F. W. Waddell, Pittsburgh, Pa.
1,059,765. Demountable rim for vehicle wheels. J. Rosenbaum, Mount Vernon, Ind.
1,059,773. Filter. J. Sgambati, New York.
1,059,811. Dress shield pocket. M. Barrow, New York.
1,059,843. Tire. M. Dawson, Vancouver, B. C., Canada.
1,059,869. Elastic for children's socks. E. M. Hatfield, New York.
1,059,870. Tire clamping device. C. Helreigel, Pittston, Pa.
1,059,882. Spring wheel. H. W. Lang, Litchfield, Neb.
1,059,903. Insulator with fuse. K. Pettersen, Sarpsborg, Norway.
1,059,911. Blouse retainer and skirt supporter. S. E. Rutter, Camberwell, assignor to W. G. Harris—both of London, England.
1,059,961. Garter fastener. W. Frieder, Cincinnati, Ohio.

Designs.

43,892. Vacuum massage device. F. O. Parker, Washington, D. C.
43,894. Shower head. A. C. Recker, Oakville, assignor to Waterbury Mfg. Co., Waterbury—both of Connecticut.
43,895. Hot water bottle. A. C. Recker, Oakville, Conn., assignor to Waterbury Mfg. Co., Waterbury, Conn.

Trade Marks.

54,977. Century Rubber Trading Co., Plainfield, N. J. Illustration of eagle in circle. Tires.
59,278. Elchemco Mfg. Co., Jersey City, N. J. The word *Elchemco.* Metallic rubber covered floorings and stair treads.
64,155. The Diamond Rubber Co., assignor to The B. F. Goodrich Co.—both of Akron, Ohio. The word *Oriole.* Bicycle tires, rubber tubes, etc.
64,156. The Diamond Rubber Co., assignor to The B. F. Goodrich Co.—both of Akron, Ohio. The word *Highland.* Bicycle tubes, tires, etc.
68,442. National Wood Reproducing Co., Augusta, Me. The word *Natwood.* Waterproof floor covering.
68,807. Transportation Utilities Co., New York. The word *Tuco.* Fabric belting.

ISSUED APRIL 29, 1913.

1,060,080. Vehicle tire. T. L. Gunning, Chicago, Ill.
1,060,195. Tire. A. W. Livingston, assignor to Standard Steel Wheel & Tire Armor Co.—both of Oakland, Cal.
1,060,237. Bottle stopper. J. Duan, Waltersburg, Pa.
1,060,262. Core for building pneumatic tires. N. D. Kuhlke, Akron, Ohio.
1,060,301. Vehicle tire. E. Williamson, Chicago, Ill.
1,060,339. Tire shrinking machine. S. N. House, St. Louis, Mo.
1,060,480. Resilient wheel. G. D. Minnick, Riverton, Neb.

Trade Marks.

68,849. R. F. MacClemmy, New Haven, Conn. A diagonal strip. Body braces.
68,901. R. F. MacClemmy, New Haven, Conn. Illustration of a crown. Body braces.
68,998. The B. F. Goodrich Co., New York, and Akron, Ohio. The word *Pinnacle.* Flush valves of rubber.

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911 and 1912.
**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 2, 1913.]

27,617 (1911). Receptacles for mucilage, etc. J. Nitzgen, 17 Martinstrasse, Cologne, Germany.

27,659 (1911). Coverings for ships. R. McIvor & Sons, and W. T. McIvor, 309 Cleveland street, Birkenhead.

27,664 (1911). Preparation of india-rubber. F. A. Byrne, Ludgate Hill, Birmingham.

27,665 (1911). Preparation of india-rubber. F. A. Byrne, Ludgate Hill, Birmingham.

27,666 (1911). Preparation of india-rubber. F. A. Byrne, Ludgate Hill, Birmingham.

27,680 (1911). Band of balata for portable track wheels. F. Kilcher, 309 Hampstrasse, Birsfelden, Baselland, Switzerland.

27,683 (1911). Cores for paper rolls. H. Roscher, 107 Oberbilker Alee, Dusseldorf, Germany.

27,695 (1911). Jackets and covers for wheel tires. R. Latour, 157 Chaussee d'Ypres, Menin, Belgium.

27,759 (1911). Electric insulator. W. McLoughlin, 154 Anglesey street, Lozells, Birmingham.

27,802 (1911). Preparation of artificial rubber. G. Reynaud, 5 Rue Salneuve, Paris.

27,827 (1911). Tire attachments to rims. E. W. Harriott, High street, Droxford, Hampshire.

27,835 (1911). Cellulose solutions. E. de Haen, Chemische Fabrik "List," Seelze, near Hanover, Germany.

27,839 (1911). Ear protectors. A. Mallock, 3 Victoria street, Westminster.

27,870 (1911). Tool for removal and replacement of tires. C. S. Challiner, 18 Park Range, and J. A. Challiner, "The Glen," Anson Road—both in Victoria Park, Manchester.

27,903 (1911). Tire attachments to rims. L. A. L'Huillier, 52 The Grove, Hammersmith, London.

27,907 (1911). Construction of aerial planes. E. C. R. Marks, 57 Lincoln's Inn Fields, London.

27,933 (1911). Shield for filling hot water bottle. T. Rowe, 52 Harold Road, Leytonstone, London.

27,957 (1911). Detachable rim attachments to wheels. B. B. Roberts, Park House, Cimla, Neath, Glamorgan.

28,029 (1911). Massage appliance. H. Dreuw, 110 Koniggratzerstrasse, Berlin.

28,031 (1911). Rubber lining for deadening railway sounds. C. J. Evans, 108 Castelnau, Barnes, London.

28,035 (1911). Non-return valve for feeding bottle. A. T. Maw and R. J. Shannon, 7 Aldersgate street, London.

28,059 (1911). Tread bands, projections, etc. J. F. F. W. Ure, 12 Sloane Court, Chelsea, London.

28,109 (1911). Jackets and covers for tires. G. A. Mortier, Elsinore, Garstang Road, and C. Macbeth, 142 Watling street Road—both in Fullwood, Preston, Lancashire.

28,149 (1911). Tread bands. B. E. D. Kilburn, Chancery Lane Station Chambers, London.

28,163 (1911). Rubber soles for shoes. G. F. Forwood, West Chart, Limpsfield, Surrey.

*28,182 (1911). Tool for removing and replacing tires. J. H. Blake, 368 Front street South, Portland, Oregon, U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 9, 1913.

28,256 (1911). Pocket atomizer. G. Blochet, 3 Rue des Grands, Augustins, Paris.

28,208 (1911). Outer ring for spring wheels. J. I. Duchateau, 29 Rue Gambetta, St. Omer, Pas-de-Calais, France.

*28,256 (1911). Outer ring for spring wheels. T. H. Grigg, 3838 Baring street, Philadelphia, Pa., U. S. A.

28,268 (1911). Key for removing crown stoppers. A. F. Sargeaunt, Chenies street, Tottenham, Court Road, London.

28,308 (1911). Pump for inflating tires. C. W. Tanner, High street, Laycock, near Chippenham, Wiltshire.

28,325 (1911). Waist belt. A. P. Jones, Hilbre avenue, Tue Brook, Liverpool, and A. Rae, 4 Sunbury Road, Seacombe, Cheshire.

*28,376 (1911). Outer ring for spring wheels. A. C. Backus, 717 E. 182nd street, Bronx, N. Y., U. S. A.

28,378 (1911). Tire vulcanizers. E. C. R. Marks, 57 Lincoln's Inn Fields, London.

*28,380 (1911). Fire extinguishing apparatus. D. W. Adams, Glendale Springs, North Carolina, U. S. A.

28,466 (1911). Suspenders for hats. W. Bereths, Hardt, near Munich-Gladbach, Germany.

28,536 (1911). Rubber as compounding ingredient of cement. G. A. A. Ceulaers, 186 Rue du Moulin, Brussels.

28,554 (1911). Skirt and blouse adjusters. J. A. Roth, "Knollys," Toxteth Road, Glebe Point, near Sydney, Australia.

28,761 (1911). Door mats, stair treads, etc. G. Cummings, Bleak House, Gosforth, Northumberland.

28,781 (1911). Treating india-rubber. R. Bridge, Castleton, near Rochdale, Lancashire.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 16, 1913.]

17,648 (1911). Preparation of zinc oxide. F. C. Beauchamp, 9 Park Hall Parade, East Finchley, London.

28,871 (1911). Impregnated cords for packing. J. A. Dick, 51 Fenchurch street, London.

28,885 (1911). Tire attachments to rims. J. Ashton, Kilnahue Rectory, Gorey, Ireland.

28,905 (1911). Detachable rim attachments to wheels. A. Turnbull, St. Mungo Works, Bishopbriggs, Glasgow.

28,915 (1911). Tire attachments to rims. A. E. Lucas, C. H. May and W. Armstrong, 39 William street, Birmingham.

28,931 (1911). Non-metallic tire. J. Guerrero, 7 Rue Georges-Ville, Paris.

28,951 (1911). Rubber ball for anesthetic mask. K. A. E. Fries, 16 Scheelegatan, Stockholm.

29,001 (1911). Non-metallic tire. J. Guerrero, 7 Rue Georges-Ville, Paris.

29,008 (1911). Rubber masticating machine. J. E. Pointon, Westwood Works, Peterborough.

29,010 (1911). Detachable rim attachments to wheels. P. B. Bosworth, 48 Great Russell street, Holborn, London, and A. C. Tyre Co., Union street, Sunderland.

29,048 (1911). Rubber washer for siphon bottles. J. F. Marshall, 50 Wigmore street, London, and T. F. Garrett, 64 Kimberley avenue, Seven Kings, Essex.

29,057 (1911). Sheeting india-rubber. W. Coulter, 284 Hyde Road, West Gordon, Manchester, and R. Bridge, Castleton, Lancashire.

29,142 (1911). Jackets and covers for wheel tires. E. Clark, 4 Colloseum Terrace, Albany street, Regents Park, and C. N. I. Irving, Winter-13, Bruton street, Mayfair—both in London.

29,154 (1911). J. G. A. Kitchen, 7 Rose Bank, Scotforth, Lancaster, and I. H. Storey, Loughrigg Brow, Ambleside, Westmoreland.

29,213 (1911). Preparation of india-rubber. Farbenfabriken Vorm. F. Bayer & Co., 217 Koenigstrasse, Elberfeld, Germany.

29,215 (1911). Rubber for connecting pipe joints. C. Rudolph, 66 Rue du Theatre, Paris.

29,246 (1911). Jackets and covers for wheel tires. A. Margetts, 64 Cow Cross street, London.

29,265 (1911). Vulcanizer for repairing tires. C. F. Adamson, Hamilton Bldg., Akron, Ohio.

*29,274 (1911). Detachable rim attachments to wheels. W. F. Copithorn, 49 North Main street, and H. M. Ferguson, 25 Waban street—both in Natick, Massachusetts, U. S. A.

29,278 (1911). Compounds of rubber. L. C. T. Turcat, and G. E. Nuth, 44 Rue Crillon, Marseilles, France.

29,294 (1911). Motor car horns. W. P. Thompson, 6 Lord street, Liverpool.

29,296 (1911). Implement for tapping rubber trees. J. da C. Gadelha, Nova Vista, Labrea, Amazonas, Brazil.

29,360 (1911). Implement for tapping rubber trees. J. da C. Gadelha, Nova Vista, Labrea, Amazonas, Brazil.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 23, 1913.]

3 (1912). Bottle stoppers, etc. A. Nixon, 34 Deramore street, Rusholme, Manchester.

14 (1912). Non-metallic elastic tires. J. Cairns, 621 Alexander Parade, Glasgow.

27 (1912). Rubber in cycle springs. J. R. Hannam, 137 Bramall Lane, Sheffield.

47 (1912). Air tubes and chambers in pneumatic tires. S. Ramsbotham, 10 Keymer Road, Streatham Hill, London.

*75 (1912). Block tires. F. M. Henry, 222 Macdougal street, Brooklyn, N. Y.

76 (1912). Cores in vehicle wheels. G. Madden, 53 Devonshire street, Islington, London.

80 (1912). Outer ring for spring wheels. C. Beaven, 26 Bridge avenue, Hammersmith, London.

102 (1912). Silent chains. A. S. Hill, and Coventry Chain Co., Spon End, Coventry.

105 (1912). Rubber resins in chewing gum. P. M. Justice, 55 Chancery Lane, London.

139 (1912). Tread bands. M. H. Cleaver, 128 Gloucester Terrace, Hyde Park, London.

164 (1912). Mud guards for motor vehicles. C. H. Richardson, 73 Lorne Road, Forest Gate, London.

173 (1912). Method of making articles from caoutchouc. H. Dogny, 13 Avenue d'Eylau, and V. Henry, 82 Rue Claude Bernard—both in Paris.

185 (1912). Exercise appliances. H. T. and S. W. Tubbs, and F. H. Hopson, 29 Noble street, London.

207 (1912). Jackets and covers for wheel tires. T. H. Buckley, 34 Stoke Park, Coventry.

234 (1912). Air tubes and chambers of tires. L. W. Holmes, 48 Great Russell street, Holborn, London.

235 (1912). Vulcanizing tires. L. Corane, 23 Rue Jenner, Paris.

269 (1912). Closing device for boot. V. R. von Heidelberg, Meran, Tyrol, Austria.

*276 (1912). Apparatus for generating oxygen. D. E. Parker, 456 27th street, Niagara Falls, N. Y., U. S. A.

277 (1912). Method of obtaining dichlorhydrocarbons. W. H. Perkin and C. Weizmann, University, and H. Davies, 5 West Grove—both in Manchester.

293 (1912). Disk wheels. I. Sarkey & Sons and W. Burton, Albert street Works, Bilston, Staffordshire.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 30, 1913.]

339 (1912). Rubber in mats. C. E. Player, Birkenhead, Auckland, New Zealand.

408 (1912). Outer ring for spring wheels. M. Frani and P. Piano, 3 Corso Buenos Aires, Genoa, Italy.

*424 (1912). Rubber plug in crutches. H. H. Flynn, Bellevue, Washington, U. S. A.

457 (1912). Mud guards for wheels. A. J. H. Ladd, 10 Hainthorpe Road, West Norwood, London.

478 (1912). Rubber pads in jugs. H. Jewett and W. Kraft, Hans Crescent Hotel, Hans Crescent, London.

619 (1912). Non-metallic elastic tire. A. von Bruning, 17 Place des Etats Unis, Paris.

629 (1912). Non-metallic elastic tire. C. R. S. J. Halle, 17 Warwick Gardens, Kensington, London.

636 (1912). Plastic compositions. K. Scherrer, 33 Schwantbalerstrasse, Frankfort-on-Main, Germany.

654 (1912). Rubber tape for golf balls. W. T. Hill, Greenhill, Rathen Road, Withington, Manchester, and R. Milne, Arnold Avenue, Bishopbriggs, Lanarkshire.

660 (1912). Rubber in photography. G. Crane, Murdieston Farm, Greenock.

693 (1912). Tire attachments to rims. S. H. Cope and Warland Dual Rim Co., Alma street, Aston, Birmingham.

694 (1912). Process of making waterproof fabrics. J. W. H. Dew and Azulay Syndicate, 8 Laurence Poutney Hill, Cannon street, London.

695 (1912). Tread bands. J. W. H. Dew and Azulay Syndicate, 8 Laurence street, London.

715 (1912). Tread bands. J. Knight, 9a Caldy Road, Anfield, Liverpool.

737 (1912). Jackets and covers for tires. F. Rose, 1 Brunswick street, Liverpool, and A. Rae, 17 Northbrooke Road, Seacombe, Cheshire.

Report of the Crude Rubber Market.

THE course of the London market for fine Pará during the month of April was, it will be recalled, almost constantly downward, while the tendency during May has been nearly uninterruptedly in the opposite direction. From *3s.* 10¾*d.* on March 26, it had dropped to *3s.* 4½*d.* on April 26, having recovered on May 24, at time of writing, to *3s.* 9*d.* The price has risen slowly but steadily, the low figure of *3s.* 3¼*d.* reached on April 15 not having since been recorded. In the earlier days of May, buyers were following their former policy of only covering immediate requirements. At the close of the first week, speculative buying, both for European and American account, gave additional strength to the market. According to some reports this development of the market was due to the existence of a large short interest in Upriver Fine. The improved prices then established have since been maintained.

Plantation rubber, while sharing in the upward movement, has not done so to the same extent as was the case with fine Pará. On April 26 it stood at *3s.* 2½*d.*, while Pará fine was at *3s.* 4½*d.* By May 24 the respective quotations were *3s.* 3*d.* and *3s.* 9*d.*

In connection with the fact of Pará rubber being now quoted at 6*d.* per pound above plantation rubber, an opinion has been expressed in London that the Pará position is entirely artificial, the supplies having been concentrated in one quarter, and prices having been unreasonably advanced. The anticipation of the sale of 113 tons (principally Congos) announced for May 27 at Havre rendered buyers cautious during the month in their operations. It was, however, hoped that the improvement in London would affect the result of the approaching auction. At the Antwerp sale of April 22, Congo grades were neglected, only 105 tons being sold out of 506 tons offered. The prices realized showed a decline since the previous month's auction equalling 4¾*d.* per pound. Of the 178 tons plantation rubber offered, 165 tons were sold, at an average decline, equalling 7⅜*d.* per pound.

Antwerp stock at the end of April amounted to 990 tons as compared with 438 tons on April 30, 1912. The sale of May 21 at Antwerp included 200 tons of plantation rubber which sold at advanced prices, and 130 tons Congo which were disposed of at a decline. The Rotterdam sale of April 23 included about 20 tons *Hevea*, which realized 2 per cent. below valuations and 14 tons *Ficus*, which fetched 5 per cent. below rates of last sales. *Hevea* formed the largest portion of the Amsterdam sale of May 16, representing 81 tons out of 94 tons the balance consisting of *Ficus* and *Castilloa*. From Hamburg a much firmer market has been reported, important sales of South Cameroon balls having been effected.

The London auction of April 29 included 900 tons, the quantity being less than had been anticipated. Prices closed on an average 1*d.* below those of the previous fortnightly sales. Owing to the Whitsuntide holidays on May 12 and 13, an auction was held on May 6, which included 500 tons, which met with a fair demand at about the prices of the sale a week earlier. The next auction took place on May 19, including about 800 tons which realized an advance of 1*d.* to 2*d.* as compared with the sale of 6th.

Statistics, including the first series of sales in May, show a total of 8,536 tons as having been auctioned this year in London, as compared with 5,991 during the corresponding period of 1912. The London "Economist" states that the total supply now coming on the Mincing Lane market fortnight by fortnight, is, roughly speaking, what had been looked for by the end of 1914.

Statistics to the end of April show the following estimate of the visible supply of Pará and Caucho rubber:

		1912.		1913.	
Pará	*Tons*	6,260		5,230	
Caucho		1,670	7,930	2,830	8,060

The visible supply of the above grades had decreased by 500 tons within a month, this year's total being about that of the corresponding period last year.

Business in New York has followed the course of the London market. Many of the large consumers are said to be very busy, particularly in tires, while their supplies of crude rubber are said to be moderate, yet large enough to meet their wants for the early summer.

New York Quotations.

Following are the quotations at New York for Pará grades, one year ago, one month ago, May 29—the current dates:

Para.	June 1, '12.	May 1, '13.	May 29, '13.
Islands, fine, new	105@106	80@ 81	84@ 85
Islands, fine, old	107@108	.....	.....
Upriver, fine, new	109@110	82@ 83	89@ 92
Upriver, fine, old	112@113	.....	.....
Islands, coarse, new	57@ 58	39@ 40	40@ 41
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	89@ 90	55@ 56	58@ 59
Upriver, coarse, old	.....	.....	.....
Cametá	65@ 66	42@ 43	42@ 43
Caucho (Peruvian) ball	87@ 88	57@ 58	58@ 59
Caucho (Peruvian) sheet	.....	.....	.....
Plantation Ceylons.			
Fine smoked sheet	118@119	81@ 82	83@ ..
Fine pale crepe	119@120	80@ ..	80@ ..
Fine sheets and biscuits	114@115	80@ ..	79@ 80
Centrals.			
Esmeralda, sausage	82@ 83	56@ ..	58@ 59
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	80@ 81	55@ ..	55@ 56
Panama	.....	.....	.....
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	81@ 82	55@ 56	56@ 57
Mexican, slab	.....	.....	.....
Mangabeira, sheet	.....	.....	.....
Guayule	55@ 56	.....	.....
Balata, sheet	89@ 90	.....	.....
Balata, block	55@ 56	.....	.....
African.			
Lopori, ball, prime	.....	.....	.....
Lopori, strip, prime	.....	.....	.....
Aruwimi	.....	65@ ..	.....
Upper Congo, ball red	107@108	75@ ..	.....
Ikelemba	.....	.....	.....
Sierra Leone, 1st quality	94@ 95	.....	.....
Massai, red	95@ 96	74@ ..	.....
Soudan Niggers	.....	.....	.....
Cameroon, ball	66@ 67	60@ ..	.....
Benguela	.....	.....	.....
Madagascar, pinky	.....	.....	.....
Accra, flake	27@ 28	.....	.....
East Indian.			
Assam	.....	.....	.....
Pontianak	5⅝@5¾	.....	.....
Borneo	.....	.....	.....

New York

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During May there has been only a moderate demand for commercial paper in the rubber line, principally from out-of-town banks, and rates have ruled quite firm at 5½ @5¾ per cent. for the best names, and 6@6½ per cent. for those not so well known."

NEW YORK PRICES FOR APRIL (NEW RUBBER).

	1913.	1912.	1911.
Upriver, fine	$0.78@ .89	$1.12@1.18	$1.18@1.45
Upriver, coarse	.54@ .66	.92@ .96	.88@1.10
Islands, fine	.76@ .85	1.10@1.14	1.12@1.35
Islands, coarse	.37@ .41	.63@ .66	.60@ .63
Cametá	.39@ .45	.66@ .70	.75@ .80

STATISTICS PARA INDIA RUBBER (IN TONS).

(Including Caucho.)

STATISTICS FOR THE MONTH OF APRIL.

	Pará.	Caucho.	1913. Tons.		1912. Tons.	1911. Tons.	1910. Tons.
Receipts at Pará	2,110	1,430 =	3,540	against	3,270	3,490	3,600
Shipments to Liverpool	1,190	790 =	1,980	"	1,290	1,450	2,800
Shipments to Continental Ports	180	230 =	410	"	440	270	860
Shipments to America	770	350 =	1,120	"	1,350	1,110	470
American Imports	1,120	290 =	1,410	"	2,000	1,320	320
American Deliveries	1,280	390 =	1,670	"	1,910	1,130	490
Liverpool Imports	1,185	915 =	2,100	"	1,466	1,681	3,818
Liverpool Deliveries	1,162	608 =	1,770	"	1,426	1,128	2,997
Continental Imports	440	240 =	680	"	230	170	560
Continental Deliveries	310	70 =	380	"	260	230	550

VISIBLE SUPPLY—1st MAY, 1913.

	1913. Pará.	1913. Caucho.	1912.	1911.	1910.
Stock in England, Pará, 1st hands	1,046	.....	3,369	757	
Pará, 2nd hands	127	.....	1,530	812	348
Caucho	.....	710	190	808	465
Stock in Pará, 1st hands	540	210	510	1,650	280
2nd hands	230	110	390	250	230
Syndicate	810	.....	2,240	2,810	.....
Stock in America	150	80	180	640	90
Stock on Continent	160	190	40	70	30
Afloat—Europe	850	680	1,250	1,180	2,180
Afloat—America	370	250	440	500	140
	4,283	2,230			
Total Visible Supply, including Caucho	6,513		6,770	12,089	4,520

CROP STATISTICS—30TH JUNE, 1912, 30TH APRIL, 1913.

	Pará.	Caucho.	1912/13.	1911/12.	1910/11.	1909/10.
Pará Receipts	1912/13 29,210	7,760	36,970	33,380	32,720	35,780
	1911/12 28,020	5,360				
Pará Shipments to Europe	15,480	5,650	21,130	17,260	16,880	19,240
Pará Shipments to America	14,650	2,450	17,100	17,500	11,640	16,270
England Landings, net			14,962	12,523	12,833	14,520
England Deliveries, net			14,449	15,873	10,613	14,071
America Landings, net			16,720	19,745	12,090	16,330
America Deliveries, net			16,660	19,465	11,590	17,030
Continental Imports, net			4,360	2,870	2,670	2,540
Continental Deliveries, net			4,105	2,940	2,650	2,540

POSITION—1st MAY, 1913.

Increase in Receipts during April, 1913, against April, 1912	270
Increase in Receipts—Crop, July/April, 1912/13, against 1911/12	3,590
Decrease in Deliveries—Crop, July/April, 1912/13, England and Continent, against 1911/12	259
Decrease in Deliveries—Crop, July/April, 1912/13, America, against 1911/12	2,805
Decrease in Visible Supply Pará Grades, against 1st May last year	257
Increase in Stock, England, April 30th, 1913, against April 30th, 1912	163

WM. WRIGHT & CO., Brokers.

Liverpool, 2nd May, 1913.

During the month 40 tons Pará have been shipped from Europe to America.

Liverpool:

WILLIAM WRIGHT & CO. report [May 1, 1913].

Fine Pará.—There has been more speculative demand; prices declined from 3*s.* 8*d.* [89 cents] to 3*s.* 3*d.* [79 cents], then reacted somewhat, finally closing at 3*s.* 5¼*d.* [84 cents] for near position and 3*s.* 5¾*d.* [85 cents] for distant. The undertone is steady in spite of the absence of American demand and large first-hand stocks in Brazil; considering the demand for this grade, supplies are not too ample, the bulk of the crop increase being in caucho. Receipts this month are 3,540 tons, including 1,430 tons caucho, against 4,265 tons last month and 3,270 tons last year, bringing the crop up to date to 36,975 tons against 33,380 tons last year, showing an increase of 1,190 tons rubber and 2,405 tons caucho.

Rotterdam

HAVELAAR & DE VRIES report [May 13]:

At the sale of May 9 about 40 tons were offered, including 20 tons *Hevea* and 14 tons *Ficus*. The former went at 2 per cent. and the latter at 5 per cent. below valuations. Inquiry being good, nearly the whole quantity was sold.

Amsterdam

JOOSTEN & JANSEN report [April 30]:

The quantities declared for the sale of May 16 include about 93 tons, the bulk of which is *Hevea*. There are also included about 11 tons *Ficus*, of which 5 tons are plantation and 6 tons wild.

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound—are practically unchanged.

	May 26, 1913.
Old rubber boots and shoes—domestic	9⅜@ 9½
Old rubber boots and shoes—foreign	9¼@ 9⅜
Pneumatic bicycle tires	5¾@ 5⅞
Automobile tires	9⅝
Solid rubber wagon and carriage tires	9 @ 9¼
White trimmed rubber	10¾@11
Heavy black rubber	4¾@ 5
Air brake hose	5¾
Garden hose	1⅝@ 1½
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾
No. 1 white auto tires	11¾@11⅞

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA, 1912 AND 1913.

[IN SHILLINGS AND PENCE PER POUND.]

July 5, 1912	4/9	December 20	4/6½
July 12	4/10	December 27	4/7½
July 19	4/10	January 3, 1913	4/7¼
July 26	4/11¾	January 10	4/6½
August 2	4/11	January 17	4/6½
August 9	5/0½	January 24	4/5¼
August 16	5/0½	January 31	4/4
August 23	5/2	February 7	4/2¾
August 30	5/1¾	February 14	4/3
September 6	4/11½	February 21	4/0½
September 13	4/9½	February 28	4/0½
September 20	4/8	March 7	3/10¾
September 27	4/7	March 14	3/11¼
October 4	4/7	March 20	3/11
October 11	4/7	March 28	3/9½
October 18	4/6½	April 4	3/6¼
October 25	4/6	April 11	3/4½
November 1	4/4½	April 18	3/4¾
November 8	4/5	April 25	3/4½
November 15	4/5¼	May 2	3/5½
November 22	4/5¼	May 9	3/8¾
November 29	4/5½	May 16	3/10
December 6	4/7	May 23	3/9
December 13	4/7		

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

APRIL 24.—By the steamer *Clement*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	105,700	.....	98,300	66,300=	270,300
General Rubber Co.	41,000	4,000	6,400	.....=	51,400
Meyer & Brown	55,000	8,900	75,100	107,800=	246,800
Meyer & Brown	.....	5,900	9,900	.....=	15,800
Astlett & Co.	21,100	5,000	.....	19,000=	45,100
Ed. Maurer	34,300	600	17,200	.....=	52,100
Henderson & Korn	.....	.....	48,900	.....=	48,900
Henderson & Korn	1,100	.....	9,900	.....=	11,000
Ed. Maurer	2,900	400	200	.....=	3,500
De Lagotellerie	12,500	1,400	5,300	.....=	19,200
	273,600	26,200	271,200	193,100=	764,100
MANAOS.					
Arnold & Zeiss	126,700	700	30,100	10,200=	167,700
General Rubber Co.	12,900	3,500	8,700	800=	25,900
Meyer & Brown	.....	.....	5,500	.....=	5,500
Ed. Maurer	.....	3,000	.....	.....=	3,000
Robinson & Co.	16,000	10,400	10,400	.....=	36,800
American Export Co.	22,200	.....	.....	.....=	22,200
	177,800	17,600	54,700	11,000=	261,100
Total	451,400	43,800	325,900	204,100=	1,025,200
IQUITOS.					
G. Amsinck & Co.	.....	.....	5,300	.....=	5,300
Astlett & Co.	.....	.....	4,800	.....=	4,800
Total	.....	.....	10,100	.....=	10,100

MAY 5.—By the steamer *Vincent*, from Pará and Manáos:

Arnold & Zeiss	21,900	.....	57,900	116,300=	196,100
Meyer & Brown	24,800	3,700	11,700	85,600=	125,800
General Rubber Co.	49,900	5,800	21,200	4,400=	81,300
Hagemeyer & Brunn	1,800	.....	16,500	.....=	18,300
De Lagotellerie	7,100	1,100	3,300	.....=	11,500
G. Amsinck & Co.	1,400	400	2,000	3,900=	7,700
Henderson & Korn	40,200	5,300	31,000	85,300=	161,800
Ed. Maurer	8,300	1,200	63,900	35,000=	108,400
Astlett & Co.	1,100	1,400	.....	3,900=	6,400
	156,500	18,900	207,500	334,400=	717,300

MANAOS

Arnold & Zeiss	91,200	.....	64,200	18,400=	173,800
Meyer & Brown	21,400	3,600	30,300	136,500=	211,800
General Rubber Co.	.....	.....	21,000	.....=	21,000
Henderson & Korn	34,500	10,100	19,800	21,000	85,400
Robinson & Co.	17,500	.....	7,900	.....=	25,400
American Export Co.	44,000	.....	.....	.....=	44,000
	208,600	13,700	163,200	175,900=	561,400
Total	365,100	32,600	370,700	510,300=	1,278,700

MAY 17.—By the steamer *Gregory*, from Pará and Manáos:

Arnold & Zeiss	36,600	2,500	37,500	35,300=	111,900
General Rubber Co.	22,400	2,800	24,700	2,200=	52,100
Meyer & Brown	.....	.....	24,900	.....=	24,900
Meyer & Brown	.....	.....	30,400	.....=	30,400
Henderson & Korn	2,100	19,400	47,100	4,400=	73,000
Ed. Maurer	52,500	700	5,500	500=	59,200
Astlett & Co.	8,200	1,400	.....	16,200=	25,800
De Lagotellerie	4,300	700	7,900	.....=	12,900
Hagemeyer & Brunn	2,500	1,100	6,600	.....=	10,200
	128,600	28,600	184,600	58,600=	400,400

MANAOS.

Arnold & Zeiss	60,300	3,000	13,000	20,500=	96,800
Meyer & Brown	35,600	18,600	24,500	12,400=	91,100
General Rubber Co.	15,800	.....	.....	.....=	15,800
Ed. Maurer	16,300	3,800	11,500	12,900=	44,500
Henderson & Korn	8,700	4,000	9,800	11,300=	33,800
Robinson & Co.	23,600	700	3,300	1,200=	28,800
American Export Co.	3,400	.....	.....	.....=	3,400
Crossman & Sieleken	3,400	300	3,700	.....=	7,400
	167,100	30,400	65,800	58,300=	321,600
Total	295,700	59,000	250,400	116,900=	722,000

ITACOATIARA.

Harne Andre	2,200	.....	2,400	3,600=	8,200

PARA RUBBER VIA EUROPE.

APRIL 26. By the *Celtic*=Liverpool:

	Pounds.
James T. Johnstone (Fine)	9,000

APRIL 28. By the *Carmania*=Liverpool:

Arnold & Zeiss (Caucho Ball)	11,200

MAY 5. By the *Carmania*=Liverpool:

N. Y. Commercial Co. (Fine)	27,000	
Raw Products Co. (Fine)	3,000	
Various (Fine)	11,000	41,000

MAY 9. By the *Patricia*=Hamburg:

Wallace L. Gough (Fine)	6,700

MAY 12.—By the *Campania*=Liverpool:

Arnold & Zeiss (Fine)	33,500

MAY 12. By the *Amerika*=Hamburg:

Ed. Maurer (Fine)	48,500

MAY 16.—By the *Mauretania*=Liverpool:

Robinson & Co. (Fine)	11,200

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

	Pounds.	
APRIL 23.—By the *Trent*=Colon:		
G. Amsinck & Co.	4,500	
A. M. Capen's Sons	4,000	
R. del Castillo	3,000	
Mecke & Co.	1,200	
Andean Trading Co.	500	
A. Held	500	13,700
APRIL 23.—By the *Prinz August Wilhelm*=Colombia:		
Gillespie Bros.		600
APRIL 25.—By the *Ithanca*=Colon:		
Gillespie Bros.		1,500
APRIL 25.—By the *Proteus*=New Orleans:		
Various		8,500
APRIL 25.—By the *El Oriente*=Galveston:		
Various		*10,500
APRIL 26.—By the *Esperanza*=Mexico:		
E. Steiger & Co.	3,500	
W. L. Wadleigh & Co.	1,000	
Dufourca & Co.	1,000	5,000
APRIL 26.—By the *Celtic*=Liverpool:		
Adolph Hirsch & Co.		11,200
APRIL 28.—By the *Rochambeau*=Havre:		
Michelin Tire Co.		30,000
APRIL 28.—By the *Zacapa*=Colombia:		
R. Del Castillo		3,500
APRIL 28.—By the *Vigilancia*=Mexico:		
G. Amsinck & Co.	1,000	
H. Marquardt & Co.	500	
R. G. Barthold	500	2,000
APRIL 28.—By the *Suriname*=Colon:		
G. Amsinck & Co.	2,500	
Rosenthal & Sons	1,500	
Manhattan Rubber Mfg. Co.	1,200	5,200
APRIL 29.—By the *Prinz Sigismund*=Colombia:		
Mecke & Co.	7,500	
Caballero & Blanco	300	
De Lima Cortissoz	300	8,100
APRIL 30. By the *Emil L. Boas*=Colon:		
Rosenthal & Sons		1,500
MAY 1.—By the *Creole*=New Orleans:		
Various		1,600
MAY 1. By the *Almirante*=Colombia:		
Ruiz Ruckgaber	3,500	
R. del Castillo	1,000	4,500
MAY 2.—By the *Guantanamo*=Tampico:		
Continental-Mex. Rubber Co.	*206,000	
Mexican Crude Rubber Co.	*45,000	
Ed. Maurer	*33,500	*284,500
MAY 2. By the *Mexico*=Mexican Ports:		
J. W. Wilson & Co.	2,500	
General Export and Commission Co.	300	
E. Steiger & Co.	1,000	
W. L. Wadleigh	3,000	
Mecke & Co.	500	7,300
MAY 2.—By the *Swedish Prince*=Bahia:		
Adolph Hirsch & Co.		3,500
MAY 6. By the *Santiago*=Tuxpan:		
H. Marquardt & Co.		500
MAY 6.—By the *Santiago*=Tampico:		
Continental-Mex. Rubber Co.	*56,000	
Various	*7,500	*63,500
MAY 7.—By the *Cevic*=Liverpool:		
Adolph Hirsch & Co.		30,000
MAY 7.—By the *Prince Joachim*=Colombia:		
Wessels, Kulenkampff & Co.	1,000	
Suzarte & Whitney	600	1,600
MAY 8.—By the *Magdalena*=Colombia:		
Kunhardt & Co.	3,000	
R. del Castillo & Co.	1,500	4,500
MAY 8.—By the *Momus*=New Orleans:		
Various		3,700
MAY 8.—By the *Santa Marta*=Colombia:		
R. del Castillo & Co.		1,000
MAY 9.—By the *Advance*=Colon:		
G. Amsinck & Co.	12,000	
R. G. Barthold & Co.	500	
Broedermann & Litzrodt	600	13,100
MAY 10.—By the *Monterey*=Mexico:		
Maitland, Coppell & Co.	6,000	
Willard Hawes & Co.	3,000	9,000
MAY 12.—By the *Prinz Eitel Frederick*=Colombia:		
Kunhardt & Co.	3,500	
Caballero & Blanco	700	4,200
MAY 12. By the *Proteus*=New Orleans:		
Various		1,500
MAY 12. By the *Frutera*=Colon:		
Rosenthal & Sons	1,000	
Eggers & Heinlein	800	
General Export Commission Co.	300	2,100
MAY 12.—By the *Baltic*=Liverpool:		
Adolph Hirsch & Co.		6,000
MAY 12. By the *Voltaire*=Bahia:		
Adolph Hirsch & Co.		6,000
MAY 12.—By the *Camagucy*=Tampico:		
Continental-Mex. Rubber Co.	*350,000	
Mexican Crude Rubber Co.	*45,000	
Ed. Maurer	*40,000	
Chas. T. Wilson	*10,000	
Various	*30,000	*475,000
MAY 13.—By the *Panama*=Colon:		
Pottberg, Ebeling & Co.		1,100
MAY 13.—By the *Minneapolis*=London:		
Various		67,000
MAY 14.—By the *Carl Schurz*=Colombia:		
Pottberg, Ebeling & Co.	1,700	
Gravenhorst & Co.	800	2,500
MAY 16.—By the *Dakotan*=Mexico:		
G. Amsinck & Co.		3,000
MAY 16.—By the *Merry Castle*=Mexico:		
Lawrence Johnson	3,000	
Murphy & Fultz	2,500	
W. L. Wadleigh	1,200	
American Trading Co.	1,200	
J. W. Wilson & Co.	500	
Harburger & Stack	300	
Mecke & Co.	200	8,900
MAY 17.—By the *Asiatic Prince*=Bahia		
Adolph Hirsch & Co.		2,000
MAY 19.—By the *Albingia*=Colombia:		
G. Amsinck & Co.	1,000	
Caballero & Blanco	1,000	2,000
MAY 19. By the *Creole*=New Orleans:		
Various		1,500
MAY 19. By the *El Sol*=Galveston:		
Various		*11,200
MAY 21.—By the *Prinz August Wilhelm*=Colombia:		
Wessels, Kulenkampff	800	
Eggers & Heinlein	500	
M. C. Keith	1,000	2,300
MAY 21.—By the *Tagus*=Colon:		
G. Amsinck & Co.	1,500	
Mecke & Co.	2,200	
A. M. Capen's Sons	2,000	
Camacho Roldau & Van Sickle	2,000	
Heilbron Wulff & Co.	1,200	
American Trading Co.	1,000	
R. del Castillo & Co.	700	10,600

AFRICAN

	Pounds.	
APRIL 23.—By the *Finland*=Antwerp:		
James T. Johnstone	15,500	
L. Blitz	4,500	20,000
APRIL 26.—By the *Celtic*=Liverpool:		
James T. Johnstone		15,700
APRIL 28.—By the *Carmania*=Liverpool:		
Various		11,000
APRIL 28. By the *St. Paul*=Southampton:		
Robinson & Co.		11,200
APRIL 28.—By the *Rochambeau*=Havre:		
Michelin Tire Co.	33,500	
Meyer & Brown	4,500	38,000
APRIL 28.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Ed. Maurer	33,500	
Wallace L. Gough	12,500	
Rubber Trading Co.	4,500	50,500
MAY 1.—By the *New Amsterdam*=Amsterdam:		
Various		13,500
MAY 5.—By the *Philadelphia*=Southampton:		
Robinson & Co.		20,500
MAY 6.—By the *Kroonland*=Antwerp:		
Various		36,000
MAY 9.—By the *Patricia*=Hamburg:		
Meyer & Brown	18,000	
Ed. Maurer	43,000	
Arnold & Zeiss	22,500	
General Rubber Co.	22,500	
Wallace L. Gough	26,000	
Henderson & Korn	45,000	177,000
MAY 9. By the *Salamanca*=Hamburg:		
Wallace L. Gough		37,500
MAY 12.—By the *Campania*=Liverpool:		
Arnold & Zeiss	5,000	
Various	22,500	27,500
MAY 13.—By the *Baltic*=Liverpool:		
James T. Johnstone	1,000	
Various	9,000	10,000
MAY 12. By the *Amerika*=Hamburg:		
Ed. Maurer	4,500	
Henderson & Korn	11,500	16,000

MAY 13.—By the *Zeeland*=Antwerp:

Various		14,000

MAY 17.—By the *La Provence*=Havre:

Meyer & Brown		7,500

MAY 17.—By the *Adriatic*=Liverpool:

James T. Johnstone		11,200

MAY 17.—By the *New York*=Southampton:

Arnold & Zeiss	22,500	
Various	2,500	25,000

MAY 19.—By the *Californic*=Havre:

Arnold & Zeiss		6,500

EAST INDIAN.

[*Denotes Plantation Rubber.]

	POUNDS.	
APRIL 23.—By the *Finland*=Antwerp:		
Meyer & Brown	*44,000	
APRIL 24.—By the *Oceanic*=Southampton:		
Arnold & Zeiss	*33,500	
Charles T. Wilson	*33,500	
Ed. Maurer	*29,000	
Rubber Trading Co.	*15,500	
Raw Products Co.	*6,500	
Robinson & Co.	*700	*118,700
APRIL 26.—By the *Neidenfels*=Colombo:		
General Rubber Co.	*11,200	
Ed. Maurer	*5,500	*16,700
APRIL 26.—By the *Indramayo*=Singapore:		
Ed. Maurer	*45,000	
L. Littlejohn & Co.	*22,500	
Malaysian Rubber Co.	*11,200	
E. Bonstead & Co.	*11,200	
James T. Johnstone	*3,500	
Various	*11,200	*104,600
APRIL 26.—By the *Potsdam*=Amsterdam:		
Various		*2,000
APRIL 28.—By the *St. Paul*=Southampton:		
Meyer & Brown	*11,000	
Ed. Maurer	*87,500	
Robinson & Co.	1,500	
Arnold & Zeiss	*2,500	
William H. Stiles	*1,100	*103,600
APRIL 28.—By the *Rochambeau*=Havre:		
Michelin Tire Co.		*33,500
APRIL 28.—By the *Kansas*=Colombo:		
Meyer & Brown	*90,000	
Ed. Maurer	*33,500	
N. Y. Commercial Co.	*8,500	
H. W. Peabody & Co.	*3,500	
Various	*2,500	*138,000
APRIL 28.—By the *Lapland*=Antwerp:		
Meyer & Brown		*30,000
APRIL 28.—By the *Indradeo*=Singapore:		
Ed. Maurer	*103,000	
Malaysian Rubber Co.	*12,500	
General Rubber Co.	*7,000	
L. Littlejohn & Co.	*29,000	
Various	*5,000	*156,500
APRIL 28.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Various		*19,000
APRIL 28.—By the *Minnewaska*=London:		
Meyer & Brown	*34,500	
James T. Johnstone	*22,500	
Charles T. Wilson	*13,500	
L. Littlejohn & Co.	*11,200	
Various	*31,000	*112,700
APRIL 30. By the *Olympic*=Southampton		
Meyer & Brown	*70,000	
N. Y. Commercial Co.	*100,800	
Ed. Maurer	*8,000	
Arnold & Zeiss	*13,500	
A. W. Brunn	*2,200	
Raw Products Co.	*2,500	
Various	*13,500	*210,500
MAY 1.—By the *New Amsterdam*=Amsterdam:		
Rubber Trading Co.		*5,000
MAY 3.—By the *Karema*=Colombo:		
Meyer & Brown	*42,000	
N. Y. Commercial Co.	*13,500	
H. W. Peabody & Co.	*22,500	
Ed. Maurer	*4,500	*82,500
MAY 5.—By the *Philadelphia*=Southampton:		
Meyer & Brown	*45,000	
N. Y. Commercial Co.	*140,000	
Ed. Maurer	*45,000	
Robinson & Co.	*27,500	
Charles T. Wilson	*2,500	
A. W. Brunn	*4,500	
Arnold & Zeiss	36,500	
Raw Products Co.	*2,200	
Rubber Trading Co.	*1,500	
L. Littlejohn & Co.	*15,000	
Various	*140,000	*459,700
MAY 6.—By the *Mesaba*=London:		
Meyer & Brown	*54,500	
James T. Johnstone	*14,000	
Charles T. Wilson	*33,500	
General Rubber Co.	*56,000	
Ed. Maurer	*15,500	
Various	*10,000	*183,500
MAY 6.—By the *Kroonland*=Antwerp:		
Meyer & Brown	*43,000	
Arnold & Zeiss	*45,000	*88,000
MAY 6.—By the *Gramsbergen*=Amsterdam:		
Manhattan Rubber Mfg. Co.		*7,000
MAY 6.—By the *Ambria*=Singapore:		
Meyer & Brown	*11,000	
Ed. Maurer	*62,500	
James T. Johnstone	*8,000	
General Rubber Co.	*7,500	
Various	*36,000	*125,000
MAY 7.—By the *Cevic*=Liverpool:		
L. Littlejohn & Co.		*33,500
MAY 8.—By the *Majestic*=Southampton:		
Meyer & Brown	*34,000	
Ed. Maurer	*15,000	
Robinson & Co.	*2,500	
Rubber Trading Co.	*13,000	
Arnold & Zeiss	*10,000	
Ed. Maurer	*15,500	
Various	*8,000	*98,000
MAY 9.—By the *Patricia*=Hamburg:		
Charles T. Wilson	*6,000	
Wallace L. Gough	*8,000	
Ed. Maurer	*16,500	*30,500
MAY 12.—By the *Amerika*=Hamburg:		
Henderson & Korn		*2,500
MAY 13.—By the *Zeeland*=Antwerp:		
Arnold & Zeiss	*117,000	
Meyer & Brown	*8,000	*125,000
MAY 13.—By the *Minneapolis*=London:		
Meyer & Brown	*48,000	
General Rubber Co.	*33,500	
James T. Johnstone	*13,500	
Charles T. Wilson	*50,000	
Robert Badenhop	8,500	
Various	*11,000	*164,500
MAY 15.—By the *Oceanic*=Southampton		
Meyer & Brown	*57,000	
Ed. Maurer	*104,000	
Arnold & Zeiss	*60,000	
Charles T. Wilson	*40,000	
Rubber Trading Co.	*24,000	
Raw Products Co.	*15,000	
Robinson & Co.	*5,000	
William H. Stiles	*10,000	*315,000
MAY 17.—By the *New York*=Southampton:		
Meyer & Brown	*33,000	
N. Y. Commercial Co.	*33,500	
Robinson & Co.	*33,500	
Arnold & Zeiss	*25,500	
Rubber Trading Co.	*9,000	
Various	*11,200	*145,700
MAY 19.—By the *Kioto*=Singapore:		
Ed. Maurer	*55,000	
Arnold & Zeiss	*45,000	
L. Littlejohn & Co.	*30,000	
Malaysian Rubber Co.	*15,000	
James T. Johnstone	*5,500	
Broome Rubber Co.	*3,500	
Bonstead & Co.	*12,500	
Various	*50,000	*216,500
MAY 20.—By the *Minnehaha*=London:		
Meyer & Brown	*28,500	
James T. Johnstone	*45,000	
General Rubber Co.	*145,000	
Adolph Hirsch & Co.	*33,500	
L. Littlejohn & Co.	*33,500	
Various	8,500	*294,000
MAY 20.—By the *Finland*=Antwerp:		
Meyer & Brown		*38,000
MAY 21.—By the *Olympic*=Southampton:		
Meyer & Brown	*42,000	
Arnold & Zeiss	*40,000	
Charles T. Wilson	*67,200	
A. W. Brunn	*3,500	
William H. Stiles	*3,000	
Various	*7,500	*163,200
MAY 22.—By the *Bulgarian Prince*=Colombo:		
Meyer & Brown	*106,800	
General Rubber Co.	*11,200	
H. W. Peabody & Co.	*8,000	
Ed. Maurer	*61,000	*187,000

BOSTON ARRIVALS.

IMPORTS IN APRIL, 1913.

	Pounds.	Value.
Gutta-jelutong (Pontianak)	1,696,086	$82,662
Gutta-percha	7,187	1,276
India-rubber	207,215	155,158

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—APRIL, 1913.

Imports:	Pounds.	Value.
India-rubber	8,500,595	$6,252,156
Balata	46,889	26,362
Guayule	799,917	346,909
Gutta-percha	179,638	41,818
Gutta-jelutong (Pontianak)	1,454,417	72,073
Total	10,981,456	$6,739,318
Exports:		
India-rubber	63,931	44,834
Balata	.....	.....
Guayule	.....	.....
Gutta-percha	.....	.....
Reclaimed rubber	107,319	14,731
Gutta-jelutong (Pontianak)	.....	.....
Rubber scrap, imported	4,012,580	350,027
Rubber scrap, exported	422,046	58,204

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR APRIL, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	GRAND TOTAL.
Zarges, Ohliger & Ca.	132,465	1,773	53,657	24,554	212,449	136,336	26,181	24,984	201,526	389,027	601,476
General Rubber Co. of Brazil	40,840	12,274	55,019	74,359	182,992	74,834	25,993	15,630	126,581	243,038	426,030
Ahlers & Ca.	58,251	11,972	25,581	16,703	112,507	103,907	11,921	31,079	74,852	221,759	334,266
De Lagotellerie & Co.	22,560	.....	.....	.....	22,560	40,796	20,200	22,132	11,891	95,019	117,579
J. G. Araujo	1,600	160	1,850	.....	3,610	2,301	786	3,370	1,626	8,583	12,193
Mesquita & Co.	.....	.....	.....	.....	.....	448	.....	1,374	537	2,359	2,359
Semper & Co.	.....	.....	.....	.....	.....	2,658	.....	841	4,751	8,250	8,250
Théodore Lévy, Camille & Co.	.....	.....	.....	.....	.....	.....	437	806	25,181	26,424	26,424
W. Peters & Co.	7,756	3,241	5,774	6,452	23,223	1,120	160	2,730	450	4,460	27,683
Sundries	.....	.....	.....	.....	.....	11,694	1,424	4,467	9,853	27,438	27,438
	263,472	29,420	141,831	122,568	557,341	374,094	87,102	107,913	457,248	1,026,357	1,583,698
De Iquitos, direct	4,438	174	405	.....	5,017	47,222	245	14,658	156,350	218,475	223,492
Total, April, 1913	267,910	29,594	142,236	122,568	562,358	421,316	87,347	122,571	613,598	1,244,832	1,807,190
Total, March, 1913	228,317	32,464	74,938	34,356	370,075	448,565	87,307	179,687	588,560	1,304,119	1,674,194
Total, February, 1913	482,593	98,982	173,593	202,059	957,227	608,121	146,075	137,106	444,567	1,335,869	2,293,096
Total, January, 1913	472,818	77,126	217,249	166,875	934,068	658,309	126,008	137,093	481,836	1,403,246	2,337,314

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Antwerp:

RUBBER STATISTICS FOR APRIL.

DETAILS.	1913.	1912.	1911.	1910.	1909.
Stocks, March 1...*kilos*	651,505	359,016	645,614	499,102	595,855
Arrivals in April—					
Congo sorts	385,070	360,605	131,553	340,456	219,645
Other sorts	8,138	15,117	44,791	40,014	91,908
Plantation sorts	246,814	129,715	90,038	49,400	18,724
Aggregating 1,291,527		864,453	911,991	928,972	926,132
Sales in April.....	301,257	426,940	312,877	458,504	318,345
Stocks, April 30.....	990,270	437,513	599,114	470,468	607,787
Arrivals since Jan. 1—					
Congo sorts 1,076,786		1,091,077	1,072,515	1,171,286	1,001,032
Other sorts	43,316	45,735	205,968	120,169	368,972
Plantation sorts	683,711	407,325	257,562	178,094	88,365
Aggregating 1,803,813		1,544,137	1,536,045	1,469,549	1,458,369
Sales since January 1..1,324,603		1,781,162	1,525,143	1,540,593	1,446,317

RUBBER ARRIVALS FROM THE CONGO.

APRIL 23.—By the steamer *Anversville:*

Bunge & Co.	(Société Générale Africaine) *kilos*	26,800	
do	(Comptoir Commercial Congolais)	15,700	
do	(Belgika)	1,800	
do	(Comfina)	1,000	
do	(Chemins de fer Grande Lacs)	8,000	
do	(Forminière)	200	
do		1,200	
Crédit Colonial and Commercial.			
do	(Velde)	9,300	
L. & W. Van de Velde	(Cie du Kasai)	79,600	
do	(Comfina)	12,500	
do	(Uelé)	3,400	
Charles Dethier	(Comminière)	3,100	
do	(American Congo Co.)	3,300	
Divers		7,000	172,900

Plantation Rubber From the Far East

EXPORTS OF CEYLON-GROWN RUBBER.

(From January 1 to April 21, 1913. Compiled by the Ceylon Chamber of Commerce.)

	1912.	1913.
To Great Britain .....*pounds*	1,950,654	3,501,382
To United States	1,234,188	2,270,021
To Belgium	451,218	822,696
To Germany	39,905	64,862
To Australia	34,002	176,617
To Japan	5,687	75,502
To Austria	5,320	25,515
To Italy	4,692	22,460
To Holland	.....	992
To Canada	12,121	.....
To Norway and Sweden	39	.....
Total	3,737,826	6,960,047

[Same period 1911—1,509,408; same 1910—740,937.]

The export figures of rubber for 1913 given in the above table include the imports re-exported. (These amount to 647,683 lb.—507,452 lb. from the Straits and 140,231 lb. from India.—Ed. C. O.) To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date, deduct the quantity of imports from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore. April 10.	Penang. Feb. 28.	Port Swettenham. March 31.	Total.
Great Britain...*pounds*	4,876,609	2,035,333	6,409,269	13,321,211
Continent	64,912	10,533	801,859	877,304
Japan	167,612	.....	.....	167,612
Ceylon	.....	15,467	393,460	408,927
United States	1,849,445	49,333	.....	1,898,778
Australia	26,540	.....	.....	26,540
Total, 1913	6,985,118	2,110,666	7,604,588	16,700,372
Same period, 1912.....	3,727,218	847,722	3,945,893	8,520,833
Same period, 1911.....	1,676,849	330,267	3,458,123	5,465,239
Same period, 1910.....	944,557	496,971	1,906,728	3,348,256

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WELCOMING THE BRAZILIANS.

DR. Lauro Severiano Müller and the other members of the special embassy sent to this country by Brazil to return the visits made during recent years, first by Secretary of State Root, and later by Secretary of State Knox, will probably never complain that the reception accorded them was not sufficiently warm and complete. Probably if they were to express their real sentiments they would say, "How fine this would all be if there were only half as much of it." But this is a very large country, and there are a great many people here and many organizations and institutions that cannot forbear showing the good-will which they sincerely feel toward the great Republic of the South—and this is the first chance they have had in some time to give any sort of expression to this feeling. The amiable Ambassador, therefore, and the other members of his special suite, will have to endure as well as they can the superabundance of our American welcome.

On the day of the envoy's arrival at New York he was lunched at noon and dined at night—as described in some detail elsewhere in this number—and besides did much sight-seeing and receiving and returning of visits. The next day was equally busy, terminating in a great banquet by the Chamber of Commerce, at the conclusion of which he started for Boston. There he was similarly feted, and taken out to Cambridge, where the degree of Doctor of Laws was conferred upon him by Harvard University. These two days are samples of the Ambassador's entire American visit.

The sincerity of this reception cannot be questioned; the great Northern Republic has the friendliest regard for the great Southern Republic. But in one respect our relations with Brazil are certainly susceptible of much improvement, and that is in the matter of trade, which has not yet struck the proper balance. We took from Brazil last year $142,000,000 worth of her products. We sent her in return only $40,000,000 worth of American wares. We took one half of the coffee and rubber that came from Brazil, and yet the bulk of Brazilian purchases was not made in the American market, but in England and Germany. This is not Brazil's fault, it is our own, and it is one that calls for early correction.

THE HOUSE OF COMMONS ON THE PUTUMAYO HORRORS.

THE committee appointed some months ago by the House of Commons of the British Parliament to investigate the Putumayo atrocities has brought in its report. As the English directors of the Peruvian Amazon Co. were men of standing and reputation, there naturally would be a temptation on the part of this committee to attribute all the blame to the Peruvian partners and as far as possible to whitewash the Englishmen connected with the company; but the committee has not yielded to this temptation. While it held the Peruvian manager, J. C. Arana, directly responsible for the atrocities and absolves the English directors from any personal acts for which they could be punished under the Slave Trade law of England, yet it finds them "deserving of severe censure," and adds: "Directors who simply attend board meetings and sign checks cannot escape from their share of moral responsibility when gross abuses are revealed." The committee further expresses its belief "that the Putumayo incidents are but a shocking instance of the conditions that are to be found over a wide area in South America."

This is certainly a very serious imputation to be brought against the rubber country. If it is true, and if the Putumayo revelations are simply one glimpse

of conditions widely prevalent, there certainly is a vast amount of work for humanitarians yet to accomplish; and if these imputations are not true, those interested in rubber gathering along the Amazon should take the promptest means of absolutely disproving them; for the rubber industry has now assumed such a large place in the general progress of civilization that it cannot afford to rest under any suspicion of being associated, at any stage, with barbarities such as the Putumayo investigation has brought to light.

WHY THIS DISCRIMINATION?

NATIONS don't get the opportunity every day to celebrate the twenty-fifth anniversary of an emperor's coronation; so undoubtedly some allowance must be made at such a time for an excursion or two from the paths of sound thinking. On that ground, and only on that ground, can an explanation be found for a queer bill under discussion in the German Reichstag making it a misdemeanor to feed babies from a bottle with a rubber mouthpiece, on the theory that it is an unsanitary practice. This is humorous enough to make even the Kaiser, oppressed by the glories of his twenty-five years' reign, give a good, honest guffaw; for if the rubber mouthpiece on the baby's bottle, which can be sterilized outside and inside, and put to soak in boiling water, if need be, is unsanitary, what can be said for the substitute for the rubber mouthpiece provided by nature, where none of these drastic processes of disinfection can be employed? If the rubber mouthpiece is to be made a misdemeanor, mothers should be made a crime.

HOW WILL MR. REDFIELD DO IT?

MR. REDFIELD, the Secretary of Commerce and Labor, has attempted at divers times to express himself as to the dire consequences that will come upon the American manufacturer who, in case the Underwood tariff becomes law, tries to readjust himself to the new conditions by reducing the wages of his employees. But just what can Mr. Redfield do? Where is the law that compels an American manufacturer to pay a higher wage than he feels he can afford to pay, or in fact to pay any wages at all, if he prefers to cease manufacturing? If, in the opinion of the present administration, certain tariff duties are too high, it is the privilege of the administration, if it can secure sufficient votes, to reduce these duties; but if, under such a reduction of duty, the manufacturer feels compelled to reduce his scale of costs, including cost of labor, so as to meet the new situation, how can he be prevented from so doing? Mr. Redfield has made it plain that in such a case the manufacturer will be visited by the strong disapproval of the administration; but would not the average manufacturer prefer to incur even this distressing consequence rather than to run his mills at a continuous loss?

COLLEGE MEN IN RUBBER FACTORIES.

COLLEGE men appear to be coming into their own, at least in rubber manufacture. There is an item in our news columns in this issue regarding the action of one of the large Akron rubber companies—already employing a number of college men—in sending out invitations through these college employes to the institutions from which they graduated, for promising candidates for employment in the company. The manager, referring to college men, remarks: "We like their spirit and enthusiasm. The broad viewpoint and training these men receive has helped wonderfully in fostering friendly relations with our customers." The young university graduate, with his fresh sheepskin under his arm, ought to be full of spirit and enthusiasm and have a broader outlook than the less educated man, but for a long time he was not at all in favor with manufacturers generally. They thought him altogether too theoretical and impractical. Evidently this view has changed.

TO DO THE ATLANTIC BY DIRIGIBLE.

INTERESTING advices have been received from Berlin to the effect that Count Zeppelin will probably try to cross the Atlantic this summer in one of his big dirigible balloons. This appears like a dare-devil thing to do, in view of the fate of the lamented "Akron" and Vaniman's ill-starred crew. Some day of course some intrepid navigator of the air will cross the Atlantic, but to the layman it would seem the better part of discretion to manoeuvre airships over land until they show less liability to explosions and to other disturbing tendencies before essaying the long leap from Europe to America.

It is quite intelligible, to be sure, that flyers should look on the Atlantic passage with longing eyes. The man who first accomplishes this flight will go down in history as a

second Columbus. It is undoubtedly a tremendous temptation to aviators. But where there is one chance of going down into history, there are fifty chances of going down into the Atlantic.

It is stated that the German Government will detail a number of warships to be stationed at regular intervals along the route which the Count will be expected to take, in order to lend a hand in case of need. It would be a good idea if the German Government would employ its entire navy in this capacity, for, in the first place, the aviators would undoubtedly need as many available sources of succor as possible, and in the second place, it would be a pleasant spectacle to see a navy put to such practical use.

PLENTY OF POTATOES FOR THE SYNTHESISTS.

THE centre of the rubber stage has been so fully occupied of late by the Brazilians with their vast schemes for competing against the shilling rubber of the Far East that the synthesists have almost been lost sight of; but a dispatch received a few days ago from Minneapolis, saying that there were 100,000 bushels of potatoes spoiling on the railroad tracks, for which no market could be found, brings synthetic rubber once more to mind. For the theory of the laboratory workers, both of England and of Germany—which in fact they have very thoroughly substantiated—is that rubber can be made from starch, with a few intermediate steps such as converting the starch into fusel oil and that into alcohol and that into isoprene, which in turn is changed into rubber. But the basic necessity, according to the leading champions of synthetic rubber, is starch, to be derived either from corn or potatoes—the chief obstacle in the way of deriving rubber from starch in commercial quantities being the cost of the starch. In the present situation, however, with the country full of last year's potatoes for which there is no demand owing to the arrival of this year's potatoes from the south, it would seem to be the synthesists' golden opportunity.

THE RUBBERIZING OF CITY NOISE.

THE staid citizens of the conservative East always associate noise with the exuberant West, but here is Chicago giving serious consideration to a municipal ordinance for doing away with noise, and especially looking to the greatly extended use of rubber for the tiring of vehicles.

Doctors disagree regarding most things (except the size of the fee they ought to have), but the neurologists all agree on this, that the reason city nerves are so unstrung is chiefly because of city noises; and of city noise traffic noises constitute seven-eighths. The tremendous nerve-wrack of so much din is everywhere recognized. There is hardly a city of any size in the country that does not have its anti-noise society, seeking to prod the local authorities into lessening the noise nuisance, and particularly the roar of traffic on the streets.

Here is an unlimited field for the use of rubber. Nobody need be pessimistic as to what we will do with our rubber if we have, as the experts promise us, 170,000 tons of it in 1915 and 340,000 tons in 1919. All of this rubber and a great deal more can be used if every vehicle that travels the streets is rubber-tired, and if the streets where quiet is particularly desired are rubber-paved, as around hospitals, schools, churches, and in residential districts. From such a beginning rubber pavements could spread indefinitely. The practicability of general rubber-paving being once proved, there is no limit to the amount of rubber that could be usefully employed.

If anyone has imagined that the chemists who have been at work so long on the problem of synthetic rubber have relaxed their energies, he will discover his mistake by simply referring to the recent issue of patents as given in the present number of THE INDIA RUBBER WORLD. He will find under the American Patents five that have recently been issued for a "Caoutchouc-like substance and process of making same" to Herr Hofman and his collaborators in the great laboratory in Elberfeld, Germany. It is not to be wondered at, however, that the synthesists keep persistently at work, for the prize they are striving for is a magnificent one, and the success which they have already attained is most encouraging. They have fully proved that synthetic rubber can be made. The only part of the problem yet remaining to be solved is how it may be made cheaply enough for commercial use.

An exceedingly interesting event occurred on June 28. The Hodgman Rubber Co. on that date celebrated its seventy-fifth anniversary, the company having been founded in 1838 by the grandfather of its present president. There were rubber companies in existence earlier than 1838, but they were short lived, for the early days in rubber manufacture were troublous and precarious. Some of the plants of those early companies were later acquired by new concerns, but it is doubtful if there is another company besides the Hodgman which was in operation in 1838 and which has had an uninterrupted career up to the present time. If there is, THE INDIA RUBBER WORLD would be glad to be informed; and if there is not, the distinction of being the oldest American rubber company must be accorded to the house of Hodgman. There will be found on another page a brief historical review of the fortunes and progress of this company during its 75 years.

Dr. Muller, Special Ambassador from Brazil.

DR. LAURO SEVERIANO MULLER, Minister of Foreign Affairs of Brazil and Special Ambassador of that country to the United States, reached New York on June 17 and, together with the other members of the special embassy, was received with marked civic honors and with great cordiality by various commercial bodies.

Undoubtedly the Ambassador has led a busy life, but it is safe to say that he never has had a busier day than his first in New York. In the morning he was taken, with the other members of the embassy, on a special sightseeing tour that carried him from the observation tower on the Woolworth building up to Grant's Tomb, eight miles away. Incidentally, he received a formal call from the Mayor, at his hotel, and shortly after returned the compliment at City Hall.

At 1 o'clock he was tendered a luncheon at the Plaza by the American Manufacturers' Export Association. This was attended by about 150 members and guests. Speeches were made by Assistant Secretary of State Dudley F. Malone, who had been appointed by the State Department to attend Ambassador Muller during his American trip, and who spoke briefly for the Federal Government; and also by Assistant Secretary of the Department of Commerce Edward F. Sweet, Collector John P. Mitchel, of the Port of New York, and James A. Farrell, president of the United States Steel Corporation. Dr. M. de Moreira, president of the association, presided and made an excellent address.

DR. LAURO MULLER.

In some respects the most informing speech of the occasion was made by Assistant Secretary Sweet, of the Department of Commerce, as he gave a great many facts relative to trade between Brazil and the United States, stating that our exports to that country had quadrupled in ten years—being only $10,000,000 in 1902 and $40,000,000 in 1912—while our imports from Brazil have doubled during the same decade, now amounting to $142,000,000.

Mr. Farrell at the conclusion of his address presented the guest of honor with a loving cup of gold standing some 20 inches high. Dr. Muller made a brief but felicitous reply, and proposed a toast to the health of the President of the United States.

Following this lunch, and more sightseeing in the afternoon, the Ambassador was given a reception and dinner in the evening, at the Knickerbocker, by the Pan American Society of the United States. The function was in charge of a dinner committee including Lloyd C. Griscom as chairman, Robert Bacon, August Belmont, President Nicholas Murray Butler, Jacob Schiff, James Speyer, and others. It was an elaborate affair, admirably "staged," to borrow a dramatic expression. Mr. Griscom acted as toastmaster.

The speaking was considerably curtailed, as the dinner did not begin until quarter of seven and it was to be followed by a theater party. The toastmaster—who was very popular among the Brazilians present, having been formerly Minister to Brazil and being

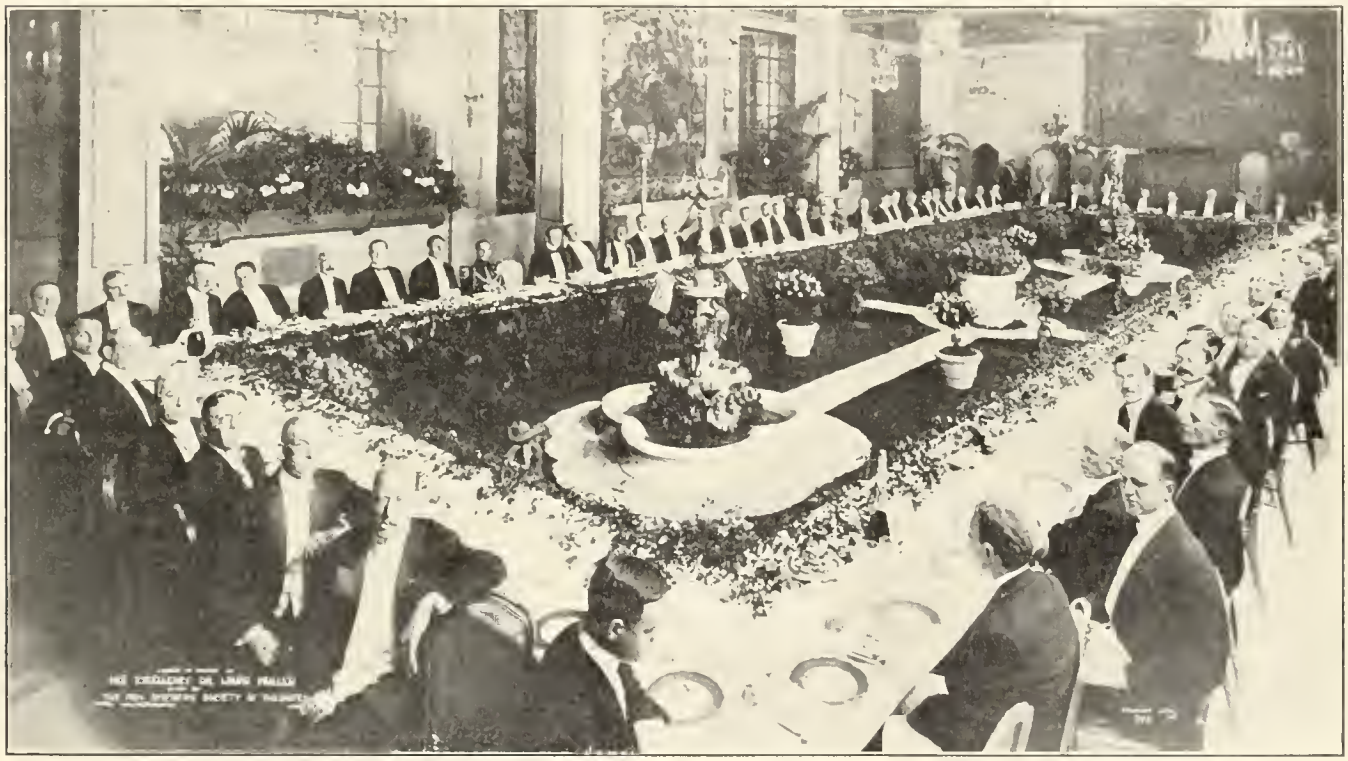
LUNCHEON GIVEN TO DR. MULLER BY THE AMERICAN MANUFACTURERS' EXPORT ASSOCIATION.

well known in that country introduced Third Assistant Secretary of State Malone to speak for the United States Government. Mr. Malone touched a responsive chord when he said that he would not be a party to any conspiracy to keep the diners away from the theater, which he knew they would enjoy more than his speaking. He was followed, briefly, by Ambassador Domicio da Gama, and then the chairman presented to the guest of honor a beautiful traveling clock, inscribed with an appropriate sentiment, from the Pan American Society. Dr. Müller responded in a few words, and at 9 o'clock the guests repaired to the New Amsterdam, a few doors away, on the same street, to witness "Follies," a light and sparkling performance, eminently adapted to the condition of the mercury on that particular evening. While quite a little of the humor of the performance consists of what is known as "local hits," the distinguished Brazilians, for whom the four lower boxes had been reserved, appeared to enjoy it heartily.

The editor of THE INDIA RUBBER WORLD had the pleasure of breakfasting with Dr. Müller last winter at his home in Rio de Janeiro and looks back upon the hour spent with this eminent Brazilian statesman as one of the pleasantest and most profitable during his entire visit to that interesting country.

Dr. Müller is rather a slender man—"wiry," as we say in America—and capable of an amount of physical and mental exertion to which many a heavy-weight would succumb. He is of much the same mould as Senator Root, whose visit to Brazil while Secretary of State is now being returned. While born in Brazil, he is of German ancestry and is a fine representative of the sterling German element that has become so prominent in Southern Brazil, both in government and commercial affairs.

The members of the special embassy attending Dr. Müller include Dr. Helio Lobo, secretary of the embassy; Capt. Antonio Sampayo, Lieut. Euclides Hermes da Fonseca, military aid and son of the President of the Brazilian Republic; Capt. Antonio da Fonseca, military attaché of the Brazilian Embassy at Washington; Dr. de Acquino, Leopoldo Moreira, Alberto do Ipanema Moreira, naval aide, and Capt. Thein Costa, commander of the Brazilian dreadnought Minas Geraes.



DINNER GIVEN TO DR. MÜLLER BY THE PAN-AMERICAN SOCIETY OF THE UNITED STATES.

COMPARATIVE PRICES OF BRAZILIAN AND PLANTATION RUBBER.

IN discussing the fact of hard Pará rubber being quoted at a premium over that of plantation rubber, the "Malay Mail" quotes a suggestion of Mr. E. L. Killick, to the effect that the former article should, in all newspaper quotations, be shown on the basis of its content in actual rubber. The Brazilian product is known to contain on an average 15 per cent. of moisture and impurities, there being thus only 85 per cent. of rubber in comparison with 100 per cent. in the pure product of the plantation. Thus if both qualities were quoted at 4s. the real proportionate cost of fine Pará would be about 4s 8½d, as compared with plantation rubber at 4s.

Mr. Killick (the rubber expert of the London "Financier") further holds that the vaunted superiority of hard fine Pará to plantation rubber is mainly traditional, that opinion gaining adherents every day, even among the most conservative of manufacturers. He adds that one or more of the new curing processes now on trial in the East may turn the scale of the market sentiment in favor of the plantation product. Mr. Wickham is actively engaged in Ceylon with his new curing system, which is said to turn out plantation rubber identical with fine Pará, less the impurities of the latter.

The new Byrne process is being taken up in Malaya with results of a highly encouraging nature, a trial consignment made to London some months ago, cured by this process, having been found in perfect condition, containing only ½ per cent. of moisture, and fully equal to any quality of first latex crêpe. It is reported that arrangements have been made to install the process and apparatus on about 30 rubber estates in Malaya and Ceylon.

In conclusion, the fact is urged that the chief handicap to the cultivated product has been the lack of proper standardization. The opinion is expressed that if the Byrne process is instrumental in bringing about this very desirable end it will do much to establish plantation rubber as the recognized market standard.

Problems in Vacuum Drying.

By J. P. Devine.

A PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912.

IN the selection of a topic for discussion I rather reluctantly, and yet from necessity, selected one that is intimately identified with the business in which I am engaged, and my remarks may at times seem somewhat personal. Among so many who have devoted their time, ability and energy to solving the many intricate problems in the cultivation and production of crude rubber, as well as to improving and refining methods and processes of manufacture of the ever increasing number of articles of the product of rubber, I can assure you that my limitations are not an unknown quantity.

My introduction to and connection with the rubber industry was made about ten years ago when I sought to interest manufacturers in this country in a new method of drying rubber. I found, however, that the manufacturer was disposed to be quite satisfied with the then existing method and did not hesitate to forcibly express his views and opinions as to any improvement in the drying process by shortening the time or otherwise, except by sacrificing the quality of the rubber and thereby jeopardizing the standards that years had taken to establish.

I had been convinced that the Passburg Vacuum Drying Apparatus, originated and designed by Emil Passburg and William Strohn, of Berlin, Germany, possessed unusual merit for economically and thoroughly removing moisture from materials and particularly where it is desired that the final traces should be removed; as is necessary in rubber and rubber compounding materials, I was ready to and did back my judgment by my reputation and resources for its introduction in this country. Many installations had at that time been made in Germany for drying rubber as well as other materials, and the results from its use, as well as its advantages, were highly satisfactory. Notwithstanding the discouragements of my early efforts, I made investigation as to methods of drying rubber and learned that little, if any, advancement or improvement had been made up to that time, and this confirmed my opinion of the value of the vacuum process, and I have maintained ever since its introduction that the vacuum drying process and apparatus introduced in Europe by Messrs. Passburg and Strohn, and in this country by myself, would be and has since proven of inestimable benefit to the rubber industry.

For years rubber was dried by any means convenient at hand that would not represent an expenditure of capital, the boiler room or a room adjacent thereto serving the purpose, until the effects of the elements upon the rubber began to receive attention and study. And then, the improvements consisted largely in the construction of drying lofts, the racks on which the sheeted rubber was hung and the distribution of heat by coils, or by circulation of hot air by means of fans and blowers; little regard, however, being given to temperature or length of time of the drying process. Until the introduction of the vacuum drying apparatus this primitive method was still in use, and occasionally an advocate is still found, who asserts that the hot air method is necessary for the proper curing of some particular grade of rubber. The fallacy of such assertions is proved by the use of the vacuum apparatus drying every grade of crude rubber, and I shall endeavor to make clear to you the claims I make for the superior quality of rubber dried by a properly designed and constructed vacuum apparatus.

While it is true, considerable thought was given to improving processes for drying rubber, there were no striking departures from the antiquated method of using hot air as the heating medium. The dust and dirt that would settle upon the rubber were the least of the evils; the construction of special drying rooms from which direct sunlight was excluded, and provisions to eliminate dust and dirt, and the regulation of temperatures for various grades of rubber, as well as the attempt to dry the air before being admitted into the drying room, all contributed to avoid the deterioration of the rubber by such means; but the value of these improvements was doubtful as they only tended to reduce the effect of high temperatures with a consequent prolongation of the drying period. The fact is that the two insidious enemies of rubber are heat and oxygen and these elements are, and always will be present, and necessarily so, in any system of hot air drying. They are deteriorating agents and their elimination is most essential for the proper drying of rubber. Their elimination by the vacuum apparatus has proven the superiority of the vacuum-dried rubber in the processes of its manufacture.

Another and serious objection to the hot air system of drying rubber is, that rubber as it comes from the washing machine, contains a very large proportion of mechanically bound moisture; while this is readily given off in the hot air drying room, its expulsion causes a contraction of the rubber, which, with the oxidation constantly taking place, causes a hardening of the surface that prevents the elimination of the last moisture within the rubber, except by a very prolonged drying period, during which time the rubber is further subjected to oxidation and not unlikely to excessive heat. Unless the last traces of moisture are eliminated, "blowing" is sure to result during the following stages of its manufacture.

We still hear occasionally about "curing" rubber; but in reality this is simply the removal of the final traces of moisture; as stated, under atmospheric conditions, this can only be accomplished by a prolonged drying period, while under vacuum the rubber is thoroughly dried in a very short time, and in practice rubber is immediately worked up after removal from the vacuum dryer.

The deteriorating agents—oxygen and excessive heat—can be eliminated only by the vacuum process and apparatus. This process and apparatus alone afford the proper conditions to dry rubber rapidly, uniformly and thoroughly at a low temperature and without oxidation, independent of climatic conditions.

It must be borne in mind that under atmospheric conditions a rapid boiling can only take place at 100 degs. C. or 212 degs. F. and that as the temperature decreases, the drying time is extended; while under vacuum the boiling point is greatly decreased and increasingly so as the barometric reading is approached. To illustrate, under a vacuum of 29 in. water boils at 25 degs. C. or 77 degs. F. Rubber dried in the vacuum chamber, while the first free water is being removed, will not need to be heated, practically, above the boiling point of water at that particular vacuum. As the moisture is evaporated from the rubber, naturally the temperature of the rubber being dried tends to increase; to prevent any overheating the supply of the heating medium—steam or hot water—is regulated accordingly and entirely shut off before the final drying; the last traces of moisture are therefore drawn off by the latent heat in the dryer accelerated by the high vacuum. Because seemingly high temperatures are used at the beginning of the drying process to expedite evaporation, the erroneous impression is sometimes formed that the rubber is overheated in the vacuum chamber; but in a properly constructed vacuum chamber with its auxiliaries—condenser and pump—properly balanced, the application of well-known physical laws absolutely prevents any overheating, if only reasonable care is taken in its operation.

Then too, the drying process taking place under a high vacuum in the absence of oxygen, oxidation cannot take place. The rubber not being overheated nor impaired by oxidation has greater elasticity and tensile strength, and accomplishes that which is the aim of every manufacturer—to obtain the greatest yield when being made into final product.

As different grades of rubber must be subjected to varying temperatures, the temperature of the heating medium is easily regulated without over-heating or materially affecting the drying time; so that the vacuum process offers many advantages over the old method of drying rubber, whether it be fine Pará or Pontianak.

Another very great advantage of the vacuum process lies in the fact that as the drying period is only a few hours, varying according to grade of rubber, the crude rubber can be washed, dried and processed in a fraction of a day; consequently there can be no deterioration after drying and before using—as it is well known that washed rubber oxidizes very rapidly—and there is no danger of the final manufactured product being porous or spongy, due to the presence of moisture.

The rubber industry has expanded tremendously in recent years, owing to an ever increasing variety of products in which rubber is used. To meet the daily factory demands for large quantities of crude rubber of different grades, the use of the old method of drying is disadvantageous and unsuitable, as well as excessively expensive.

In an average establishment of to-day, making a general line of rubber goods, two tons of crude rubber is a conservative estimate of its consumption. If the old hot-air method is used, in order to properly and thoroughly dry the washed and sheeted rubber, six weeks are consumed in the drying process. Seventy-two tons of rubber would be hanging in the drying lofts, which at $1 per pound, would represent an idle investment of $144,000 on raw material, the carrying charge at 5 per cent. amounting to upward of $20 per day; and should the carrying charges for instance, factory space, etc., be included, the above sum would be greatly increased.

The same quantity of rubber could be more thoroughly and permanently dried by one or two vacuum chambers in a day of ten hours, so as to "work up" whatever grade may be required for each day's output, and the initial cost of such an installation would be less than the cost of the old-fashioned drying rooms for the same quantity. So that the vacuum chamber pays for itself in the savings on investment, carrying, insurance and other fixed charges on raw material, as well as gives a flexibility to the factory for its daily production that cannot be obtained by any hot-air method.

To illustrate the great saving in factory space, a vacuum drying chamber having a capacity of approximately two tons of dry sheeted rubber per 10 hours, occupies a space of 8½ feet high, 15 feet wide by 9 feet long; and its auxiliaries, the condenser and the pump, can be conveniently located at any place in the factory in proximity to the dryer.

In addition, the vacuum drying process offers further advantages over the hot-air system because of the other factory economies derived by its use. The drying expenses for a hot-air system for steam consumption and attendance are enormous. It is an established fact that by any hot-air system not more than one-third of the heat units supplied are utilized in the evaporation of moisture; whereas by the vacuum process practically every heat unit is transmitted to and comes in direct contact with the material being dried. The saving of fuel is consequently most considerable not only on account of the very much shorter drying time—reduced from weeks to hours—but because of the much higher efficiency of the heating medium used in the vacuum drying process.

The vacuum drying apparatus is constructed of cast iron and is practically indestructible; there are no appreciable maintenance charges and fire hazards are eliminated.

As to attendance, only one operator is required to operate the vacuum dryer, who, while one charge is being dried, is engaged in filling the second set of trays with rubber for the next charge, and in recharging the apparatus replaces each tray of dried rubber with one of wet.

A vacuum drying apparatus consists of a vacuum drying chamber, which should be constructed of a special grade of close-grain homogeneous cast iron, equipped with heating shelves made of hydraulically straightened sheet steel plates. I emphasize that the plates should be hydraulically straightened, as by this means only can a uniform even and flat surface be secured on which the trays are placed and which will withstand the strain of the varying steam pressures used during the drying process. It is important that the heating shelves are so constructed as to insure an even surface, as any distortion of the heating shelves will cause the trays to rest uneven and thereby permit an unequal transmission of the heat to the material being dried.

Connected with the vacuum chamber is a condenser, and it is most important that this auxiliary be of proper condensing capacity for the vapors given out during the drying process. In the determination of the size of the condenser, somewhat complex problems arise, for not only must the volume and speed of such vapors be determined, but the proportion to be condensed during the early stages of the drying process must be determined, when the free or mechanical moisture is driven off; and in this connection, there must also be considered the temperature of the cooling water available for condensing purposes. These elements cannot be determined by any "Rule of Thumb Method," but must be carefully calculated. The size and capacity of the dry vacuum pump is of equal importance to the well balancing of a vacuum apparatus; for in order to secure the highest efficiency it is necessary to create the highest obtainable vacuum as quickly as possible, and when obtained to maintain a uniform vacuum throughout the drying period.

Complaints have occasionally been made by some people who have attempted to dry rubber under vacuum that such vacuum-dried rubber was not satisfactory, and the blame was promptly put on the vacuum drying apparatus and process. I may state that though these complaints were, of course, *bona fide*, the cause for such complaints was misplaced. The vacuum apparatus and process have the advantage of working almost automatically and require scarcely any attendance; but these advantages have in the above mentioned cases been abused, and of course not without detrimental effects to the vacuum-dried rubber.

To illustrate what I mean, a certain size of a vacuum apparatus is intended to receive a certain quantity of rubber per charge, and naturally the heating surface of the dryer, which is equivalent to its drying capacity, has, as I have stated, to be most carefully calculated for this purpose, and if the instructions for operating such apparatus, which are most simple, are only followed, it is a physical certainty, I might say, that the vacuum-dried rubber will be satisfactory and far superior to air-dried rubber, because with a vacuum apparatus and process nothing is left to chance or climatic conditions.

In cases, however, where complaints have arisen, the well-meaning people who were using such a dryer, being surprised at the capacity of the apparatus far exceeding their expectations, thought it right to go a little further by further increasing the charge of rubber and ultimately loading the apparatus with a much larger quantity than their apparatus was intended for. Of course, it was soon found that the increased charge could not be dried in the stated time, nor with the stated temperature of heating steam. As it is only human not to decrease one's desires, the natural human remedy was resorted to, that is, an increased temperature of heating steam and also a prolonged drying time. If you consider that the heating surface at a certain temperature within the dryer is intended for a layer of rubber of a uniform and certain thickness, its capacity, or rather

the beneficial results obtained therefrom, will be destroyed, or at least impaired, by an increased quantity of rubber per charge and an increased temperature of heating steam, because the heating surface itself remains the same; and it is this factor which remains constant—that upsets the results sought to be obtained by the violation of well known, but not considered, natural laws.

Experience has taught us to balance the necessary heating surface, to transmit a certain temperature to a certain layer of material to be dried; and it is quite erroneous to argue—though a common mistake—that the same beneficial results may be obtained from a larger quantity of material, by simply increasing the thickness of the drying material and increasing temperature, in the belief that the above mentioned factor would increase proportionately. This, however, is not the case, as I will more fully point out.

If one takes the conductivity of rubber alone into consideration, and the gradual but decreasing evaporation of the water contained therein, it can very easily be understood that by altering some of the factors the physical laws, on which our calculations are based, will be violated without any such intention, and the penalty will be an unsatisfactorily dried rubber; —the cause of which is naturally placed at the wrong door. The fault is not in the apparatus, but in the method of its operation. The same remarks refer to the auxiliaries of an apparatus for drying rubber. These auxiliaries consist of a condenser and vacuum pump which are both calculated to correspond with the capacity of the vacuum apparatus they are intended to serve.

To illustrate what I mean: A vacuum dryer of a certain drying capacity and calculated for a certain purpose is intended to evaporate a certain quantity of water in a given time, and of course, which is essential, at as high a vacuum as is possible under practical working conditions. All this is, to a great extent, based on practical experience with the very material our apparatus is used for. If, however, the condenser, instead of handling the quantity of vapor for which its cooling capacity is calculated, is burdened with ever so much larger a quantity, the result must be detrimental in two ways; it not only re-acts on the dryer and the product it is supposed to turn out regardless of the time, but also re-acts on the working of the pump.

As regards the vacuum dryer, it is essential to have its inner space continuously freed from the vapor arising from the drying material in order that no inner pressure may be created in such apparatus to lower the vacuum. This can only be done by having the arising vapors taken care of in their entirety during their passage through the condenser, the capacity of which cannot be changed at will.

If more vapors are created than the condenser is intended for, such vapors will partly remain in the dryer, and create inner pressure. The inner pressure thus created consequently reduces the vacuum in the dryer and as a consequence the boiling point of the water contained in the rubber is increased, and the rubber will be heated up to a temperature never intended, with detrimental effects to its quality. The overcharging, as I said before, affects the efficiency of the pump and prevents it from creating the desired high vacuum. The reason for this is that a dry vacuum pump—the only type we have in mind in this discussion—is intended, dimensioned and constructed for pumping air and not vapor, particularly as the latter expands so enormously under vacuum. If the pump were intended to exhaust rarified or expanded vapor in addition to rarified or expanded air, its dimensions would be so enormous as to make its use practically impossible.

If, therefore, the dry vacuum pump has to exhaust vapors which have passed uncondensed through the over-taxed condenser, a burden is placed on the pump for which it was never intended; its work becomes inefficient and most naturally impairs the vacuum and efficiency of the whole installation for drying purposes.

I have but briefly outlined some of the factors which have to be taken into most serious consideration in designing and constructing a proper vacuum dryer and its auxiliaries. I submit that it is wrong and unfair to subject apparatus to work for which it is not intended, and to charge the inefficient or insufficient results of such an abused vacuum drying installation at the door of the principles of drying under vacuum,—viz.: rapid and thorough drying at a low temperature.

Owing to the remoteness of plantations and the difficulties surrounding the transportation of machinery and appliances for removing impurities, only primitive and unscientific methods of preparation could be adopted. The use of the vacuum drying process was, in consequence, first introduced and adopted by the manufacturers to dry washed rubber. In recent years, however, much greater thought and study have been given to the preparation of the crude rubber on the plantation. Especially is this noticeable in the quality of the rubber reaching the market from the Malaysian Straits Settlements, and Congo Plantations, where vacuum drying apparatus has been installed and is found to be of great value. This is somewhat reflected in the moisture content of plantation rubber that reaches the market with a low percentage of moisture, as compared with 15 per cent. or more, in Upriver Pará. There can be little doubt that in the future the planter will understand that the price is based upon actual rubber and he will serve his purpose best by adopting the very latest method for the treatment of the raw material so as to free it from impurities and to reduce its moisture to a minimum percentage. Pure and dry rubber does not suffer in transit through fermentation caused by vegetable impurities and moisture. This improved quality of the raw material will not cause the discontinuance of the drying process in the factory. It will, however, tend to restrict the operation for the treatment of such rubber to remove the final percentage of moisture only, and thus simplify factory operation.

The highly satisfactory results to the manufacturer and planter from the scientific and research work in the laboratory have contributed materially to the advancement of the industry, and its further progress can and will be accomplished by a closer and more intimate relationship between the manufacturer or producer and the appliance manufacturer. We are, after all, in our several activities dependent one upon the other, and why not recognize our mutual obligations to co-operate, that a maximum productiveness by newer and better methods may be secured?

NORTH BRAZILIAN SYNDICATE.

Advices have been received from Pará, of the establishment in that city of the North Brazilian Syndicate, Ltd., for the purpose of representing firms, companies or syndicates of capitalists, both Brazilian and domiciled in other countries. Its object will be the development of the resources of Brazil while it will have agents in the principal countries of Europe and America.

STATISTICAL POSITION OF PARA RUBBER.

Statistics quoted by the "Financier" of London show that the visible supply of Pará and Peruvian rubber was reduced from 6,550 tons on May 1 to 6,350 tons on June 1. At the same time last year the visible supply was 6,880 tons. There is consequently a falling off of 530 tons, although the South American output for the season to date has increased by 3,000 tons. From these figures it is deduced that consumption has increased 3,530 tons within the year.

A new Canadian company known as the Sterling Rubber Co., Ltd., is now manufacturing a line of drug sundries at Guelph, Canada. F. S. Friedman is the secretary and treasurer of the company.

A Brazilian's Commentaries on the Akers Report.

THE May number of THE INDIA RUBBER WORLD contained a general review of the report of the Akers Commission, particularly with reference to that part of the report which dealt with the findings of the commission in the Middle East. The June issue contained a review of the Second Volume of the Report, which is devoted to the Amazon Valley. Below are some commentaries on the report, by a Brazilian, who for many years has been prominent in the rubber trade and is very familiar with the rubber industry of the Amazon.

A haphazard reader of the Akers report would be puzzled to trace its origin and might never obtain a proper explanation of its reason for existence unless he learns all the facts that have led to its publication. In this respect, it may be said to be a unique publication.

Such a report would need no explanation were it officially hall-marked or recognized as an investigation conscientiously made under Government direction. On the contrary, however, it seems to be a sort of high-handed censure, set up by a private individual for the special purpose of showing up the past negligence of the government or driving it into further action, at greater speed than it has been accustomed to move at in matters of this sort.

Had this report been published before the promulgation of the Federal Laws for the Economic Defense of Rubber, the object of the publication might have, and perhaps would have, been accepted as a kindly indication of what might be done by the Government to improve the native rubber industries of the Amazon. But after the promulgation of those laws, *all of which it recapitulates at the end*, this publication has a tinge of inopportune obtrusion that rather spoils its otherwise good features. But the report may have been published to assist the safe launching of a special company to undertake a colonization scheme in the lower Amazon. It looks as though it were specially worded to suit the needs of an attractive prospectus, meant to enlist the support of foreign capitalists in a certain direction.

About 1907 there appeared the first symptoms of the competition which rubber grown in Asia threatened to put up against Brazil at no distant date.

About that time Mr. J. J. G. Vianna published a series of articles in the Pará press, calling attention to the necessity which existed for all interested in the native rubber industry to prepare to meet the competition of the East.

A volume entitled "A Crise Amazonica" was written by Mr. J. A. Mendes, showing the defective methods under which native rubber was exploited, and inciting the Government to take steps to escape the dangers which were ahead by favoring the fiscal and commercial reforms that were necessary.

Mr. J. Simão da Costa was also a champion of the cause of the said reform, and under the heading of "Rational Valorisation of Rubber," proved that in planting rubber abundantly, as near as possible to the Atlantic ocean, in the state of Pará, and by cheapening the cost of living and of transportation in the whole region, lay the only hope of the Amazon's being able to hold its own against the middle East plantation rubber. This, of course, on condition that the government lent its credit and prestige to the undertaking. All these writers were unanimous in denouncing the excessive hardships of the export taxes on rubber producers and the exorbitant rates of freights prevailing. The Chamber of Commerce of Pará also presented a memorial to the Chamber of Deputies of the Federal Union pointing out the excessive customs duties which were levied on all imported necessaries of life.

If we now turn to the Report itself and its intrinsic value, it must be acknowledged that Mr. Akers did all that he was asked to do, to the best of his ability.

As regards the tapping modifications he has tried to introduce in fifty different *seringaes*, within a distance of seven thousand miles, it takes more optimism than we are accustomed to meet, even in the Amazon country, to feel confident that any considerable increase of the production will result therefrom. The chances are that nothing but the pleasant recollection of Mr. Akers' passage now remains at the spots he visited. We doubt whether Mr. Akers had time enough to study the philosophic temperament of the average Amazonian rubber gatherer and how prone he is to follow the lines of least resistance.

The tapping of rubber trees in the East is still an open question, and of course while there are hopes that some inventive genius will some day devise the proper mechanical means by which the extraction of the most latex with the least possible danger to the tree will be accomplished, no one can assert at present that the method Mr. Akers tried to introduce in the Amazons is the very best, nor the last word on the subject. His suggestion for the planting of vegetables along the margins of the Amazon is now followed up to the utmost ability of those who have *Estradas* right by the river banks. But Mr. Akers could not expect men to tap rubber ten and fifteen kilometers (six to ten miles) off the borders of the rivers and at the same time cultivate lands on these borders.

As regards Theobroma Cacao, Mr. Akers would be surprised to learn that the Government of Pará issued a booklet, written by Mr. J. Simão da Costa and Dr. J. Huber, teaching how best to plant cocoa and prepare same for export. No appreciable improvement has taken place up to the present, as the result of this propaganda, because labor for carrying out planting operations cannot be obtained economically.

The Amazon's evils have been correctly and conscientiously exposed in a lecture delivered at the Engineers' Club at Rio de Janeiro by Mr. J. Simão da Costa and may be summed up as follows:

1. Lack of sufficient capital to undertake all the necessary reforms to place the native rubber gathering industry on a sounder footing, industrially and commercially.

2. Lack of technical knowledge on the part of the management of the above industries.

3. Natural drawbacks brought about by the extent of territory which must be traveled over before reaching seringaes, the unhealthy nature of these, and the great distances between trees that are tapped.

And the only remedies for such evils were also suggested, and are as follows:

1. The undertaking of intensive planting of the *Hevea* tree, side by side with every other branch of tropical agriculture, at the most suitable places near the Atlantic Ocean and under government assistance and supervision, and for the benefit of the whole community.

The series of measures the government has promised to undertake, and is carrying out to the best of its ability, are all indirect methods of cheapening cost of living and transportation, but the benefits to be derived can only be felt after a lapse of many years. It is evident, therefore, that the greatest benefit that could be created for the whole region would be the planting of enough trees to produce, under modern methods and by carefully taught laborers, as much rubber from Pará plantations as the wild rubber which the Amazon is now shipping, leaving the upriver seringaes to be exploited, as long as it would pay those whose primitive habits could never be changed by law, or by the spreading of printed instructions, which they cannot read and would never be willing to follow.

The constant procrastination in the undertaking of the intensive culture of the *Hevea* tree, *and this alone,* is responsible for the crisis which now envelops the whole Amazonian region in a common cloud of insolvency and ruin, and Mr. Akers has failed to point out the real salvation. Nor would the Amazon Land and Colonisation Company, with all the favors which Mr. Farquhar may be powerful and influential enough to obtain from the government, be able to solve the problem: first, because many years must go by before the lands it means to exploit can become inhabitable by Europeans; and second, because the obstacles in the way and cost of transportation to and from the Amazon River, up to the settled portions, must always remain a large item of expenditure in this exploitation.

Mr. Akers tells us that he went up to the experimental farm at Igarape Assú, on the Braganza Railway, having made the visit in a single day, ten hours of which were consumed on the voyage. Yet he had enough time to see everything and report upon everything representing an outlay of £70,000. In a word: he saw enough to justify the unrestricted condemnation of the whole thing, because the soil is composed of either sand or hard clay.

Mr. Akers will be surprised to hear that geological investigations have led to the conclusion that the whole tract lying between Igarapé Assú, was, to a great extent, submerged for ages. There is not as much humus, then, in this region, as is commonly found in other portions of the State of Pará. As a matter of fact, the really good agricultural section nearest the city of Pará begins just beyond the River Peixe Boi, which is the limit of the Igarapé Assú experimental farm. The lands from this spot up to and beyond Braganza, up to the Gurupy River, are among the best tropical agricultural lands on earth.

The tobacco produced in this zone is famous, and tropical agricultural farms organized under modern methods and tilled by machinery would yield wonderful returns. But what makes this region the most valuable of all the lauded assets of the State of Pará is the excellence and healthiness of the climate of the whole region.

Of course the lands on this side of Pará do not all belong to the government, and no concession of free lands to the extent of 60,000 square kilometres could ever be granted for the asking. But if the lands were needed for any enterprise for the public weal and good, their acquisition by the government would be quite an easy matter.

It is a great pity, therefore, that this proposition was lost sight of by Mr. Akers and his associates, as it would be quite possible to establish European laborers in this region, and the advantages of such possibilities cannot be exaggerated.

As regards the introduction of Chinese immigrants, suggested by Mr. Akers, there is yet to be proven one single instance in which this class of immigrants, even under indenture, ever proved satisfactory in any country.

The history of this class of immigration in the United States of America, in Australia, and in South Africa is of common knowledge, even in the Amazon. Dr. Huber, who visited the East with all the open-minded fairness and generous disposition peculiar to men of science, would hardly endorse Mr. Akers' opinions in this respect. There is no doubt that the Chinese laborer is intelligent, hardy, thrifty and industrious. But at heart he is a merchant, a speculator, a gambler, and a vicious reprobate, just as soon as he feels free enough to act unhindered by military supervision. If there is one place more than another where Chinese immigrants would feel at liberty to found a colony of their own to the absolute exclusion of every one else, that place is the Amazon. In a word—Chinese are not given to intermixing with any other nationality, for the very lowest classes of Chinese have been reared to believe themselves the "sons of Heaven" and all other human beings devils.

Now if we understand Brazil's proclivities, as a nation, one of its best traits is the happy way in which all comers are assimilated. Even the Indians and the Africans are being assimilated by degrees, and the time will come when few traces of these will be left in certain States. If for no other than ethnological reasons, therefore, Chinese should not be imported into the Amazon country.

As a whole, Mr. Akers has rendered the special interests so powerful in Brazil yeoman service in placing before them in a bright, succinct and lucid form, an excellent analysis of the rubber industry of the Amazon valley and its other resources. But much which he now says had been constantly repeated before by others, if in a more unassuming way in terms just as clear and intelligent; and the Federal government of Brazil seems to have awakened to the true situation before Mr. Akers undertook his task. The appendices to his report are proof of this. These comprise all the measures the said government has resolved to carry out, and it would seem that the best and most practical thing to do now is for Mr. Akers and his associates to exert all their influence in seeing that all that has been decreed will be duly put into practice.

It would never do to seek any alteration of the present government program, at this stage. And if the government begins to falter and show signs of indifference in the realization of the measures already provided for legally, then, and only then, would it behoove those interested in the Amazon to force the government's hand.

But the worst feature of Mr. Akers' report is the fact that it was issued at the end of the year 1912, and embodies suggestions that were adequately provided for by the laws promulgated by the Federal government on the 5th of January, 1912.

Mr. Akers seems to have condensed in twelve concise paragraphs the sum total of his findings on the investigation he made in the Amazon, and therein embodies all the suggestions he puts forward as the proper program to be observed by the Brazilian government.

First. He suggests the new method of tapping.

Second. He suggests the establishment of an agricultural school for training tappers and teaching modern methods of preparing latex, and preparation of rubber for shipment.

If we now turn to pages 144, 145, *et seq.*, we find in Chapters II and III of the Law for Economic Defense of Rubber, promulgated on the 5th of January, 1912, the most elaborate provisions for all that Mr. Akers suggests, and very considerably more than he mentions.

Third. He suggests the erection of adequate machinery at Pará and Manáos for washing and preparing scrap rubber previous to shipment. By referring to page 146 of the said report, we find that the Federal government offered prizes for the erection of rubber refineries, not only in Pará and Manáos, but also in Ceará, Bahia, Recife and São Paulo.

Fourth. He suggests the appointment of expert rubber planters to superintend tapping operations and the preparation of rubber for shipment. The creation of the Superintendency of the Economic Defense of Rubber covers all these items in the most elaborate form.

Fifth. He advises the Federal government to enter into agreement with the northern governments for the reduction of duties. This is fully provided for in the said law, and we have already stated why it cannot be done from one day to another.

Sixth. He suggests the urging of the Federal government to carry out the establishment of central hospitals, etc., and goes on to mention the very law we are citing and which he should know is being carried out, no less a personage than the world-famed Dr. Oswaldo Cruz having been entrusted with the task.

Seventh. He suggests the establishment of centres of supply, where the employers of labor can purchase at reasonable rates all articles necessary for the workmen in the rubber dis-

tricts, and in this manner bring about a substantial reduction in the cost of living. If we turn to the said law we find that the government has provided for the creation of several agricultural farms precisely for the said purpose.

Eighth. He urges the establishment of one or more experimental stations in order to demonstrate economical methods of producing rubber and foodstuffs. If we turn to page 153, we find a complete law, making every provision conducing towards the point he suggests.

Tenth. He suggests arrangements to facilitate the acquisition of tapping tools and agricultural machinery at low costs. By virtue of the said law, all such machinery and tools are allowed to come into the country duty free; and it would be impossible for any government to do more than this, within reason.

And last, but not least, the introduction of the system of planting food crops in the alluvial deposits on the river banks after the annual floods. Mr. Akers will be astonished to hear that this system does not require to be introduced, for it has long been prevalent along the Amazon. The only reason why it is not carried on to greater extent is because there is not enough labor. To remedy this Mr. Akers suggests the introduction of coolies from China. The law already referred to provides for the introduction of native and European labor, for which suitable accommodations are to be built in the principal points along the Amazon.

So far, then, one wonders whether the Federal government was inspired by Mr. Akers or his associates, in the drafting of the good laws, or whether Mr. Akers chose to follow the government's trodden path, only emphasizing here and there the points of great importance to the interests he represents.

But on this score, we, at least, have not the slightest doubt. For almost every item provided for in the said laws was fully commented on by Dr. Passos de Miranda Fitho at the Rubber Congress held in Manáos in 1910 and the one which followed it in Rio in 1911. We have not the slightest doubt that Brazilians are quite capable of solving their own problems and have disposed of the whole matter, satisfactorily, so far as making legal provision and voting the appropriations were concerned.

Mr. Akers' report then could have been made for no other purpose than to infuse enthusiasm in European financial circles, and we are pleased to see this done so cleverly and effectually. The question is whether the same purpose could not have been attained by a simpler method. For, as we have said, the world wonders who is it that has authorized Mr. Akers to issue a report of such pretensions on the Amazon valley, when it seems that no one in authority ever asked him to do so. We are quite certain that Brazil is ever ready to accord the bond holders of any enterprise within its limits every reasonable opportunity to improve their position and satisfy themselves of the solidity of the guarantees they hold, and it looks a bit out of the ordinary to adopt the indirect methods that are constituted by what is now known as the "Akers' Mission."

BRAZILIAN CREDIT IN THE FIRST RANK.

In writing the "Folha do Norte," Mr. Franklin Morse remarks: "The future of South America is the subject of serious discussion among the principal European bankers. According to the classification made by Lombard Street of the South American countries, there figure in the first rank Brazil, Argentina and Chile; in the second rank—Peru and Uruguay; and in the third rank Bolivia and Colombia. The remaining South American countries are considered as outside the limit of financial operations of a serious character."

BRAZILIAN GEOGRAPHICAL CONGRESS.

The Brazilian Geographical Congress, which has met in recent years at Rio de Janeiro, São Paulo and Curuyuba, is to be held this year at Recifé, on September 7. A geographical exhibition will remain open until September 16.

A HANDSOME RUBBER MEDAL.

An interesting souvenir, prepared by the thoughtful Brazilians at the New York Rubber Exposition, was a disc of Fine Pará Rubber, to which was attached a rosette of satin ribbon in colors that artistically blended those of Brazil and the United States. This was put up in a sumptuous satin-lined box. It was planned as a decoration for the presiding officer at the Rubber Banquet that closed the Exposition. An error prevented its being worn, but it adorns the editorial sanctum and is one of the very pleasant souvenirs of a memorable occasion. Aside from its value as a remembrance it has a very distinctive prophetic value. The fact that a Brazilian is able to produce easily and cheaply a product in every way the equal of the finest plantation biscuit, points to what may be done with the latex of the wild *Hevea* once it has been found to be necessary.

NEW AKERS EXPEDITIONS.

As reported in the June issue of THE INDIA RUBBER WORLD, Mr. Akers had arrived in Pará, where a demonstration took place of the Oriental method of tapping.

The "Folha do Norte" states that he would leave Pará for Europe and the East in June, with the view of organizing two supplementary expeditions. These expeditions, it is added, are intended to develop the service of instruction on the Upper Purus and the Upper Juruá rivers, as well as in the region of the Lower Amazon.

BRAZILIAN PREFERENCE AGAIN IN FORCE.

As explained in the May issue of the INDIA RUBBER WORLD, page 409, certain American goods have hitherto enjoyed a preference in Brazil. This preference has amounted to 30 per cent. on wheat flour and 20 per cent. on some 15 other articles, including manufactures of rubber. These preferences were withdrawn by the Brazilian government on April 9, but have since been restored under the decree of May 6.

BRAZILIAN GOVERNMENT INCREASES GRANT TO RIO EXHIBITION.

At the request of the Minister of Agriculture, the Brazilian Minister of Finance has given instructions for the credits allotted the fiscal delegations of the various states for defraying the expenses connected with the Rio Exhibition to be increased by Rs. 208:480$000 ($69,493). The amount will be divided *pro rata* between the delegations of Amazonas, Pará, Maranhão, Ceará, Rio Grande do Norte, Parahyba, Pernambuco, Alagoas, Sergipe, Bahia, Parana and Goyaz.

THE EAST PASSES BRAZIL.

For the first time in the history of rubber, the production of rubber from the Far East for the year ending June 30, 1913, will exceed the output of rubber from Brazil. According to the closest estimates, the Brazilian production for the year will be 42,000 tons, an increase of about 2,000 tons over last year—while the output from the East will be somewhere from 50,000 to 54,000 tons, or 20 per cent. more than the Brazilian product. Incidentally, it might be mentioned that the price of fine Pará on June 1st was 90c a pound as against $1.10 a pound one year ago.

Important Meetings at Pará.

ON May 1, a largely attended meeting responded to the invitation of the Pará Commercial Association, for the purpose of discussing the crisis now existing in Amazonia and the measures necessary for improving present conditions. The meeting had more than local significance, being held under the presidency of Admiral José Carlos de Carvalho, a prominent member of the group of noted Brazilians at the recent New York Rubber Exposition, and federal deputy from the State of Rio Grande do Sul. In his opening remarks the admiral referred to his visit to New York in company with Dr. Jacques Huber, whom he termed a "friend of Amazonia," expressing his appreciation of the information he had acquired on that occasion. He promised to do all in his power to further the objects of the meeting.

Speaking of the high cost of freights, he stated that it was due to the excessive size of the crews which the river steamers were obliged to carry under existing regulations. A measure introduced dealing with river navigation had been defeated in the Federal Senate for political motives. Other measures of that character are now engaging legislative attention.

Dr. Ferreira Teixeira then addressed the meeting, expressing the opinion that instead of taking up the many complex divisions of the subject it would be advisable to try to solve two fundamental questions:—The reduction of the cost of producing rubber, and the attainment of a higher scale of value through the careful preparation of a fixed type of the article.

In connection with the first question, he advocated the diminution of municipal taxes and the lowering of the freights of the "Lloyd Brazileiro" for articles of food, as well as the revision of customs tariffs on food, clothing and fuel. He likewise urged the abolition of inter-state and other taxes on imported provisions, as well as a lowering of freights by Amazon steamers.

With regard to the preparation of rubber, the speaker considered the initiative rested with the *Seringueiro*. He likewise expressed the opinion that the latex should be strained before coagulation and that the rubber should be extremely dry; that is, should not contain any water. "Sernamby," however, should be washed, thus completely eliminating foreign substances.

The general conclusions urged by the speaker included the formation of a large association, composed of those who are interested in the agricultural, industrial and commercial prosperity of Pará. He likewise urged the nomination of a large committee for the purpose of convening a congress at Pará at the earliest date possible, representing the three last-named interests, in which the State of Amazonas and the Territory of Acre would have the right of taking part.

Dr. Jacques Huber then spoke and submitted various samples of plantation rubber.

An opportunity was then afforded those present of examining samples treated by the processes of Dr. Cerqueira Pinto and Señhor José Amando Mendes. For both of these processes superiority is claimed over the eastern product. Deputy Vianna Coutinho referred to his process for rubber smoking with an apparatus of his own design, as well as to a *machadinho*, also of his invention. Specimens of both the above appliances, with samples of rubber prepared by the first-named method, were on exhibition.

Telegrams were sent to the president of the Republic and the president of the Senate, expressing the hope that measures would be taken to reduce the cost of living.

Various tapping appliances were shown by their respective inventors and referred to a committee under the presidency of Dr Jacques Huber.

RUBBER CONGRESS BEING ORGANIZED.

A committee was appointed to organize a congress at an early date. The committee was under the presidency of Admiral de Carvalho; the members being: Dr. José Ferreira Teixeira, Dr. J. Huber, Dr. J. Barbosa Rodrigues, Jr., Dr. Manoel José Rebello, Jr., Dr. Banto José de Miranda, Claudino Romariz, Dr. Luciano Castro, Dr. Antonino Emiliano de Sousa Castro, J. A. Fonseca, Manoel Barreiros Lima, Francisco Coutinho, Jr., Dr. Manoel Lobato, Col. Avelino de Medeiros Chaves, and Manoel Vianna Coutinho.

The purpose of the congress will be to deal with the present rubber crisis and to develop rubber preparation.

Following out this resolution, the principal members of the committee and others interested in the subject assembled next day at the headquarters of the Pará Commercial Association under the chairmanship of Dr. Ferreira Teixeira.

The officials chosen to organize the congress were: President, Admiral Carvalho; vice-president, Dr. José Ferreira Teixeira; secretary, José Amando Mendes; treasurer, Manoel J. Rebello, Jr.; assistant secretary, Dr. Casimiro Gomez da Silva. Various other committees were likewise appointed which will deal with the reduction of export taxes and the abolition of inter-municipal imposts on flour, fish (fresh, dried and salted), meat, fruit, etc.

Among the resolutions adopted was one providing for sending circulars to all inventors of appliances for the extraction of rubber, asking them to forward these articles to the congress, accompanied by photographs and brief descriptions. The object of another resolution was to ask from the principal Amazonian navigation companies and shipowners the exemption from freight of exhibits intended for the congress.

The preparation of a program has been entrusted to a special committee, which is composed of Señhores Dr. Sousa Castro, Dr. J. Huber, and Amando Mendes. It was decided to invite a number of prominent men connected with the rubber industry to join the committee of organization.

The congress is scheduled to open on August 15th next, under the presidency of Dr. Enéas Martins, governor of the State of Pará. Several meetings of the committee have taken place, at which various details were elaborated.

MEETING OF PARA AVIADORS.

Following the two meetings already mentioned, the Pará aviadors and exporters (in conjunction with members of the "Defesa da Borracha"), held a meeting on May 9, to consider the proposal of Admiral Carvalho. This proposal, as reproduced by the "Folha do Norte," was based on the alleged want of care in the preparation of rubber, particularly of "Sernamby." It urged that it is for the dealers to insist on the adoption of a system of curing, and on the establishment of the types best fitted to compete with plantation rubbers, thus improving the quality while reducing the expenses. For "Sernamby" there should be a perfectly clean quality, free from all impurities. For the quality known as "fine," a type should be established prepared on the system of J. A. Mendes, Vianna Coutinho, Cerqueira Pinto, or on any other system with like advantages.

Señhor Rebello urged the gradual adoption of improvements without giving up the present system. Dr. Ferreira Teixeira expressed his approval of the principal features of Admiral Carvalho's proposal, advocating the elimination of the "Entrefine" and "Cameta Sernamby" grades. Dr. Huber remarked that a transformation of system could not be general, as the type made in the form of balls was preferred by foreign consumers. The smoking ought to be continued as at present, if no prejudicial elements were present. The speaker coincided

with those who had advocated restricting the grades to Sernamby and "Fine," eliminating the "Entrefine" type.

Señhor Vianna Coutinho opposed the elimination of "Entrefine" rubber, as there are regions which cannot produce the latex required for the "Fine" grade.

The resolutions finally adopted were:

1. The elimination as far as possible, of the "Entrefine" grade, by the diffusion of the processes of smoking in sheets (Amando Mendes and Vianna Coutinho), and of the chemical processes of Cerqueira Pinto and others, when approved by the governor of the state.

2. The elimination of the type of "Cameta Sernamby."

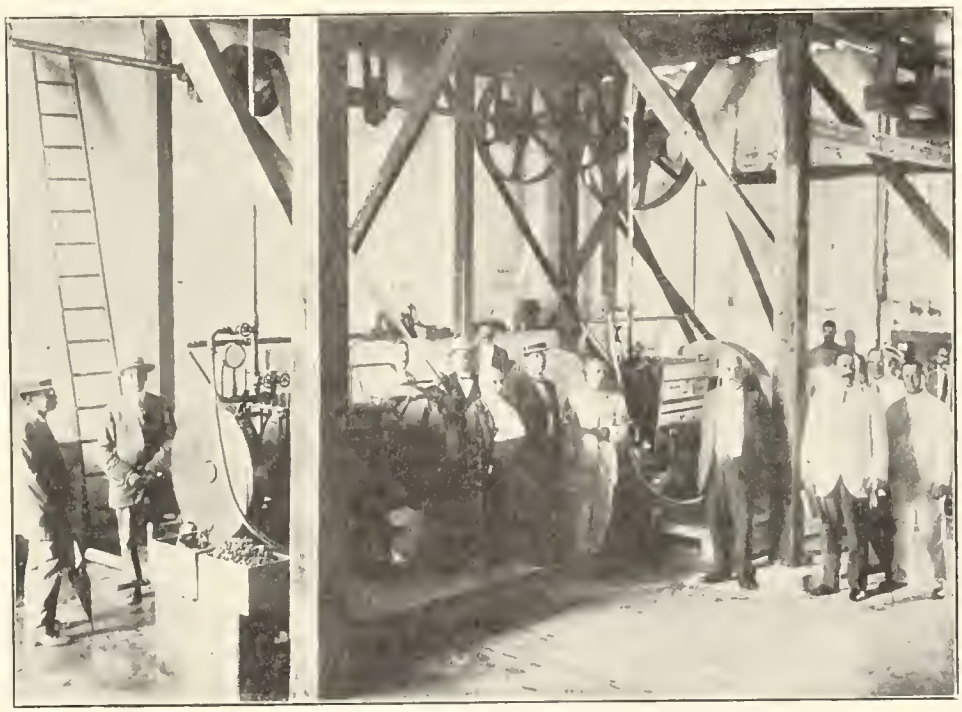
3. The improvement of Island "Sernamby."

4. The manufacture of Caucho by the Cerqueira Pinto process or other equivalent process.

Considerable interest attaches to the above meetings. The proposed establishment of a large association is doubtless expected to facilitate the carrying out of the various suggestions which have lately been made for the development of the Brazilian rubber industry.

WASHING RUBBER IN MANAOS.

A LETTER has just been received from Manáos—which is reproduced below—which is interesting not only because of its reference to the subject of washing machines, treated at length in the May issue of THE INDIA RUBBER WORLD, but particularly as giving a concrete illustration of the new activity in the Amazon rubber country in the campaign for producing cleaner and cheaper rubber, so as to be able to compete with the greatly increased product of the East. The samples referred to in the letter look like good, hard, dry rubber, and if the washing cost is not too great the work of these machines ought to prove entirely satisfactory.



RUBBER WASHING MACHINES INSTALLED AT MANAOS.

H.C.PEARSON,ESQ.,

EDITOR OF THE INDIA RUBBER WORLD, NEW YORK:

Dear Sir—In the issue of the INDIA RUBBER WORLD dated May 1, 1913, I noted with interest what you say about rubber washing and washing machines on pages 396 and 411.

As an interested party in the matter, I beg leave to state that rubber washing is indeed an accomplished fact in Manáos. At about the time when the famous law about the "Defesa da Borracha" was passed, I decided to try whether it would be possible to find a suitable machine for washing such rubber as comes to our market full of impurities, and which suffers in consequence a heavy reduction in price. For this purpose I took with me to Europe a certain quantity of dirty coarse, and after having seen various other systems of machines I visited Messrs. Werner & Pfleiderer in Cannstadt, who showed me their new rubber washing machines and washed in my presence the samples I gave them. As the result was a satisfactory one I bought two of their machines. They offered me the agency for their machines in Northern Brazil, which I accepted.

The above-mentioned two machines have been installed in the stores of the well-known firm of J. G. Araujo, of Manáos, and were operated recently in the presence of his Excellency the Governor of the State of Amazon and the local superintendent of the "Defesa da Borracha," as well as of other authorities and merchants.

My object is not to wash fine rubber, but only such qualities as would not find ready buyers in the consuming markets, i. e., dirty coarse, dirty caucho balls, etc. which would have to be sold at very low prices and would only impair confidence in good qualities. By sending a clean and uniform quality to the consuming markets I hope to establish a standard quality.

Enclosed I beg to hand you some photos showing the installation of the two machines, and by same mail I am sending you a sample of washed coarse.

I do not claim that the system is a perfect one as yet, and I shall be thankful for any hint which may be useful for its improvement.

I am, dear sir, yours very truly. PH. SCHLEE.

Manáos, May 26, 1913.

AMAZON EXPLORERS QUIT THEIR SHIP.

In the April issue of THE INDIA RUBBER WORLD mention was made of the expedition sent out under the auspices of the University of Pennsylvania for the purpose of exploring the upper tributaries of the Amazon. The expedition set sail on the 19th of March, in the "Pennsylvania," a yacht of 184 tons burden. Unfortunately, the "Pennsylvania" has not lived up to expectations. It sprang a leak soon after leaving Philadelphia and had to put in at Newport News. It was also found necessary to make further repairs on arrival at Charleston; and this experience was repeated off the Florida coast, so that they put into Jacksonville, where they abandoned the yacht. The expedition, however, will proceed to the Amazon, where a new boat suitable for exploration purposes will be secured.

DR. HUBER AND THE TURIN EXHIBITION OF 1911.

A banquet was lately offered at the Café da Paz, Pará to Dr. Jacques Huber and Señhor Jayme Abreu, two of the three representatives of Pará at the Turin Exhibition of 1911. Appropriate reference was made to the memory of the late Commander João Rodriguez Martins, the third delegate, deceased since the exhibition.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

THE City of Akron, which was the first city in the United States to use an automobile fire patrol, has just let contracts which will more adequately protect its various industries, among which are those manufacturing rubber goods. These contracts provide for the installation of motor apparatus and will do away entirely with all that now drawn by horses. The city has installed in its water plant heavier pumping engines, so that the present pressure is much stronger.

Contracts for the new reservoir which will dam the waters of the Big Cuyahoga River for almost two miles, with a maximum depth of 33 feet, have been let, and the water mains connecting the large reservoir with the power reservoir are rapidly being placed in position; so that within two years' time Akron will have a supply of pure water sufficient for a population several times the present one, including the needs of the rubber plants, several of the larger of which use as much water as many of the smaller cities of this country, ranging in size from 20,000 to 50,000 people. The new supply taken from the Cuyahoga River, together with that from the Tuscarawas River and the Portage Lakes, will give the City of Akron and vicinity enough water to adequately take care of the anticipated growth in its industries and population for many years to come.

* * *

Saturday afternoon, June 7, a fire broke out in the general offices of The Goodyear Tire and Rubber Co. among the office supplies which filled the basement. The fire before discovered affected the gas pipes, so that gas began to escape. There being no exit for the smoke, it became very dense, and on account of this and the gas the fire was very hard to locate. Six lines of hose were laid and it took three hours to subdue the blaze. When finally conquered the water lay several feet deep upon the basement floor, and although the total damage caused by the fire was not great, much damage was done by smoke and water.

The volunteer fire department of the company aided the city department. Mr. Shiller, from the master mechanic's office, one of the volunteers, stuck with the best of the veterans and finally had to be carried out, with several of the city force, overcome by smoke and gas. Both city and volunteer departments gave excellent service.

* * *

W. B. Miller, former secretary and sales manager of the Diamond Rubber Co., leaves in a week for his new home at Beverly Farm, Massachusetts. Miller's West Hill home was sold to Henry Manton, vice-president of the First-Second National Bank.

"No, I am not going into business again," said Miller. "I'm just going to loaf."

* * *

The Swinehart Tire and Rubber Co. is rapidly completing its large new addition, which will give space to almost double its present tire output.

* * *

As a tribute to Mr. Mason of The B. F. Goodrich Co., who has done so much for his home city, the school board has named the new school building which is being erected in East Akron the Mason School.

* * *

Many employes of the various rubber factories have, during the last few years, built homes on the west side, so that Akron is compelled to erect a new high school building, not far from the Perkins homestead.

* * *

The chemical section of the Goodyear Technical Society has the promise of the noted industrial chemist, Dr. John A. Shaeffer, chief chemist of The Picher Lead Co., Joplin, Missouri, to give them a lecture on "The Smelting and Casting of Lead and the Preparation of Lead Compound." He has many lantern slides illustrating the lead mines in Missouri, and will give the main facts concerning the manufacture of litharge and sublimed white lead, largely used in the compounding of rubber.

* * *

The Goodyear Tire and Rubber Co., through its vice-president, C. W. Seiberling, made the following statement:

"Sales of The Goodyear Tire and Rubber Co. over the last six months show the following gains, as compared with the previous year: April, 1913, 8 per cent.; March, 1913, 2 per cent.; February, 1913, 24 per cent.; January, 1913, 45 per cent.; December, 1912, 52 per cent.; November, 1912, 31 per cent. Although figures for May are not yet in, officials expect the gain in that month to be about 15 per cent.

"When we started this year everything indicated that we would do a $40,000,000 gross business. Now, however, indications are for figures considerably below that amount and we shall be satisfied with a 25 per cent. increase in sales as compared with a year ago, which would bring our gross business in 1913 up to about $32,000,000 or $33,000,000. There appears to be a general slowing up in business all around and the rubber goods trade has suffered as well as the rest.

"We have now about 6,100 employes, but could use at least 1,500 more. We are manufacturing about 5,500 automobile tires per day, as compared with 6,500 before the strike. In addition to the automobile tires, we are also putting out about 1,000 each of bicycle and motorcycle tires daily.

"So far as the reduction in tariff on rubber goods is concerned, I do not think that the proposed schedule will hurt us. We are well prepared to meet any foreign competition that may be offered.

"The Goodyear company is now going into the manufacture of mechanical rubber goods on a far greater scale than has ever before been attempted. Within two or three years we expect to be able to manufacture from $2,000,000 to $3,000,000 of mechanical rubber goods a year. We are not doing over $500,000 in this department at the present time.

"It has never been, with but one exception, the policy of the Goodyear management to sell any new stock that it might be deemed advisable to put out. This stock has always been distributed in the form of stock dividends. The Goodyear company has a little over $10,000,000 stock outstanding of an authorized issue of $15,000,000. The company is now paying 12 per cent. in dividends annually on its common stock. This dividend is paid in a single disbursement at the close of the fiscal year. It is the present intention of the management to make a distribution at the close of 1913 at least as large as that of a year ago."

* * *

The Goodyear Tire and Rubber Co. recently shipped to the Far East a large consignment of specially built rubber tires for use on jinrikishas.

* * *

C. A. Swinehart, for several years sales manager of the Swinehart Tire and Rubber Co., of Akron, Ohio, has become general manager of the Vulcan Rubber Co., of Erie, Pennsylvania. This company has been manufacturing mechanical rubber goods and inner tubes and now, under the management of Mr. Swinehart, will take up the manufacture of commercial truck tires. The company, in which Mr. Swinehart and Mr. H. F. Burger, formerly with the Swinehart company, have acquired an interest, is incorporated for $200,000. Mr. Swinehart has designed a solid tire for which he claims special merit and which this company will place upon the market.

* * *

Emil Gammeter, sales manager of the Universal Stock Calender Shells Co., Cadiz, Ohio, and also of "Aluminum

Flake," has gone to Europe, where he expects to organize sales agencies for his products.

* * *

On Saturday, June 14, Akron and Columbiana, Ohio, and all the towns and cities between, were the scene of one of the most "exclusive affairs" of the season in automobile circles. It was the occasion of "the Firestone Foremen's Home-

Firestone Foremen's Homestead Dinner.

stead Dinner," Mr. Firestone's invitation list being strictly limited to factory superintendents and foremen, with officials and directors of the Firestone Tire and Rubber Co. Even so, a fleet of about 30 cars was needed, the guests numbering 145. Charles S. Whitman, District Attorney of New York and candidate for Mayor, was the only guest drawn from outside the "Firestone Family." In addressing the diners—"down on the farm"—Mr. Whitman told of his life-long friendship with Mr. Firestone and of his years of boyhood spent in Columbiana County, Ohio, during which time he was a frequent visitor at the Firestone Farm.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

GENERAL conditions of the local rubber trade have not changed materially the past month. The retail trade is moderately active for footwear, clothing and sundries, while the wholesale business has been fair in all lines. The constantly increasing use of automobiles this season has benefited local tire houses, who report activity in that line. While almost every known make of tire has local representation, there is no complaint to be heard from dealers, jobbers and branch houses of lack of trade.

* * *

The day of leather sole and heel Oxfords for summer wear is past. This is the verdict of local shoe manufacturers who this year were obliged to put on the market, in competition with the big shoe factories of the country, Oxfords and pumps with rubber soles and heels. It is the unanimous opinion of the shoe manufacturers locally that the use of rubber soles and heels will ultimately result in the adoption of rubber bottoms for all kinds of shoes, as the demand will be for this class of footwear after the public becomes accustomed to the use of rubber soles and heels. What effect the adoption of rubber soles will have upon the shoe market with reference to price remains to be developed.

* * *

An interesting part of the exhibit which was held in connection with the annual convention of the Building Owners and Managers held in this city June 12-14, was the display of rubber accessories used in the modern office buildings and skyscrapers throughout the country. This part of the display was interesting to the delegates to the convention, as well as to the casual visitor to the exhibition, as it gave visitors an insight into the large number of uses to which rubber is applied in the manufacture of necessities for the modern office buildings of today. One of the largest exhibitors was the Dryden Rubber Co., of Chicago. The Atlas Rubber & Belting Co. of this city also had a unique display.

* * *

"Not guilty of stealing rubber, goodbye." This was the note found by the coroner beside the body of John Thompson, receiving clerk at the C. H. & D. railroad yards, who committed suicide by cutting his throat. Several weeks ago it was reported to the police that a number of tires, consigned to local dealers, were taken from the depot. According to testimony brought out at the inquest, it developed that Thompson was driven insane by companions who jokingly accused him of stealing the rubber tires.

* * *

The B. F. Goodrich Co. opened temporary employment offices in this city enlisting men to go to Akron to learn the rubber trade. It was announced at the employment office, which was established at the Grand Hotel, that on account of the increased business the company needs about 2,000 additional workmen, and to this end efforts are being made to recruit this small army of men from the various large cities within a reasonable distance from Akron.

* * *

James Albert Green, one of the directors of the Cincinnati Rubber Manufacturing Co., was appointed by the Common Pleas Judges of the County as a member of the Public Library Board of Trustees.

* * *

Judging from reports by proprietors of the various automobile supply houses, it would seem that this part of the country has taken on an exaggerated case of automobile craze. For example, A. C. Davis, of Coughlin & Davis, says: "Not in the seven years of my activity in the auto supply trade has there been so enormous a demand for accessories and so annoying an inability on part of the manufacturers to furnish them with any degree of promptness. Daily we are telegraphing and using long distance telephone, but without avail, in hurrying the shipment of goods that are in any wise staple. Similar complaints are heard in salesrooms of nearly every other supply house in the city.

* * *

The death on June 5 of Mrs. Cora Hayward Crawford, wife of Dr. J. M. Crawford, one of the founders of the Cincinnati Rubber Manufacturing Co. and for several years president of that company and now one of its directors, awakened sincere and widespread regret in the circles of the city in which for years she had been a gracious and winning personality. During the six years that Dr. Crawford was United States Consul General at St. Petersburg she was a resident of that city. Some six years ago she made an extensive tour of Mexico, and her observations and impressions have been given in a delightful volume, "The Land of the Montezumas."

* * *

The American Manufacturing and Distributing Co., of Louisville, has placed on the market a tire puncture cure known as "Prest-O-Ceal." The company has launched a big advertising campaign to introduce the product, and headquarters have been opened at 123 East Seventh street. It is claimed for the new product that it will seal up punctures of any size. The product is a paste-like amalgam of mineral and fibrous material.

The Ohio Rubber Co., which is retiring from the retail trade in this city and will operate a big wholesale house here—announcement of which was made in this column last month—started a "retail discontinuation sale" June 10 to continue until the big retail stock carried by the company is disposed of. The Ohio company, through the efficient management of Edward G. Howard, enjoys an excellent wholesale trade in this city and vicinity. It was because of this large trade locally that the company decided to discontinue the retail business, as it was in a way competing with its own customers. The company will act as jobbers or selling agents for the leading rubber companies of the country.

* * *

The annual "Orphans' Parade and Outing," as sponsored yearly by the Cincinnati Automobile Club, eclipsed this year all previous efforts. Approximately 300 machines were used in the parade, while 1,700 "kiddies" were made happy by reason of a delightful "joy ride." To encourage participation in the outing by auto owners, the committee this year having charge of the parade arranged for prizes to be awarded owners taking part. The local tire houses were the most liberal contributors of prizes, there being no less than ten different makes of inner tubes offered as prizes. The prizes consisted of every conceivable accessory used about an automobile, and they were hotly competed for.

* * *

Fred A. Geier, vice-president of the Cincinnati Rubber Manufacturing Co., has come prominently to the front in the past month in connection with Cincinnati's philanthropic work. He has been elected president of the Council for Social Agencies, which was incorporated last month, and at a recent meeting of "the better housing movement," which has in prospect the erection of modern homes for workmen, the rents of which are to be suited to the income of the occupants, Mr. Geier subscribed $10,000 to the fund being raised to carry on the work.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

THE trade in rubber tires is brisk, as of course it ought to be at this season of the year, for this is practically the rush season on tires. Old tires carried over on machines through the winter have by this time begun to show more or less wear and require replacing. There is considerable activity in mechanical rubber goods, particularly of the kind used on the large Western farms—rubber belting, for instance, for outdoor machinery. And in the footwear line it can be safely predicated that the popularity of the rubber soled shoe has reached Chicago. There is a very large sale for this exceedingly comfortable summer shoe.

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The convention of the National Building Managers' Association, held at Cincinnati last month, was attended by many representatives of the local rubber houses, several of whom had exhibits at the convention and who report the returns therefrom as entirely satisfactory. The event is an annual one. It is a gathering of the managers of buildings throughout the country, for the purpose of getting new ideas on building equipment. Local dealers exhibited their various lines of fire hose equipment for modern office buildings, and the other necessary requirements of such buildings, as rubber matting, etc.

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W. H. Salisbury & Co. are featuring a new garden hose mending device which is proving popular with the user of garden hose. It is a metal contrivance with clincher ends. A brass tube inserted in the hose couples the place to be mended, and the ends are clinched into the hose; which insures a firm grip. The price is moderate, which further commends its use to the consumer.

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How ridiculous the rubber trade of Chicago is being made by the "shoddy" stores—of which an exposé was printed in this column last month—is indicated by the following paragraph clipped from the widely read humorous column of one of the Chicago morning papers: "As all raincoat and trunk dealers are constantly in a state of being overstocked or going out of business and selling below cost, I would suggest that all of the raincoats be packed in all of the trunks and shipped to some far off country where both commodities will find a profit producing market."

Despite individual fuming and complaining among the dealers in regard to the situation, no concerted action has been taken to offset the effect of these thoroughly unreliable houses. All agree that something must be done, but no plausible plan has as yet been presented. In the case of similar unscrupulous dealers in the furniture trade one house took it upon itself to expose their business methods in all of the daily papers; which plan proved effective, keeping customers away from those places.

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A bill for receiver was filed against the $1,000,000 Dutch Guiana Culture company, a rubber planting concern with an Arizona charter, and with offices in the City Hall Square building. The petitioner, Roy C. Holbrook, secretary of the company, alleges waste of stockholders' funds by other officers. L. C. Parker is president and treasurer; James A. Crawford and Louis T. Orr are directors.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

THE annual sales conference of the representatives of the National India Rubber Co., of Bristol, with delegates from various States in the Union, was held at Bristol early in the month. There was a two days' gathering, during which business and pleasure were so combined as to detract from neither. Conferences were held with Vice-President LeBaron C. Colt at the offices of the company; and the wire department of the corporation was specially discussed in regard to the betterment of the business in insulated wire, which is one of the chief products of the Bristol plant.

The sales people arrived on Thursday morning, June 12, and a business meeting was at once held. The ground covered during the past year was considered at length, and reports and suggestions were offered by the delegates from the different sections. On Thursday evening Vice-President Colt entertained the visitors at his home on Smith street, when brief addresses were made by all present and Fay's orchestra rendered musical selections. Another business session was held the following forenoon at the company's offices, after which the party was entertained at a Rhode Island clambake at the farm of Col. Samuel P. Colt at Poppasquash Neck. Later a baseball game was played, the married and the single men forming opposing teams. The group was then photographed, and after general sightseeing the conference was ended. At the clambake were: Vice-President Le Baron C. Colt, Treasurer A. H. Emerson, F. L. Dunbar, W. R. Davis, J. W. Franklin, W. J. McCaw and J. T. Ashton, all of Bristol; A. P. Eckhert, M. F. King, George E. Shaw, R. M. Campbell and Rudolph R. Rosa, of New York; P. F. Lyons and M. E. Flaherty, of Chicago; William A. Wardwell, of Boston; E. E. Curry, of Atlanta, Ga., and H. B. Squires, of San Francisco.

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The Revere Rubber Co. has commenced the erection of a considerable addition to its one-story frame building on Eagle street, this city, to be used for office purposes.

A system of pensions is being established in the factory of the National Rubber Co. at Bristol, and for several months past half a dozen of the former employes of the concern have been receiving weekly pensions. Two of the beneficiaries under the pension system, John Newbold and William H. Young, had served in the factory for upward of forty years each.

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A new shipping shed, of wood with a concrete foundation, has been erected at the factory of the National India Rubber Co. at Bristol, for the shipment of insulated wire. It is 160 feet in length and 70 feet in width.

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The Woonsocket Rubber Co. of Woonsocket, recently called for fifty girls to learn rubber shoemaking. The company is running to capacity to keep up to the demands on these goods.

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The Woonsocket Rubber Co., the Joseph Banigan Rubber Co. and the Marvel Rubber Co., all subsidiaries of the United States Rubber Co., held annual meetings of stockholders on May 27. The meeting of the Woonsocket Rubber Co. was held at the company's office at Woonsocket, and Walter S. Ballou, Samuel P. Colt, Walter A. Read, John W. Ellis, James Harris, George Schlosser and Clarence H. Guild were elected directors. All of the seven, with the exception of Messrs. Schlosser and Guild, were re-elected, these two filling the vacancies caused by the death of Edward R. Rice and the resignation of Homer E. Sawyer. Walter S. Ballou was re-elected president and Clarence H. Guild, of Providence, secretary and treasurer. Homer E. Sawyer was chosen general manager in place of Walter S. Ballou, who previously held the latter position in addition to being the corporation's president. George Schlosser, of Woonsocket was again chosen general superintendent and Henry C. Wagner, of Woonsocket, superintendent.

At the meeting of the Joseph Banigan Rubber Co. Walter S. Ballou, Samuel P. Colt, Walter A. Read, John W. Ellis and Clarence H. Guild were elected directors. Messrs. Read and Ellis are new men on this board, taking the places of Homer E. Sawyer, resigned, and Edward R. Rice, deceased. The directors again chose Walter S. Ballou president and Clarence H. Guild secretary-treasurer. Mr. Sawyer was appointed general manager in place of Mr. Ballou, who had previously held that position.

The meeting of the Marvel Rubber Co. resulted in the election of Samuel P. Colt, Walter S. Ballou, Walter A. Read John W. Ellis and James Harris as directors. Samuel P. Colt was re-elected president and Clarence H. Guild secretary-treasurer. Homer E. Sawyer was appointed general manager in place of Col. Colt.

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Among the corporations doing business in Rhode Island that have a corporate excess of $50,000 or more, according to the latest assessment made by the Rhode Island Tax Commission, whose report was filed a few days ago with the General Treasurer for collection, are the following: American Emery Wheel Works, excess $51,450.58, tax $205.80; American Multiple Fabric Co., excess $99,897.70, tax $399.59; American Wringer Co., excess $1,252,579.21, tax $5,010.31; Joseph Banigan Rubber Co., excess $1,338,900, tax $5,355.60; Bourn Rubber Co., excess $101,407.11, tax $405.62; Collyer Insulated Wire Co., excess $62,580, tax $250.32; Davol Rubber Co., excess $109,079.62, tax $436.31; Glendale Elastic Fabric Co., excess $229,733.76, tax $918.93; International Rubber Co., excess $78,506.99, tax $314.02; Mechanical Fabric Co., excess $636,676.93, tax $2,546.70; National India Rubber Co., excess $1,845,566.95, tax $7,382.26; Phillips Insulated Wire Co., excess $1,543,680, tax $6,174.72; Revere Rubber Co., excess $851,627.42, tax $3,406.50; Washburn Wire Co., excess $691,922.68, tax $2,767.69; Woonsocket Rubber Co., excess $955,512.28, tax $3,822.04.

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C. L. Stockbridge, of Boston, sales manager for the Hood Rubber Co., was a member of the party which accompanied the delegation of the Institute of Automobile Engineers of England on their visit to a number of the manufacturing plants in this city and other sections of New England early this month.

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William J. Golden, formerly of Bristol, who went to Muskegon, Michigan, a year ago last April to take the foremanship of the mechanical department in the factory of the Vulcanized Products Co. of that city, was recently appointed superintendent of the plant. He was for a number of years foreman of the mechanical department at the factory of the National India Rubber Co. at Bristol.

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Col. Samuel P. Colt, president of the United States Rubber Co., gave a dinner at "Linden Place," his summer home at Bristol, on Friday, May 30, at which he entertained friends from New York, Washington, Boston, Providence and Bristol. On June 1 the party left this city for Boston en route for the Colonel's hunting camp—as described in the general news columns of this issue.

* * *

"Two years ago today we started in business here in Providence," said A. N. Bannister, local agent for the Goodyear Tire and Rubber Co., of Akron, Ohio, speaking reminiscently on June 13. "At that time we had five employes. In the two years this number has grown to 13 and the business has grown correspondingly."

* * *

A cablegram received at Woonsocket early in the month stated that Hugo Hammann died in Paris, France, May 28, where he was stricken several weeks ago. Mr. Hammann was for more than twenty years an overseer in the Millville rubber mill of the Woonsocket Rubber Co. and later he was superintendent of the Joseph Banigan rubber mill at Olneyville. From the latter place he went, four years ago, to the Kaufmann Rubber Co. at Berlin, Ontario, as superintendent. He remained there for three years, returning to East Blackstone last year. On April 12 he sailed for Paris on a business trip and while there suffered a shock, which resulted in his death. He was well known throughout rubber circles of New England.

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Mr. and Mrs. Walter S. Ballou will sail on the Steamship "Baltic" of the White Star Line on July 10 for a motor trip through England and Scotland. They expect to be absent for several weeks.

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The contract for the big refrigerating plant to be erected by the Revere Rubber Co. at its Valley street plant, this city, was awarded a few days ago to a Providence contractor. The building is to be one of the largest of its kind used by rubber manufacturers in this part of the country. It will be used in cooling the rooms where the rubber goods are stored. The dining hall for the use of officials of the concern is nearly completed. This will be a great accommodation to the heads of the several departments. A number of other improvements are under contemplation, but very few will be attempted for the present, as the concern is very busy, operating two full shifts—night and day.

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"The latest step in the growth of the Goodyear Tire and Rubber Co.," said A. M. Bannister, manager of the Provi-

dence branch, a few days ago, "is the purchase of a large tract of ground at Killingly, situated in the extreme northeast corner of the State of Connecticut. On the property is a large cotton mill, four stories high and 400 feet in length, where will be made a large part of the tire fabrics, hose and belting ducks so extensively used by the company. There are also on the property houses for 350 employes, a store, a large boarding house and an assembly hall. The cotton factory will be equipped with the most modern machinery and will run steadily at a uniform output on fabric for the exclusive use of the Goodyear Tire and Rubber Co."

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The steel bridge across the tracks of the New York, New Haven & Hartford Railroad Co., on Asylum road, which Col. Samuel P. Colt has built to connect his country estate at Bristol with his ocean drive on the west shore of Poppasquash, has just been completed. The work of preparing the pedestals for the bronze bulls which are to be placed on each side of the entrance to Asylum road is now going on. The foundations underground are of concrete. Each figure will rest on a massive Georgian marble slab, four feet wide, nine feet long and about eight feet high. The bronze bulls will be of life size. A white marble balustrade with a total length of 162 feet will extend on either side, and the figures will be about 35 feet from the main street.

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Robert Gregg, who was for many years employed in the packing department of the National India Rubber Co. at Bristol, died at his home in that town recently, in his 88th year. He was a native of Ireland but had lived in this country about forty years.

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The Consumers' Rubber Co.'s plant at Bristol, employing about 300 hands and manufacturing rubber covered insulated wire and rubber footwear, was closed the first of July. The plant is operated by the Walpole Rubber Co., of Walpole, Massachusetts. A. P. Baldwin, of the Walpole company, stated on June 24 that the Consumers' Rubber Co.'s plant would be closed for the purpose of making an inventory of its stock, and that before it is reopened a meeting of the stockholders will be called to define the business policy of the concern. "It may be two or three weeks after closing before the plant will reopen," said Mr. Baldwin. "It is not to be closed permanently, however. The recent failure of the Atlantic Bank of Providence had nothing at all to do with the closing of the plant," he said. "The company had some money on deposit in that bank, but it was by no means as much as the company owed the bank, but the bank is not worrying about that. We have not had any notes called on us."

The Walpole company took over the Consumers' a year ago last month, after the Consumers' company—then owned and operated by Terrence McCarthy—had gone into the hands of a receiver. After the Walpole company took over the plant Mr. McCarthy was engaged as manager, a position which he still retains. Mr. Baldwin could not say when the meeting of the stockholders would be called.

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The Continental Rubber Works, of Erie, Pennsylvania, expect to make an addition 200 feet in length and 70 feet in width to their plant, increasing the factory space nearly 6,000 square feet.

THE RUBBER TRADE IN SAN FRANCISCO.

By Our Resident Correspondent.

CONDITIONS on the coast are rather quiet, not so much owing to anything peculiar to local affairs as to the general tightening of the money markets of the world and the tendency of all enterprises to hold up as much as possible at the present time.

The Ralphs Pugh Co., a comparatively new concern in the local rubber field, reports that business is moving along in a fairly busy fashion and that they feel well satisfied with the progress they have been making. This firm has decided to move into larger quarters, where they can carry a complete stock of boots and shoes of the Beacon Falls Rubber Shoe Co., whose lines they represent. They carry also a general line of rubber goods. The new store has practically been selected and will be in the vicinity of First and Mission streets.

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The Crandley Rubber Co. has secured the Manhattan Rubber Co.'s account for this coast. William Crandley reports that business with his firm is satisfactory and is showing steady growth.

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W. H. Gorham, of the Gorham-Revere Rubber Co., has just returned from a trip to the Orient, where he visited the principal cities and not only enjoyed a very pleasant vacation, but booked some highly satisfactory orders.

C. C. Case, vice-president and general manager of the Revere Rubber Co., is now in San Francisco on business, making his headquarters with the Gorham-Revere Rubber Co.

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Mr. Anderson, manager of the local branch of the Electric Hose & Rubber Co., with a store on Howard street, is contemplating a transfer to the Chicago branch of the company, to take charge of the electrical supply department there.

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Mr. Rigdon, of the Gorham-Revere Rubber Co., has left for a trip to the factory in the East in the interest of the company.

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E. F. White has sold his vulcanizing plant in Los Angeles to W. F. Simpson. Mr. Simpson has also recently purchased the Ninth street Vulcanizing Works at Los Angeles, formerly owned by F. C. Wells.

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The Ernest Rubber Co. has been organized at Chico, California, and has opened up for business in an attractive store.

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C. A. Muller, of Oakland, California, has recently bought out the business of the Bay Cities Tire Co. of that city.

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Elmer E. Woods, as proprietor of the Auto Tire & Vulcanizing Co. of Santa Barbara, California, has filed an involuntary petition in bankruptcy.

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The Always Air Sales Co. has opened a branch store in San Francisco at upper Van Ness avenue. This company manufactures a fluid compound to be inserted in tires for the purpose of automatically filling punctures and preventing blowouts. Barney Oldfield is at the head of the local sales company, as vice-president and general manager, while Walter Hempel is in active charge, with Mr. Griffin as sales manager.

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L. C. Rockhill, sales manager of the Goodyear Tire & Rubber Co., has returned to San Francisco after a tour through the Northwest, during which he visited Seattle and Spokane. After a short conference here he will return to the home office at Akron, passing through Los Angeles on the way. He is not only enthusiastic over the possibilities of the tire business in the Northwest, but he is impressed with the almost incredible work which is being done toward good roads in country districts, smooth traveling boulevards being made through country so rough and mountainous as to appear inaccessible.

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Peart & Elkington, of Oakland, have taken the agency in that city for Ajax tires, arrangements having been made through Hughson & Merton of San Francisco, Pacific coast distributors.

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The French-American Rubber Co. has drawn up incorporation

articles, and organized as a corporation at Long Beach, California, with a capital stock of $25,000. The original incorporators are W. Harbart, F. I. Lee, P. R. Rader, of Long Beach, and one or two others, from Colorado. The plan is to erect an automobile tire factory at Long Beach, at which 200 men will be employed.

Long Beach has also been selected as the factory site of the new Panama Rubber Co. This concern has purchased property at Long Beach and will manufacture automobile tires. They promise to erect a plant at a cost of $500,000 and to employ at least 500 men.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

MUCH to the satisfaction of manufacturers and the more skilled of the rubber workers, labor differences here have been settled and strike talk ended. The various plants in this city are operating day and night shifts, despite tariff uncertainty.

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Clarence Arnold Hutchinson, one of the energetic young men of the Essex Rubber Co. staff, was married June 10 to Miss Mabel McCullough, youngest daughter of Mrs. Eliza McCullough of this city. The employes of the plant and officers of the company presented the bridegroom with a handsomely designed silver service.

* * *

The Thermoid, Empire, Home, Whitehead and Ajax-Grieb tire making concerns report big business the past month, the force of operatives being worked to the limit to keep up with the rush of orders. The $5,000 prize contest for chauffeurs who make the best records in the use of Ajax tires has boosted Ajax sales considerably.

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From the post of office boy to that of general manager of the New York State and Canadian branch of the Empire Tire Manufacturing Co., of this city, represents the business progress made by Raymond Paddock, Trenton boy, within ten years. Last year he sold $191,000 worth of tires and other rubber goods manufactured by the local concern. Mr. Paddock is a son of Mr. and Mrs. Frank Paddock of this city. He attended the local schools and Rider Business College. At the age of seventeen he decided he had sufficient education to enable him to enter the race for riches and fame, but was undecided whether to become an editor, lawyer or business man. His decision in favor of the business world was sagacious, if not unique, and later events have justified the wisdom of his choice. Riding along on his bicycle he noticed a sign hanging on the office door of the Empire Rubber Co. on Clinton avenue. He stacked his wheel against the building, took down the sign, carrying it into the office of the president.

"Boy, why did you take down that sign?" the president asked somewhat brusquely.

"You don't need it up there now, I'm the boy," replied young Paddock.

The president was amused by the audacity of the lad and he was immediately engaged. He was so invariably prompt and diligent in the performance of his duties as office boy that when one day an invoice clerk left the company's employ, he was in line for and received promotion to the position thus vacated. But he didn't remain long at the invoice desk—he was jumped to a clerical position, and then he began to sit up nights studying the intricacies of the rubber business. From invoice clerk he went into the factory, in a minor position, where in less than a year he was given charge of the tire department. His next opportunity was to demonstrate his ability as a salesman on the road, and from the start he was successful. Three years ago when the company decided to open a branch house at Buffalo to supply the trade in upper New York State, Michigan and Canada, Paddock was the unanimous choice of the officers of the company; and he is today recognized as one of the keenest young men in the rubber industry.

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The Eureka Tire Co. filed at the County Clerk's office on June 18 articles of incorporation, with an authorized capital

Raymond Paddock.

of $100,000, the incorporators being John E., Peter D. and Frank W. Thropp.

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On June 20 Commissioner LaBarre recommended to the City Commission that the Hamilton Rubber Co. be given the contract for furnishing 5,000 feet of rubber hose for the fire department, at a cost of 85 cents a foot.

THE BROOKVILLE RUBBER CO.

The Brookville Rubber Co. has been incorporated in Trenton, New Jersey, for the purpose of manufacturing, purchasing and selling all kinds of mechanical rubber goods. The capital stock is $100,000, and the incorporators are Edward A. Fischer, Ezra Evans, Charles A. Joslin and William Groff, Jr.

THE SPECIALTY INSULATING MANUFACTURING CO.

The Specialty Insulating Manufacturing Co. has recently located its factory at Hoosick Falls, New York, where it is now running with about 70 employes. This company, which is capitalized at $30,000, was formerly located at Pittsfield, Massachusetts, under the name of The Specialty Manufacturing Co., and was incorporated under the laws of Massachusetts.

A NEW RUBBER COMPANY IN MILFORD.

The Askam Rubber Co., of Milford, Connecticut, has filed its certificate of incorporation with the secretary of state of that State. The capital stock is $150,000, and the incorporators are Isaac W. S. Hawes, William F. Askam and LeRoy Askam.

MACHINE SHOPS CLOSED FOR TWO WEEKS.

The machine shops of the New England Butt Co. at Providence are closed for two weeks' vacation, beginning June 28. They will open again on July 14. The office and the foundry will continue to run as usual.

News of the American Rubber Trade.

ADVERTISING MEN STUDY GOODRICH IDEAS.

THE Associated Advertising Clubs of America, including a membership of some 10,000 advertising men, held their annual convention in Baltimore from June 9 to 15. Among other features, the advertising campaigns of three different companies—large national advertisers—were presented in full to the members of the convention, as a study of this interesting science. One of the three companies selected was The B. F. Goodrich Co. It gave a complete exposition of its advertising methods, including newspaper and magazine work, bill-board display and road signs—which, by the way, now cover 30,000 miles of American highways. It also presented a full description of the Goodrich service system—which, though perhaps in the mind of the public would not be associated with advertising, still is the very best advertising that a tire company can engage in.

DUTIES ON HARD RUBBER PARTS OF FOUNTAIN PENS.

Notwithstanding the fact that our present tariff schedule may all be changed in a short time, it is none the less interesting to note the rulings in various lines of rubber manufacture under the rates now in force.

Some time ago the firm of Schrader & Ehlers imported the barrels, necks and caps that go to make up fountain pens, minus the pens. The collector of the port of New York assessed them at 35 per cent. ad valorem, as being manufactures of hard rubber, under paragraph 464. The importers protested that the goods were fountain pens and dutiable as such at 30 per cent., under paragraph 187; but the Board of General Appraisers overruled them and now the United States Court of Customs Appeals has also sustained the collector, deciding that assembled parts do not constitute the complete fountain pen, under the tariff act of 1909.

COLLEGE BOYS IN THE GOODYEAR FACTORY.

Many college men from all over the country are planning to work during the summer vacation in the factory of The Goodyear Tire & Rubber Co., Akron, Ohio. The company recently requested the college men in its employ to write to their colleges asking them to suggest promising candidates for factory positions; and the responses have been numerous.

"We like to have college men with us," says C. W. Seiberling, vice-president of the company. "We like their spirit and enthusiasm, and I firmly believe that the spirit of loyalty, which is a distinctive feature of the Goodyear concern, emanates largely from having so many clean-cut young fellows around. The broad viewpoint and training these men receive has helped wonderfully in fostering friendly relations with our customers."

TEHUANTEPEC RUBBER CULTURE CO. REPORT.

The report of the president of the Tehuantepec Rubber Culture Co., dated May 13, 1913, makes interesting reading, although it does not paint the immediate rubber prospects of the company in very bright colors. Owing to the exceedingly unsettled condition of affairs in Mexico, very little work has been done on the plantations during the last year. In the opinion of the president, the best course for the company to take is to devote its energies—for the immediate future at least—to some annual crops, particularly sugar. He remarks: "In recommending the planting of sugar cane for your consideration I can say from many years' intimate association with the sugar industry that it is a profitable crop, and if the present favorable indications with experimental planting are confirmed sugar cane will be a safe crop to plant at Rubio"—which is the name of the company's plantation.

THE REPUBLIC CO.'S NEW CLUB HOUSE.

The April issue of THE INDIA RUBBER WORLD contained a brief description of the new club house being built by the Republic Rubber Co. of Youngstown, Ohio, for the company's 1,500 employes. Here is a picture of the building, which shows its attractive appearance. It is 60x130 feet in size, is located

THE CLUB HOUSE.

just across the street from the company's main offices, and contains bowling alleys, pool tables, reading rooms, lunch rooms, shower baths, and all the other accessories and conveniences which could add to the comfort and happiness of the Republic's working force.

FACTORIES HELPING THE COLLEGES.

It has been the aim of all American colleges during the last fifteen years to make their instruction as practical as possible. They are no longer satisfied to send out their students furnished simply with book knowledge; they try now to equip their graduates as far as possible with such practical knowledge, particularly in the sciences, that they can put on the harness of actual work without too great a feeling of strangeness. The University of Minnesota arranged to have the graduating class in chemistry visit, during the last few weeks of the term, a number of industries where chemistry comes into play. As part of this tour they visited, early in June, the Federal Rubber Mfg. Co. works at Cudahy, a suburb of Milwaukee. The students first made a careful study of the laboratory connected with the plant and then went into the factory, where the work of the chemist was shown in the actual production of tires. Incidentally, the company entertained the students at a lunch, which undoubtedly still further impressed on their minds the practical value of factory inspection.

THE WALPOLE CO. OFFERS SOME 6 PER CENT. NOTES.

The Walpole Tire and Rubber Co., Walpole, Massachusetts, is offering directly to the public $350,000 of three-year 6 per cent. convertible notes, being a part of an authorized issue of $750,000. The notes are dated April 1, 1913, due April 1, 1916, and are convertible at any time before maturity into the 7 per cent. cumulative stock of the company.

The offering price on the present issue is par, but in addition the notes carry several inducements. The company guarantees the notes to purchasers free from all taxes. Furthermore, the note holders are offered preferential terms on all goods manufactured by the company. Both gross and net earnings of the company for the first four months of this year have shown nearly a seventy-five per cent. gain over the corresponding period of 1912. The notes constitute a first lien on all the assets of the company, amounting to $3,000,000, and after the issue has been sold no further obligations will be issued until retirement of the notes.

BOSTON WOVEN HOSE & RUBBER CO. SALESMEN MEET.

During the week of June 9 to 14 the annual salesmen's convention of the Boston Woven Hose & Rubber Co. was held at the executive offices at Cambridge, Massachusetts. Representatives from New York, Buffalo, Philadelphia, Pittsburgh, Chicago, St. Louis and Seattle, as well as traveling salesmen from other cities, were present. Business conditions were discussed and policies outlined for the coming year.

On Wednesday evening, June 11, Mr. George E. Hall, general manager, entertained the visiting salesmen and department heads at the Engineers' Club in Boston. Dinner was followed by the reading of papers bearing on subjects of interest. Here are some of the subjects discussed: The Sale of Manufactured Products, The Successful Salesman, Keeping Up with Production, Co-operation, The Evils of Over-Confidence in Our Own Ability, Factory Problems, To What Extent Should We Protect the Jobber, "Quality Is Remembered Long After Price Is Forgotten," Closer Relations Between Salesmen and Correspondents, Standard of B. W. H. Quality, and Team Work vs. Individual Play.

On Friday the salesmen and heads of departments were entertained by Mr. H. B. Sprague, treasurer, at luncheon at the Tedesco Club, Swampscott. Some of the party spent the afternoon on the golf links, while others enjoyed an automobile ride along the North Shore. In addition to the general manager and treasurer, the outing was attended by the president of the company, Mr. B. F. Spinney, and by directors Mr. J. Newton Smith and Mr. Albert M. Creighton.

NEW BUILDINGS FOR THE DETROIT PLANT OF THE UNITED STATES TIRE CO.

Some idea of the magnitude of the proposed additions to the old Morgan & Wright plant, now the Detroit factories of the United States Tire Co., may be gained from the fact that the addition will afford approximately 1,000,000 more feet of floor space. Among the buildings proposed are a laboratory 82 x 35, three stories high; a warehouse 93 x 235, six stories high; manufacturing buildings 60 x 315, six stories high, and 230 x 60, six stories high; machinery shops 80 x 170, one story high; 50 x 165, four stories high; 50 x 120, three stories high; 50 x 120, three stories high, and three storehouses each 93 x 170 and six stories high; two manufacturing buildings each 47 x 35, four stories high. As already stated, this will make an approximate increase in floor space of 1,000,000 square feet, and will render necessary an increase from 2,500 to 6,000 employes. All of these plants are to be equipped with the most improved machinery.

UNITED STATES TIRE CO., DETROIT.

CHANGING ITS NAME AND INCREASING ITS CAPITAL.

Notice has been filed at Columbus, Ohio, by the Bayne-Subers Tire & Rubber Co., of Cleveland, of a change in its name to the Subers Fabric & Rubber Co., and an increase in its capital from $250,000 to $1,500,000.

CLARENCE H. LOEWENTHAL.

Clarence H. Loewenthal was born in New York, June 10, 1885. He is a Columbia man, and before entering the U. S. Rubber Reclaiming Co., of which he is now the secretary, he spent three years in the banking house of Ladenburg, Thalmann & Co. He began his rubber career in the Buffalo factory of the United States Rubber Reclaiming Co. in 1906, where he spent two years. He is particularly interested in tennis and he is an amateur athlete of recognized ability. He is a conspicuous member of the younger set in the rubber trade. He sailed for Europe on the Imperator on the 25th of June and expects to return to this country early in August.

CLARENCE H. LOEWENTHAL.

RUBBER STAMP MAKERS HOLD A CONVENTION.

Manufacturers and dealers interested in rubber stamps, stencils and other marking devices—comprising the membership of the International Stamp Manufacturers' Association—held their second annual convention in Minneapolis from June 24 to 27. There were several hundred present—from all parts of the world. While there were many social features, the greater part of the convention's energy was devoted to the discussion of various matters of commercial importance to rubber stamp manufacturers.

FROM SAN FRANCISCO TO BALTIMORE BY MOTOR.

E. B. Hanson, vice-president and general manager of the San Francisco Exposition Tour Sales Co., and J. A. Clairmonte, recently finished a notable run from San Francisco to Baltimore, covering the distance in 18 days. The last lap, from Omaha to Baltimore, 1,430 miles, was made in 71 hours actual running time. Mr. Hanson attributed this remarkable record to absence of all mechanical troubles, and particularly to the fact that not a tire had to be changed. His car was equipped with the Firestone "Non-Skids."

GOODYEAR MOTORCYCLE TIRE PRICES REDUCED 10 PER CENT.

S. A. Falor, manager of the motorcycle tire department of the Goodyear Tire and Rubber Co., of Akron, announces a reduction of 10 per cent. in the price of motorcycle tires to dealers, consumers and jobbers, the reduction taking effect June 14. He says that these lower prices are not attributable so much to the lower price of crude rubber as to the company's increased business in this particular line of tires. They are now making 1,000 motorcycle tires a day and expect soon to be making 1,500.

TRADE NEWS NOTES.

The Mercer Rubber Co., of New York, Inc., 95 Broad street, New York, has been organized with a capital of $10,000 to take the New York agency of the Mercer Rubber Co., of Hamilton Square, New Jersey, which manufactures mechanical rubber goods and specialties. The president of the New York company is W. A. Dale, who has been connected with the New York rubber jobbing trade for twenty-five years.

The Swinehart Tire Agency has recently been opened at 726 Main street, Buffalo, for the distribution of the Swinehart solid and pneumatic tires in Western New York and Pennsylvania. The president of this new agency is C. A. Couch, and the secretary and treasurer F. P. Georger.

By a vote of the stockholders at a meeting held at Pittsburgh early in May, the business of the McGraw Tire and Rubber Co. of Pennsylvania was transferred to the McGraw Tire and Rubber Co. of Ohio, a corporation with a capital stock of $1,000,000 and with a factory at East Palestine, Ohio.

William H. Scheel, of 159 Maiden Lane, New York, who specializes in earths, clays, calcined magnesia and fillers of all kinds —domestic and imported—has the exclusive agency in New York of Ohio aluminum flake, and plans to carry a very large stock of this on hand, in order to be able to fill immediately all urgent requirements of the trade. He occupies a five-story building and has ample room for abundant storage.

The Rosenthal Co., manufacturers of rubber erasers and rubber balls, moved their offices, about the last of May, from 346 Broadway to 45 East 17th street, corner of Fourth avenue, New York, where they have taken considerably larger space.

The Keaton Patents Co., New York City, has been incorporated, with a capital stock of $100,000, for the purpose of manufacturing rubber tires and pnuematic cushions.

The United States Rubber Reclaiming Co., with factories at Buffalo and executive offices in the Forty-Second Street Building, New York, have recently erected a new factory building equipped with every late mechanical appliance, which will be exclusively devoted to the production of tire stocks, increasing the capacity approximately 100 per cent. in this class of work. The factory is in operation day and night.

The Firestone Tire & Rubber Co., Akron, Ohio, has given out plans for the construction of a four-story brick, steel and reinforced concrete manufacturing plant addition.

A firm of commission agents in a Mediterranean country informs an American consulate that it would like to secure agencies for the sale of American shoes, rubber goods, and hardware. This firm is said to be well rated and would like to import direct. The consular report is No. 11152.

The Ancient and Honorable Artillery Company of Massachusetts—of which Captain Francis H. Appleton has been the commanding officer during the past year—celebrated its 275th anniversary on June 2. The exercises consisted of church services in the morning in the Old South Church, Boston, with a sermon by Rev. A. Horton, D.D., while later in the day a banquet was served at the Copley Plaza Hotel.

MR. CUTLER OPENS HIS OWN OFFICE.

Mr. D. A. Cutler, formerly associated with The Continental Rubber Co., and more recently in the development work of the United States Rubber Co., has opened an office at 277 Broadway, where he will operate as an expert in crude rubber research. Mr. Cutler has had an extensive and successful experience in practical work of this sort, and there is every likelihood that his services will be in active request among rubber manufacturers.

A RADICAL DEPARTURE IN ADVERTISING U. S. TIRES.

The tire trade was very much surprised when it became known on June 10 that the United States Tire Co. had abolished its advertising department and that hereafter all the various kinds of advertising put out by this company would be handled through an agency, which is expected to move its offices into the United States Rubber Co. building, Broadway and Fifty-eighth street, New York, where the offices of the tire company are located. The only reason given for this radical change is that it is hoped to effect substantial economies. Mr. Hubbs, who has been in charge of the company's tire advertising department, has no plans for the immediate future.

MR. J. M. GILBERT.

The June issue of THE INDIA RUBBER WORLD contained an announcement of the resignation of Mr. J. M. Gilbert from the position of general manager of the United States Tire Co. and his assumption of the duties of president and general manager of the Lozier Motor Co., Detroit; and some details regarding his career in the tire manufacturing field were given at that

J. M. GILBERT.

time. The accompanying photograph shows that Mr. Gilbert is still a young man; and this fact, together with the possession of unusual energy, and a marked degree of executive ability, promise exceptional success in his management of the Lozier company. He has been acquainted with the automobile trade ever since the time, a dozen years ago, when he was sales manager of the Firestone Tire Co., so that, while he goes from tire manufacture to automobile manufacture, he is very far from being a stranger in his new field.

DIVIDENDS DECLARED.

The B. & R. Rubber Co. has declared a regular quarterly dividend of 1¾ per cent. on its preferred stock, and a dividend of 2 per cent. on its common stock—payable July 1 to stockholders of record on June 21.

The Canadian Consolidated Rubber Co., Limited, declared its usual quarterly dividend of 1¾ per cent. on its preferred and 1 per cent. on its common stock, payable July 2 to stock of record June 21.

RUBBER GOODS COMPANY PAYS DIVIDENDS.

On June 4 the Rubber Goods Manufacturing Co. declared its 57th regular quarterly dividend of 1¾ per cent. on the company's preferred stock, and a dividend of 1 per cent. on the common stock—both payable June 16.

PERSONAL MENTION.

Mr. James B. Dunlop, who invented the first pneumatic tire, about 25 years ago, recently arrived in America with a number of British engineers who came as guests of the Society of Automobile Engineers.

Mr. Fred J. Wagner, long identified with the automobile business, has been elected vice-president of the Ajax-Grieb Rubber Co., Trenton, New Jersey, manufacturers of Ajax tires.

Mr. Arthur E. Friswell, formerly connected with the Mechanical Fabric Co. and later with the Goodyear Tire and Rubber Co., after a year's vacation in Bermuda is back in the States with the thought in mind of again entering the tire field. Mr. Friswell's experience and capabilities are such that it goes without saying that he will not long remain idle.

Mr. Fred Moses, formerly with George A. Alden & Co., of Boston, is now operating on his own account as a broker in crude rubber at 220 Devonshire street, Boston.

COLONEL COLT'S CAMPING PARTY.

The summer camp of Colonel Colt, president of the United States Rubber Co., called "Camp Colt," and located at Kidney Pond, Maine, is one of the most attractive spots in that state. It has been the Colonel's custom for a number of years to take quite a party of guests to his camp during June. Continuing this custom, he started from Providence on June 1st with a party of about fifteen guests, including his brother, Senator LeBaron B. Colt, Mr. Walter S. Ballou and Mr. Nathaniel Myers, of the United States Rubber Co. The other members of the party were: Dr. Calvin S. May, Colonel and Mrs. Harold J. Gross, Mr. and Mrs. E. A. Barrows, Rev. G. L. Locke, Miss Beatrice Colt, Hon. Mrs. William Beresford, Miss Gertrude Barrows, Miss Ruth Anthony.

The party broke camp and returned home on June 14th.

COMMODORE BENEDICT BACK FROM HIS CRUISE.

Commodore E. C. Benedict arrived at his home in Greenwich, Connecticut, on June 5th, after a six weeks' cruise, including a long trip up the Amazon river. This is the Commodore's fifth sail up the Amazon, in which he has a double interest, for, being a director of the United States Rubber Co., he is interested in the supply of crude rubber from the Amazon, and, in addition, he installed on that river a few years ago a system of wireless telegraphy. The trip was made on the Commodore's yacht "The Oneida," which has an over-all length of 199 ft. and carries a crew of 36 men. The Commodore was accompanied by a party of friends, including Mr. and Mrs. Colgate Hoyt.

MR. COE AND MISS PIKE MARRIED IN JAPAN.

The consummation of a little romance which will interest many of the rubber footwear trade, was a marriage at the American Consulate in Yokohama, Japan, the latter part of June, when Mr. Kersey Fell Coe and Miss Louise G. Pike became husband and wife.

Charles A. Coe, the Eastern selling agent of the United States Rubber Co., is a resident of Medford, a suburb of Boston. Chester J. Pike, for many years with that company, and now managing the advertising campaign for the Hub-Mark rubbers, also resides in Medford. Here their children received their pre-collegiate education, and Kersey Coe and Louise Pike were schoolmates. Mr. Coe graduated from Williams College, and later entered the employ of the Standard Oil Co., and three years ago was sent to Japan.

But before starting on his long journey the young folks became engaged, and it was finally decided that as Mr. Coe could not come to America for his bride, she should go to him. Miss Pike started from Boston on Wednesday, May 28, for San Francisco. She was met by friends in Chicago, and in San Francisco embarked on the "Shimyo Naru" on June 4.

Mr. Coe met her on the arrival of the steamer at Yokohama, where the wedding took place, after which the couple proceeded to Otaru on the Island of Hokkaido, the northernmost of the large islands which compose the Japanese Empire, where Mr. Coe will be in charge of the local office of the Standard Oil Co., a position to which he has just been promoted. Many handsome gifts went forward on the same steamer, for both the young people have hosts of friends in Medford and Boston.

THE NEW TREASURER OF THE UNITED STATES RUBBER CO.

Some men seem to get through life without ever being visited by the consequences of their own acts, but not all men escape. Some men get caught with the goods, and have stern justice meted out to them. To the latter class belongs Mr. W. Guy Parsons, who has just got what he richly deserves. He has just been made treasurer of the United States Rubber Co. after an even twenty years of service in the financial department of that big corporation.

Mr. Parsons was born approximately forty-five years ago, in a little town in Kansas, but when he reached the reflective age

W. G. PARSONS.

of five he became convinced that while Kansas was a fine place for raising corn and cyclones, it was no place for future treasurers of $120,000,000 corporations—so he left for Chicago. That town did well enough until he was 19 years of age, when he concluded that though Chicago was the literary center of the Western Hempishere, large affairs of finance were arranged in New York; consequently he removed to the metropolis. That was in 1885. Eight years later, when the United States Rubber Co. was formed, he took charge of the bookkeeping department. Evidently his work was not so badly done, for very soon he was promoted to the cashiership; thence to the assistant auditorship; another promotion and he was made auditor; still another boost and he became assistant treasurer. And now, having climbed every round on the ladder—at least all the upper rounds—he has reached the top rung in the financial department, and has been made treasurer—a job of no small dimensions when you consider the size of the corporation, its various ramifications and its multitudinous interests. Here is a clear case where efficiency has come into its own.

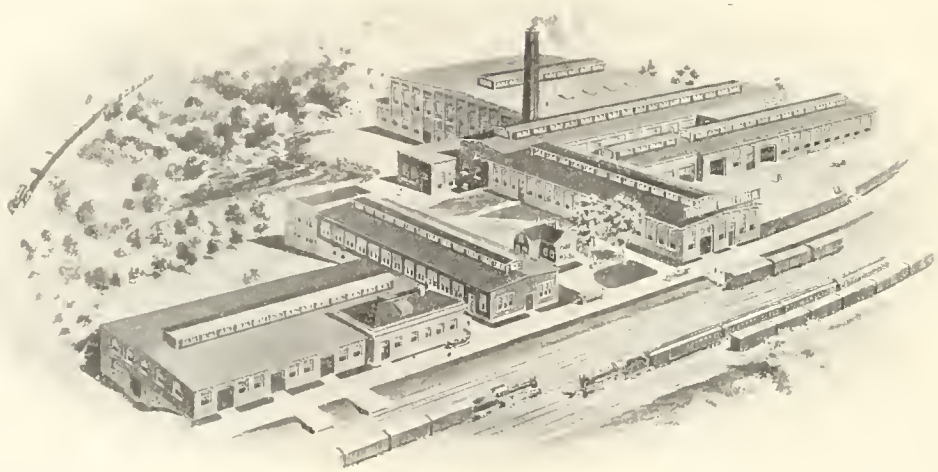
Incidentally it might be mentioned that personally he is a thoroughly likable man, perfectly genial even though living in Brooklyn; and a few years ago, when he weighed somewhat less than now and used to play on the Rubber Company's nine, he could be relied upon to hammer out a five-base hit almost every time he came to bat.

THE MONATIQUOT RUBBER CO.

Probably no branch of the rubber trade has shown greater advance during the last five years than the reclaiming industry. Several new enterprises have been launched during this period and remarkable growths have been attained. Prominent among these is the Monatiquot Rubber Works Co., of South Braintree, Massachusetts, which calls its product "Naturized Rubber."

This company first began to manufacture in April, 1910, and from the first, its brands (known as "The Four Good Indians") were popular with the manufacturers. The demand has shown continuous increase, rendering necessary substantial additions to its plant during the past three years, especially during the last twelve months. The company has found it necessary to erect three new buildings to take care of the healthy growth of its trade; so that the plant, as it stands today, is of entire brick construction and embodies three separate and distinct power plants. During this time a reinforced concrete dam on the Monatiquot River was built, a third engine installed and extensive mechanical equipments were added.

The company has a 1,000-foot siding on the Brockton Division of the N. Y., N. H. & H. R. R., besides being located on the Plymouth Division; and convenient and prompt shipment of manufactured product is further facilitated by means of a new power truck, which is used in the handling of rush orders to the Boston freight terminals.



MONATIQUOT RUBBER WORKS CO., SOUTH BRAINTREE, MASSACHUSETTS.

The company's original method of making few rather than many brands is still maintained and the wisdom of this policy is reflected in the demand for the "Four Good Indians"—Squantum, Monatiquot, Samoset, and Massasoit—who have recently been joined by Wampatuck, now known as the "Fifth Good Indian." Each stock occupies a distinct field of its own, and the processing of all is rigorously guarded so that there is no possibility of confusion.

An effective organization, of which Robert C. Harlow is president and James H. Stedman treasurer, has brought to the Monatiquot Rubber Works a degree of success more than commensurate with its three years of existence.

AMERICAN AND EUROPEAN TIRES.

One of the leading manufacturers of tires in America stoutly champions the American tire against those of European manufacture and believes that they will make their way abroad against European brands even at the higher prices which it is necessary to charge for them. His theory is that as American roads are not nearly as smooth as European roads, and as the conditions here to which tires are subjected are very much harder than those in Europe, the American manufacturers make a stronger and tougher tire to meet these severer conditions, and that the Europeans are gradually finding out the better qualities of our tires.

DR. DANNERTH AND A CO-OPERATIVE LABORATORY.

Dr. Frederick Dannerth, the rubber consulting chemist who acted as honorary secretary at the Rubber Conference held in connection with the International Rubber Exposition last fall, is interesting a number of rubber manufacturers in a co-operative laboratory. He has prepared a list of twenty-three arguments in favor of such an institution. He calls attention to the fact that the larger corporations have finely appointed laboratories and employ a large number of chemists who are at work constantly on the solution of various rubber questions, in the interest of these particular corporations. But the smaller manufacturers are not able to compete with the large ones in this research work, and, in his opinion, the only way in which they can engage successfully in this laboratory competition is by co-operation. He believes that a co-operative laboratory could be equipped at a cost not exceeding $5,000 and maintained at an annual cost of about the same amount. Such a laboratory would, he believes, serve a vast number of useful purposes, not only to those companies that banded together for this co-operative work, but to the trade at large. It could be used as a central bureau where disputes regarding crude rubber and reclaimed rubber and manufactured articles could be referred.

Anyone in the trade who would like to get the details of this project can do so by writing to Dr. Dannerth at Passaic, New Jersey.

A FINE COMPLIMENT FOR MANHASSET FABRICS.

The following letter has been received by the Manhasset Manufacturing Co., producers of tire fabrics and yarns, with mills at Putnam, Connecticut, and offices at 317 Howard Building, Providence. It is self-explanatory.

Rutherford, N. J., June 3, 1913.

Manhasset Mfg. Co., Providence, R. I. Attention of Mr. Ballou.

Dear Sir: Allow us to congratulate you on the clean construction of your duck. In the 3rd Annual Indianapolis Speed Race we used your fabric which you constructed for us, being style No. 1101 48" C. S. I. fabric and marked special racing tire.

These tires constructed with your duck by us went through the hottest race on the hottest course and made the world's record for endurance on any track, going the 500 miles without a change of tires, and 11 laps, or 27½ miles, on the day previous, and still good for more mileage. These tires were the only four tires to go through this great race without a change.

We would like you to give us the construction of fabric used in this roll of duck for our files and in ordering further material of this sort so we may know exactly the way we wish it, in the event of your firm not knowing the exact construction.

Mr. Mulford will use our tires in the 600-mile race at Tacoma, Wash., and as soon as things are settled we will be in line for another roll of this same duck. Wishing you success with your fabric and hoping to have the pleasure of hearing from you, we remain Yours truly,

BRAENDER RUBBER & TIRE CO.
FRED L. BRAENDER, MGR.

THE RUBBER CLUB OUTING.

THE annual Midsummer Outing of the Rubber Club of America will be held on Monday, July 14, at the Belmont Springs Country Club, in one of the beautiful suburbs of Boston.

BELMONT SPRINGS COUNTRY CLUBHOUSE, BELMONT, MASS.

There will be all the attractive features to which the club members have been accustomed in the past, and more. The outing

ANOTHER VIEW OF THE BELMONT SPRINGS COUNTRY CLUBHOUSE.

VIEW ON THE GROUNDS OF THE BELMONT SPRINGS COUNTRY CLUB.

is in charge of the Sports Committee, consisting of Frank R. McKenna, of the Bourn Rubber Co., chairman; E. L. Phipps, of the United States Rubber Co., W. L. Pitcher, of the Easthampton Rubber Co., Frank H. Appleton, Jr., of F. H. Appleton & Son, and W. J. Kelley, of Arnold & Zeiss; and they are hard at work on the most interesting program they can devise. There will be golf, baseball and tennis, of course, and other sports.

The Belmont Springs Country Club has exceedingly attractive grounds. Here are three convincing proofs of the fact, viz.: Two photographs showing different views of the club house and another photograph showing a wonderfully fine avenue of trees leading out from the club house.

The details of the day's outing will be sent to club members within a few days.

NEW INCORPORATIONS.

ALLING-LOCKWOOD CO., INC., May 23, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Clarence E. Alling, Stamford, Connecticut; Arthur E. Alling, New Haven, Connecticut, and Frederick F. Lockwood, Binghamton, New York. Location of principal office, Binghamton, New York. To manufacture and deal in rubber, etc.

Benton Raincoat Co., May 23, 1913; under the laws of Illinois; authorized capital, $5,000. Incorporators: Carl Cohn, Leo S. Kosichek and Jacob Schwartz. Location of principal office, Chicago, Illinois. To deal in men's clothing and wearing apparel, etc.

Costello Seat Co., May 13, 1913; under the laws of Illinois; authorized capital, $10,000. Incorporators: George W. Costello, Edward J. Hennessy and William R. Swissler. Location of principal office, Chicago, Illinois. To manufacture, buy and sell and generally deal in all kinds of automobile seats and sundries.

East India and African Rubber Co., May 12, 1913; under the laws of New Jersey; authorized capital, $20,000. Incorporators: Edward Walham, 158 North La Salle avenue; James Butler and Ernest Wilfried, 915 North La Salle avenue—all of Chicago, Illinois. To import, export, buy and sell raw products, as rubber, etc.

Federal Sales Co., Inc., June 2, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Henry S. Bliss, 726 West avenue; Charles A. Hahl and John J. Henry, 176 Woodward avenue—all of Buffalo, New York. Location of principal office, Buffalo, New York. To deal in rubber goods.

Live-Leather Belt Co., Inc., June 13, 1913; under the laws of New York; authorized capital, $1,000. Incorporators: Isal Weinman, 1800 Seventh avenue; Leon Heinmann, 1018 East 163d street, and Joseph Jacobs, 1348 Boone avenue—all of New York. Location of principal office, New York. To manufacture leather and elastic belts.

New Idea Tire Co., April 30, 1913; under the laws of Delaware; authorized capital, $500,000. Incorporators: F. R. Hansell, Philadelphia, Pennsylvania; George H. B. Martin and S. C. Seymour, both of Camden, New Jersey. To manufacture and deal in tires, etc.

Phillips Tire Co., April 14, 1913; under the laws of North Carolina; authorized capital, $10,000. Incorporators: W. L. Phillips, J. E. Craddock and C. D. Cooper—all of Asheville, North Carolina.

Pneumatic Rim and Tire Co., May 12, 1913; under the laws of Delaware; authorized capital, $200,000. Incorporators: R. Boyd Cooling, Clarence J. Jacobs and Harry W. Davis—all of Wilmington, Delaware. To manufacture and deal in pneumatic tires for engines, etc.

Positive Vulcanizing Co., May 26, 1913; under the laws of Iowa; authorized capital, $10,000. Incorporators: W. G. Sandford, Charles Huber and J. Reed Lane—all of Davenport, Iowa. To manufacture tire vulcanizers, etc.

THE TYER RUBBER CO.'S NEW FACTORY.

THE new tire factory of the Tyer Rubber Co., Andover, Massachusetts, completed early this year, is in full operation, turning out an average of seven hundred tires per week, which practically equals the steady demand. This new establishment is so modern and up-to-date that a recent visit by the representative of THE INDIA RUBBER WORLD is well worth recording.

The new factory is entirely separate and distinct from the old established factory of this company, which is still used and still fully occupied in the manufacture of its druggists' specialties, which enjoy so enviable a reputation.

The new establishment is at some distance from the other, on the line of the Boston and Maine Railroad. It consists of two

TYER RUBBER CO.'S PLANT.

distinct buildings, each 310 feet long, and parallel with each other, one being 50 feet and the other 60 feet wide. They are solidly built of brick, with most liberal window space. Each is three stories high, while two ornamental and two plainer towers and a tall and graceful chimney cut into the sky-line. The interior is of "factory construction," solid and substantial, as is needed for a building containing rubber working machinery; and every appointment shows thoughtful planning both for present and for future requirements.

The engine room and boiler house are models of modern industrial power plants. The building, of very liberal height, assures space for comfort and convenience and allows for growth by additional engines and boilers. The engines are Rice & Sargent's, of 1,000 horse-power, with direct rope drive. Besides these there are smaller engines for running the 500 kilowatt generators for electric light and power. The boiler room contains four Robb Engineering Co.'s boilers, each 19½ feet long and 72 inches in diameter. There is room for eight more boilers of similar size, when needed. Contiguous to the boiler-house is an immense coal pocket of solid concrete, where coal can be dumped direct from a spur track of the railroad. The pump-room has a fire pump capable of throwing 5,000 gallons of water a minute, the water coming from a private reservoir. Here also are the accumulators for running the hydraulic presses. The Bowser oiling system is used on all the engines.

Inspection commenced with the rear building. First comes the mill and calender room, with ten mills, a drying machine, two 72-inch calenders, and plenty of extra room for further machinery, when the demand requires. Each of these machines, as, in fact, most others throughout the factory, is run by an individual electric motor, thus bringing about a substantial saving of power. In the next room are three washers and all the appurtenances to an up-to-date washing room. The compounding room is large, light and roomy, and is especially convenient in its arrangement.

On the second floor is the machine shop, very thorough and complete; and here are made most of the molds used by the company. This shop is fully equipped for making all the repairs needed in the two factories. The remainder of this floor is used as a drying room. All the rubber used by this concern is air dried. A complete box factory occupies the entire third story, 310 x 50 feet, and here are made all the thousands of plain and fancy boxes in which the many specialties of the company are marketed.

Between this and the similar building fronting on the street is a receiving and shipping department, with large store rooms on the first floor and basement. A fine macadamized drive-way is now building to reach this department.

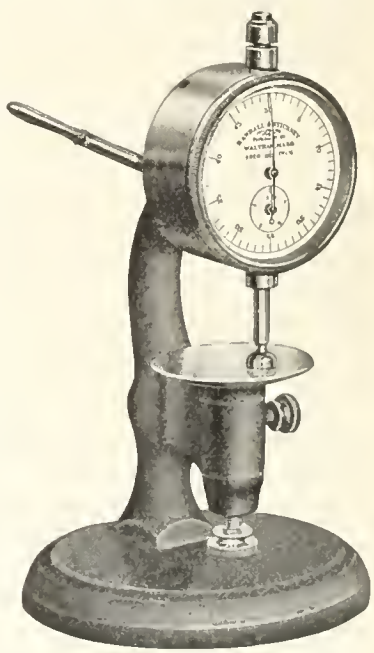
In the front building, the first room we enter is the press room, where 21 presses are in constant use for the druggist goods and sundries made by this company. Most of the remainder of this big building is devoted to the manufacture of the "Tyrian Anti-Skid" automobile tires. Nearly two entire floors are needed for this purpose, while the upper floor is used for stock room, packing and shipping.

The second floor is so arranged that the stock and the work go steadily forward, from the time of entering until leaving, with no lost motion and no backward step. There are in use three of the latest improved tire making machines, made by the J. J. Thropp's Sons Co., and more are to be added. These partly made tires then go to the ground floor, where a 12-foot press is molding a tread bearing the anti-skid device for surrounding the rim with the letters "T. T.," for Tyrian Tires. This press gives the threads a pressure of 3,000 pounds to the square inch. In this room are numerous other presses for various purposes, including 4 four-foot presses. Here also is an automatic wrapping machine, and three pit vulcanizers for curing. The tires, which are of white rubber, on coming out of the vulcanizers are thoroughly inspected, after which they are sent to the stockroom in the upper story.

This is in brief a description of the factory pictured herewith, a thoroughly modern establishment, now making nearly 120 tires per day, and with room for a large increase over and above this ticket. The factory is in charge of Superintendent C. M. Riddeck, ably assisted by Mr. F. W. Hodges.

RANDALL AND STICKNEY THICKNESS GAUGE.

Most rubber manufacturers have felt the need of an accurate method for determining the thickness of rubber. Such an object has been attained in the Randall and Stickney thickness gauge, illustrated by the accompanying cut.



In the use of the gauge, the plunger is first raised by pressing down the lever on the left, and the article to be tested is placed on the table under the plunger. The lever is then gently released, when the hands on the dial register the thickness. The long hand registers the thousandths of an inch, and the small hand the tenths. By means of an adjusting screw under the table, the long hand can be brought to the proper position, when it is not on the starting point.

The most important rubber goods manufacturers have taken up this thickness gauge on account of its known accuracy. Another proof of its merit consists in its adoption by the Bureau of Standards, Washington, which has expressed approval of its being exceedingly convenient and very easily read. It is manufactured by Frank E. Randall, 248 Ash street, Waltham, Mass.

The Hodgman Rubber Co. Seventy-five Years Old.

IT is an entirely legitimate sentiment—the pride of priority. To have been a long time on the earth proves the possession of the virtues that make for stability and permanence. Survival is the best proof of fitness. St. Augustine boasts because she is the oldest town in the United States, and Harvard plumes herself upon the fact that she is the oldest college in America. So why should not the Hodgman Rubber Co. take a proper pride in being the oldest rubber company in the United States—for this distinction undoubtedly belongs to this company. It was founded in 1838 and has been continuously and actively in existence ever since; and what is even more interesting, it has remained continuously in the hands of the Hodgmans—three generations up to the present time, with a fourth getting ready for active participation.

There were rubber companies before 1838, a number of them; but none survived those early, troublous days. One of them, the Roxbury Rubber Co., famous in its day, founded in 1828, may properly be called the ancestor of the Boston Belting Co., for this company later acquired the old Roxbury plant. But

DANIEL HODGMAN.

taking into consideration only continuous and uninterrupted existence, there appears to be no other rubber company that can compete with the Hodgman company's three-quarters of a century. If there is, now is the time to speak up; for until it does and proves its case the Hodgman company must be conceded the palm of priority, the record of its 75 years being unimpeachable.

It was founded by Daniel Hodgman. He was a typical Yankee boy, born in Mason, New Hampshire, in 1808, of good old sterling native New England stock—the only kind of stock there was in New England in those days. A copybook, full of arithmetical rules and problems which he composed as a part of his school work is still in existence. It is a most painstaking, accurate piece of work, with not a comma slurred or a dot slighted. Anybody looking at that copybook could tell that when the boy grew to be a man he would keep every engagement promptly and pay every bill when it was due—or a little before.

When he was 21 and had served his apprenticeship to a neighboring farmer, he struck out for Boston, the goal of all ambitious New England boys in those days. After remaining there a year he concluded that New York was even a larger field, and to New York he went. He found a position in the grinding room of a factory—probably the Atkinson rubber factory—and there he remained for eight years. It is no joke to say that working eight years in a grinding room is a good deal of a grind, but it showed the quality of the man—he didn't object to hard work—and during those eight years he learned many things and saved up some money. But, what was more to the point, he kept his eyes open; and among the important things that he saw was the fact that there was a great future for india rubber. Those were the days of rubber's beginnings. A good many alert people had conceived the notion that if rubber could only be properly treated it could be made to serve a vast variety of useful purposes. Goodyear was cudgeling his brain over the problem. A greater vogue was given to the possibilities of this new substance by the spectacular ride of President Jackson through the streets of Boston on a rainy day clad cap-a-pie in a rubber suit which was provided him for that occasion. So, after eight years in the grinding room, young Hodgman—then 30—pulled out, and, taking a partner by the name of Robinson, opened a rubber store on Beaver street, New York. But Mr. Robinson does not seem to have been adapted to the rubber business, for he soon dropped out and Mr. Hodgman decided to go it alone and on a larger scale, and accordingly took a new and bigger store a little further uptown, on Maiden Lane. He made several changes of location as the increase of business necessitated it, but for 41 years he remained in the neighborhood of Broadway and Maiden Lane, 35 of these years, from 1844 to 1879, being passed in Maiden Lane.

GEORGE F. HODGMAN.

He was not content to remain a storekeeper, however, but put his Yankee wits to work and started to invent useful articles of rubber. His first invention seems to have been a life preserver, for which he was given a medal and diploma at the Fair of the American Institute held in New York in October, 1840. In the meantime he had started a rubber factory at 26th street and East River, close to the factory where he had gained his experience. An exceedingly interesting document hangs on the

wall of the Hodgman company's New York office, being an enlargement of the letter of patent granted Mr. Hodgman in 1842 for "a new and useful improvement on overshoes," the document being signed by no less a person than Daniel Webster, then Secretary of State. These Hodgman overshoes were evidently made of pretty good material, for the company has a pair now,

OLD STONE BUILDING CONSTITUTING HODGMAN FACTORY IN 1851.

made in 1848, that time has not withered nor made brittle—they are as pliable as if made last year.

An extremely interesting advertisement is still in existence, clipped from the *Evening Post* of 1846, in which Mr. Hodgman advertised a great variety of rubber wares, among them "Rubber Pantaloons," considerably affected in those days but not now worn, except as they form a part of the body boots used by oystermen. Speaking of interesting advertisements, here is a reproduction of an old picture of a "Forty-niner," dressed all in Hodgman rubber. When gold was discovered every able-bodied easterner wanted to start for California; and Mr. Hodgman saw to it that as many of them as possible started well equipped against the elements, in his rubber coats and boots and hats, with rubber knapsacks on their backs, advertising his store across the continent.

In 1851 a certain H. B. Ames assigned to Mr. Hodgman—for a consideration of $2,000—a license which he had obtained from Charles Goodyear to manufacture rubber door springs. Mr. Hodgman seems to have put a great deal of energy into this particular branch. He built it up into a large business, as is shown by a little pocket account book still extant in which he recorded his monthly payments to Goodyear on his door spring sales; and seven years later, in 1858, a new indenture was made directly between Goodyear and Hodgman—an interesting document in Goodyear's own writing.

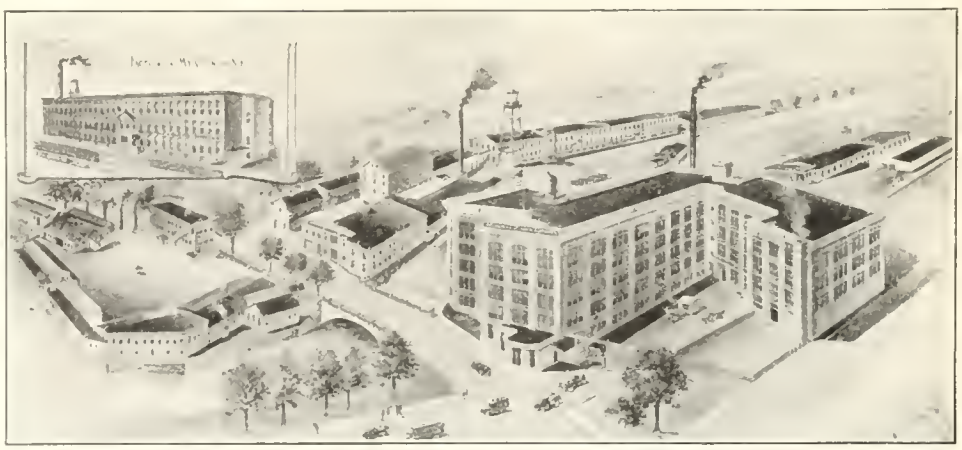
After a few years the factory on 26th street proved to be much too small, and in order to get more room for future developments Mr. Hodgman moved his manufacturing business in 1851 to Tuckahoe, a suburb north of New York City, where he bought a stone building, shown in one of the accompanying pictures, that had been used as a cotton mill. This was the beginning of the big Hodgman plant at Tuckahoe. This old stone structure still stands in good condition, tho it was built just 100 years ago this year, and gives every evidence of being able to weather another century.

Daniel Hodgman died in 1874, but his two sons, George F. and Charles A., had been well trained, so that they were able to step immediately into the management of the large and successful business their father had left them. Eleven years later the company was incorporated, under the name of the Hodgman Rubber Co., George F. Hodgman becoming president and Charles A. secretary and a little later vice-president. In the mean time, in 1879, the store followed the up-town march and located at 425 Broadway; and in 1882, in addition to the large plant at Tuckahoe a new factory was built in the adjoining town of Mt. Vernon, which is devoted exclusively to the manufacture of mackintoshes and other rain coats.

George F. Hodgman had all the sterling qualities of his father. He had the same unswerving sense of honor and indefatigible industry; and in addition he possessed many social graces which the elder man, like most men of his generation, had not—because of the harder struggle of those early days—had time to develop. Under the presidency of George F. Hodgman the business of the company grew steadily from year to year. While he was a very broad man, active in church, civic and social interests—a member of the Union League, the Chamber of Commerce and other leading organizations—his chief concern was the big industry which he had inherited; and on his death, in 1906, it was passed on to other hands, much increased in size and importance.

For three years the company's president was Charles A Hodgman, the second son of Daniel, who then retired because of ill health; and George B. Hodgman, son of George F., took the presidency, his brother, S. Theodore, being made secretary and treasurer—while a cousin, F. A. Hodgman, a son of the retiring president, was elected vice-president.

A few years before this, in 1903, the New York store had been moved to 806-808 Broadway, at 11th street, where it remains to this time, the most commodious rubber merchandising house in New York City. In the meantime the plant at Tuckahoe that began in 1851 with one small stone building has grown by one addition after another until it has assumed large proportions, many subsidiary departments being added, as, for instance, a box making shop, a machine shop, a printing department, an electrical department and an extremely modern laboratory, where a corps of chemists is constantly at work in experimental and research investigation connected with rubber manufacture.



THE HODGMAN RUBBER CO. PLANT OF TODAY.

It can be safely said of the Hodgman company that, while it is probably the oldest rubber company in America, there is none that is more modern in its equipment or its methods. As in the early days of Daniel Hodgman, its products cover a wide variety

of goods, a few of which may be mentioned: rubber clothing, mackintoshes, rain coats, air goods, articles for the bath and for the hospital; sporting goods, water bottles, syringes and other druggists' sundries; auto-top material, many kinds of tubing, and moulded goods.

A. W. WARREN,
Secretary and General Manager.

GEORGE B. HODGMAN,
President.

S. THEODORE HODGMAN,
Treasurer.

The present chief executive of the company, Mr. George B. Hodgman, is maintaining the high traditions of his ancestors. How he is generally regarded in the trade may be shown from the fact that he is president of the Rubber Club of America, the first man outside of New England to receive that honor. And the big company over which he presides never displayed more vitality or more promise for uninterrupted progress than it does today.

A FORTY-NINER IN HIS RUBBER OUTFIT.

The finances of the company are in the capable hands of Mr. S. T. Hodgman, who has been active in its affairs for twenty years. The secretary and general manager, Mr. A. W. Warren, has been with the company for nearly fifteen years and has done much to bring it to its present important and enviable position.

Incidentally, mention should certainly be made of Mr. Frank De Frate, great uncle of the president and of the treasurer, who has been connected with this company since 1846, 67 years ago. He is now, at the age of 89, daily at the factory. As the Hodgman company is undoubtedly the oldest rubber company in the country, it is equally safe to say that Mr. De Frate is the oldest man, both in years and in service, connected with any American rubber manufacturing plant.

On Saturday, the 28th of June, the Hodgman company held a great celebration in commemoration of its seventy-fifth anniversary and had a famous outing, where 1,500 of its employes and their friends were present. But that is a story all by itself.

INDIA-RUBBER GOODS IN COMMERCE

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta percha for the month of March, 1913, and for the first nine months of five fiscal years, beginning July 1:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
March, 1913.....	$200,573	$100,939	$854,230	$1,155,742
July-February.....	1,766,066	1,077,329	5,339,773	8,183,168
Total, 1912-13.....	$1,966,639	$1,178,268	$6,194,003	$9,338,910
Total, 1911-12.....	1,710,395	1,232,428	5,330,999	8,273,822
Total, 1910-11.....	1,511,975	1,801,977	4,485,644	7,799,596
Total, 1909-10.....	1,416,655	1,499,770	3,510,618	6,427,043
Total, 1908-09.....	1,053,758	1,071,489	2,805,914	4,931,161

The above heading, "All Other Rubber," for the month of March, 1913, and for the first nine months of three fiscal years, beginning July 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
January, 1913.....*values*	$273,519	$50,409	$323,928
February, 1913	276,253	44,130	320,383
March, 1913	482,821	34,935	517,756
July-December	1,777,324	316,352	2,093,676
Total, 1912-13.....	$2,809,917	$445,826	$3,255,743
Total, 1911-12.....	1,869,471	393,920	2,263,391
Total, 1910-11.....	1,325,903	411,801	1,737,704

OLD ANDREW JACKSON AS A RUBBER ADV.

The United States Rubber Co. makes a brand of particularly tough rubber boots called the "Hickory" brand—a very proper name. To advertise this brand the company has recently issued a striking cut-out, a foot wide, standing about 20 inches high. It shows the figure, or at least the upper half thereof, of that sterling old American warrior, Andrew Jackson, known at his time and ever since as "Old Hickory." He is holding one of these "Hickory" boots in his hands while beneath a placard calls attention to the brand. This cut-out is printed in seven or eight colors and gives an excellent representation of the hero of New Orleans, as well as making an attractive advertisement.

OBITUARY RECORD.

GEORGE PELLINGER.

A BRIEF announcement was made in the June issue of THE INDIA RUBBER WORLD of the death of Mr. George Pellinger, president of the Vulcanized Rubber Co., which occurred at his home, Weehawken, New Jersey, on the night of Saturday, May 24.

Mr. Pellinger had been identified with the hard rubber industry since 1872, his start in the business being in a minor factory position with the India Rubber Comb Co. at College Point, New York. He remained with this company until 1878, when he resigned to accept a place in the Rubber Comb and Jewelry Co. of Bloomingdale, New Jersey. He left this company after several years of service, and helped organize the Keystone Hard Rubber Co. of Morrisville, Pennsylvania, with the assistance of Frank Nichols and Wm. A. Sheldon. He remained with this company until 1887, when, at the earnest request of Dr. B. F. Goodrich, he took charge of the Goodrich hard rubber department at Akron, Ohio, remaining there until 1895, when he accepted the position of manager of the electrical department of the Goodyear Vulcanite Co., since changed to the Vulcanized Rubber Co.

GEORGE PELLINGER.

His well known ability and good business qualifications helped him to rise rapidly from this position to the presidency of the company, which office he filled up to the time of his death.

He is survived by his widow and four children.

HENRY KIVER.

Henry Kiver, head of the well-known crude rubber house of Henry Kiver & Co., operating at 5 Fen Court, Fenchurch street, London, E. C., died on the 2nd ult. Arrangement has been made for the continued operation of the business on the same basis and at the same address as hitherto.

PROSPECTIVE EFFECTS OF PROPOSED TARIFF REDUCTIONS ON RUBBER GOODS.

ANY reduction in tariff rates would naturally in the first place operate in favor of those foreign makers who have been doing business with this country in spite of the 35 per cent duty, and are thus in a better position to profit by the situation than those who have been kept out of the market by the tariff and would now have to make new connections. The next efforts to profit by the change would naturally be on the part of countries which have lost ground and wish to regain it.

The annual American imports of india rubber manufactures have been as follows: 1907, $2,262,783; 1908, $1,956,590; 1909, $1,391,770; 1910, $1,154,347; 1911, $875,125; 1912, $998,722.

The average reduction of 60 per cent, between 1907 and 1911 was distributed as follows among the three principal sources of supply:

	1907.	1911.
Great Britain	$193,468	$288,668
Germany	1,028,746	438,302
France	825,399	68,322
Total	$2,047,613	$795,292
Other countries	215,170	79,833
Total	$2,262,783	$875,125

For the six years Germany shows a falling off to the extent of about 47 per cent., while France only retained about 8 per cent. of its former trade. Great Britain, on the other hand, shows a gain of about 50 per cent.

Whether or not the result of the new tariff would be to encourage those countries which have lost ground to make efforts to regain it under the more favorable conditions now in prospect, the advance in imports from England would seem to indicate a still keener competition from that quarter in the future.

Canada has of late partially regained lost ground. In 1907 the imports from Canada nearly reached $28,000. After a drop from $27,970 in 1907 to $1,894 in 1908, and $1,899 in 1909, imports from Canada recovered to $2,684 in 1910 and $51,864 in 1911.

COMPARISON OF PAYNE TARIFF AND NEW SENATE TARIFF BILL.

Paragraph.	Payne Tariff.	Per cent. ad valorem.
463.	Manufactures of India rubber	35
464.	" " gutta percha	35
463.	Rubber sponges	40
135	Wires and cables composed of metal and rubber (equalling)	52
330.	Cotton and rubber belting	30
330.	Tire fabrics	45
347.	Waterproof cotton cloths (equalling)	50½
330.	Suspender webbing (cotton)	45
358.	" " (fiber)	45
383	" " (wool) equalling	84
401.	" " (silk)	50
332.	Manufactures of cotton	45
402.	Clothing of silk and India rubber	60

Paragraph.	Proposed New Tariff as Reported by Senate Finance Committee.	Per cent. ad valorem.
378.	Manufactures of India rubber and gutta percha not specially provided for	10
378.	Druggists' sundries	15
379.	Hard rubber	15
116.	Wires and cables composed of metal and rubber	15
267.	Belting of cotton or other vegetable fiber with India rubber	15
267.	Tire fabrics	25
259.	Waterproof cotton cloths	25
267.	Suspender webbing (cotton)	25
289.	" " (fiber)	30
301.	" " (wool)	35
324.	" " (silk)	45
271.	Manufactures of cotton	30
325.	Clothing of silk and India rubber	50

New Rubber Goods in the Market.

LIVING IN THE OPEN.

"BACK to the open" has been the cry of city dwellers for a number of years. People are pretty generally waking up to the fact that if they had less medication and fewer serums and more fresh air and sunlight they would be much better off. Here is an open-air bungalow. It is made of canvas sides, with plenty of screened windows, and has a canvas

waterproof roof. In addition to the open windows it has open gables—which enables the occupant, while being duly housed, to live practically perpetually in the open air. The cut shows one of these bungalows with a floor space 10 x 14 feet, and with screened windows aggregating 81 square feet. Canvas curtains are provided for covering these screened windows when inclement weather necessitates. It is an admirable little house for camping purposes, for out of doors sleeping, as a summer house on the lawn, a playhouse for the children, or to supplement sleeping accommodations at the summer cottage or camp. It is light and portable, easy to put up and readily taken down. [The Camping Bungalow Co., Hartford, Connecticut.]

A NEW FIRESTONE CLINCHER TIRE FOR ELECTRICS.

Extremely sensitive mechanisms—these electric cars. They cannot be bounced around with impunity—every jolt and jar by that much diminishes the mileage power of the batteries. For that reason pneumatic tires have been used extensively on the electric delivery wagons employed by city stores, to relieve, as far as practicable, not only the mechanism of the car itself, but the batteries from jarring.

But a pneumatic tire on a delivery wagon has its drawbacks, because it may be necessary to arrive at a given point at a certain time, and a puncture or a blow-out may interfere seriously with such a programme. Consequently various manufacturers have devoted much time to the designing of a cushion tire that shall be sufficiently resilient to be used on electric delivery wagons without subjecting the batteries to excessive jolting. The Firestone people have recently put on the market a new tire which they call the "Firestone Clincher Cushion Tire for Electric Cars." The accompanying cut gives a very good idea of it. The manufacturers say that this tire has all the cushion value of the pneumatics hitherto used. It is interchangeable with pneumatics on standard clincher or quick detachable clincher rims. [The Firestone Tire & Rubber Co., Akron, Ohio.]

A BELT TO KEEP SHIRTWAISTS IN PLACE.

Slovenliness is the greatest crime of which a woman can be guilty. Other delinquencies are readily forgiven her, but to go around with everything flying at loose ends is unpardonable—that is a mortal sin. Here is a device to assist women in their effort always to appear trim and orderly. It is a shirt waist belt, consisting of a specially woven corrugated elastic cord with small nickel fastener. It is worn as a belt around the shirtwaist, beneath the skirt, and keeps the waist in place. Its length can be regulated without in any way decreasing its snug fit and tenacious hold. It cannot tear the waist and it is quite inexpensive. [M. W. Schloss, 291 Seventh avenue, New York.]

THE "TREO" SHIRTWAIST BELT.

A RUBBER STAMP FOR EGGS.

In these days when there are so many different qualities for almost every sort of article, the consumer likes to know where his particular purchase comes from, as the brand indicates to him the quality. He always looks for the name when he purchases a tire or a pair of shoes. In fact this principle has been carried even into the world of edibles, so that many

THE "PAT" EGG MARKING STAMP.

people always buy oranges from a particular grove and eggs from a particular poultry farm. Here is a simple rubber stamp for marking eggs. It consists of a little metal tube, one end being open and the other end furnished with a molded rubber diaphragm. In inking the pad the finger is inserted in the cylinder so as to push the diaphragm against the inking pad, but in stamping the egg the finger is removed so that the rubber diaphragm conforms to the shape of the egg. It is a simple and inexpensive device. [The R. H. Smith Mfg. Co., Springfield, Massachusetts.

VOLUME OF RUBBER TRADE.

It has been estimated that out of a rubber production of 108,000 tons anticipated for 1913, nearly 45,000 tons will be consumed in factories identified with the automobile industry. That industry is said to now consume as much rubber as constituted the total supply of the world fifteen years ago.

NEW TRADE PUBLICATIONS.

THE LATEST GOODRICH LITERATURE.

THE B. F. Goodrich Co., Akron, Ohio, is a firm believer in advertising literature. The output from its printing presses is not only of an attractive and artistic character, but it is more or less continuous. During the past month it distributed to the trade a number of interesting pamphlets, among which the following are included:

"The Automobile Tire, Its Care and Repair," which is a catalog in convenient pocket size, of automobile accessories, and contains suggestions as to the proper way of using them. It describes and illustrates the "Goodrich Rubber Cement," the "Goodrich Plastic," the "Self-Vulcanizing Patch," the "Permanent-Puncture Plug," the Goodrich emergency band, the inside protector, and various other articles.

Another pamphlet describes the Goodrich elevator belts, including the special white-covered canning belt. Another little leaflet describes and illustrates the "Crest" fountain syringe. There is also another Goodrich route pamphlet, this time showing how to go from Philadelphia to Baltimore and Washington, and giving small but clear maps of these three cities.

AN EXCEEDINGLY ATTRACTIVE PURITAN.

THERE has been some criticism, these latter days, regarding the Puritan, some contending that while he was a very worthy person, he was too stern and austere to be altogether attractive. But regarding the Puritan maiden there never has been any ground for argument. She is altogether attractive. The E. H. Clapp Rubber Co., which makes certain "Puritan" brands of reclaimed rubber and uses the word "Puritan" as a trade mark, has favored its friends with a handsome colored panel, about 10 inches wide and 16 inches high, showing a "Puritan Girl" standing on the rock-bound coast, looking off at the "Mayflower"—or a craft of a similar type, anchored in the distance. As befits the type, she is a trim figure, plainly attired and extremely proper, but withal, very winsome in her youthfulness and unworldliness. The panel is in a narrow gilt frame and is pretty enough to hang anywhere.

A CONSPICUOUS TENNIS HANGER.

THE United States Rubber Co. has always issued attractive advertising in connection with its "Tennis" brand. Incidentally, its Tennis brand is one of its most popular lines. Possibly the popularity of the goods is attributable to the excellence of the advertising; or possibly the excellence of the advertising simply proves an effort on the part of the printing department of the company to keep pace with the work done by the factory. The latest Tennis product of the company's advertising department is a circular cut-out card, about 12 inches in diameter, printed in red and black, showing around the margin, in letters that appear to be deeply embossed, the words "Champion Tennis Shoes," while running across the card is a cut-out Tennis shoe, of the black variety. It is a conspicuous sign for wall or window.

A FOLDER FOR A RUBBER BOOT.

THE United States Rubber Co. is also distributing a small folder calling attention to its "Hickory" brand of rubber boots. It is printed in buff, green and black, and the front half of the folder shows a half-tone of the boot. On the inner pages will be found some excellent advice regarding the treatment and preservation of rubber footwear. A small wash-sketch shows a farmer coming from the barn, balancing two heavy pails of milk, and wearing a pair of these boots. Incidentally, there is a driving rain, and the pails are not covered, so that the honest farmer will have more milk when he reaches the house than when he left the barn—but he can't help that.

CANADIAN CONSOLIDATED RUBBER COMPANY, LIMITED.

In an attractive group of five catalogues, the Canadian Consolidated Rubber Company, Limited, tells the story of its products, under the divisions of Mechanical Rubber Goods, (A); Druggists' Sundries, (B); Molded, Miscellaneous and Plumbers' Rubber Goods, (C); Fire Hose and Supplies, (D), and Textile Goods, (F). The five catalogues have in the aggregate about 400 pages, in most of which are illustrations of the company's products. Each catalogue having a separate index, reference is thereby facilitated.

Rubber belting, for various reasons, claims superiority to that of other materials, retaining uniform width, thickness and tensile strength in spite of dampness and changes in temperature. These advantages are explained in catalogue A, which further gives prominence to the fact that the company's belting is thoroughly stretched in manufacture, the amount of stretch caused by work being thus minimized. Rubber hose likewise comes under this section, in which are illustrated the varied products of the company for conducting water, air, steam, oil, beer, wine, tannery fluids and acids. The eleven grades of garden hose are effectively illustrated in color printing. With regard to packing, the need of efficiency is duly urged, and emphasized by illustrations of the various grades made by the company.

In Catalogue B, the subject of Druggists' Sundries is fully dealt with, every feature being illustrated. Catalogue C takes up Molded Goods and Plumbers' Rubber Goods, including matting, stair-treads and tiling. Catalogue D is specially devoted to Fire Hose and Supplies.

Catalogue F directs attention to the company's complete line of rubber textile goods, including aprons, carriage cloth, auto top cloth, rubber coats, auto accessories, sportsmen's rainproof materials, horse covers, etc.

Each catalogue is complete in itself, containing views of the company's premises at St. John, Halifax, Montreal, Ottawa, Quebec, Toronto, London (Ont.), Hamilton, Brantford, Winnipeg, Regina, Calgary, Saskatoon, Edmonton, Vancouver and Victoria.

A NEW CATALOG FOR DAVID BRIDGE & CO.

David Bridge & Co., of Castleton, Manchester, England, have been issuing catalogs these 20 years, and as a rule the catalogs have constantly been getting larger, better and more complete. The latest catalog issued by this company—which it calls C 12—covers the friction clutches and driving installation under the Heywood & Bridge patents made by this company. It is a catalog of 190 pages, though, being only 5 inches in width, it can conveniently be inserted in a desk pigeon-hole, or in a coat pocket if desirable. The striking feature of this catalog is its wealth of illustrations. By actual count, there are 305 cuts in the book, some of them pen and ink drawings of machinery, but a great many of them half-tones made direct from photographs. The first cut in the book is an interesting birdseye view of the company's works, giving a very good idea of their magnitude.

In addition to a vast deal of information about the clutches and driving installations of every kind which the company makes, there are at the back of the book a good many tables which will be found of value to factory superintendents and others interested in any way in machinery—for instance, a table giving the belt velocity or circumferential speed of pulleys; a table of horse powers that a good cotton rope of different diameters will transmit at various speeds; a table showing the equivalent of millimeters in inches, and a conversion table which gives the equivalent of the metric system of weights and measures in the system generally in use in England and in the United States.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

The Editor's Book Table.

ANNUAL REPORT OF THE DIRECTOR OF FORESTRY OF THE Philippine Islands. Manila, 1912. [Paper, 60 pp.]

THE annual report of the Director of Forestry of the Philippine Island, for the fiscal year ending June 30, 1912, has come to hand. In the absence of the director, Major Ahearn, it has been submitted by the acting director, Mr. W. F. Sherfesse, and bears evidence of careful compilation.

It is stated that a marked decrease took place during the year 1912 in the exploitation of gutta-percha, owing to the extremely low market price during that period. Timber naturally occupies a prominent place in the report, which is embellished by some effective illustrations of Philippine forest scenes.

ACROSS THE ANDES; A TALE OF WANDERING DAYS AMONG the Mountains of Bolivia and the Jungles of the Upper Amazon. By Charles Johnson Post. New York, 1913. Outing Publishing Company. [Cloth, 362 pp., with 54 illustrations.]

In this bright description of one of the less known highways of travel, Mr. Post has accomplished the main object of the returned voyager. He has, by means of his vivid descriptions of ocean, mountain, jungle and river, carried the reader with him from Panama to Manáos. He reached Callao by steamer, and thence proceeded by a short railway journey of a quarter of an hour to Lima, described as a "Delightful City of Contrasts," in which highly civilized pleasures are found alongside of aimless poverty. Resuming his steamer voyage at Callao, Mr. Post reached Quilca, where he struck the trail leading to San José, continuing his journey by train to Arequipa and Lake Titicaca, finally arriving at Guaqui, where there is a connection with the railway for La Paz.

From the capital of Bolivia, his journey was continued by pack train and saddle, raft and canoe. The third and last of the Andean series was to be crossed, being also the highest and most difficult of the range.

Mr. Post's narrative of how he reached the confluence of the Madeira and the Amazon, thence breasting the current to Manaos, is graphic and picturesque, dealing with every notable incident which marked his journey, lasting over three and a half months from La Paz to its termination.

Rubber forms the subject of frequent reference, particularly the discomforts and disadvantages to which the rubber-pickers are subjected. The facts quoted illustrate and confirm the various statements which have been officially made as to the absolute dependence of rubber pickers upon the estate owners for even the barest necessaries of life.

PROTECTION OF INTELLECTUAL PROPERTY. DR. L. H. BAEKEland. 1913. [Paper, 16 pages.]

Readers of THE INDIA RUBBER WORLD will recall the excerpts published in the April, 1912, issue (page 361) from Dr. Baekeland's paper on the above subject, read at the Detroit meeting of the American Institute of Chemical Engineers. The recent issue of the paper in pamphlet form affords an opportunity of reading Dr. Baekeland's work in its entirety.

The excerpts in question included those portions dealing with "Intellectual Property Rights," "Fundamental American Patent Law," "Incompleteness of New Rules of Supreme Court," "German Practice of Settling Patent Suits," "Deficiencies of Proposed Oldfield Bill," and other points of importance.

In the more complete form as now issued, the paper refers to the fact that the average man has a one-sided conception of patents or inventions, and of the trouble and expense incidental to the protection of even apparently simple devices. The far-reaching effects of chemical inventions is a point which even the better prepared legislators find it difficult to understand; though such inventions have brought about the most far-reaching development. An instance is afforded by the perfecting of the automobile and all that it implies, from Goodyear's process of vulcanizing rubber. Another example is the diffusion of knowledge rendered possible by printing on cellulose paper.

With reference to the cost of living, Dr. Baekeland points out that the industries where invention and patents play the smallest rôle are also those where the increase of prices is most burdensome; while those commodities where patented inventions have had the fullest influence have, on the contrary, decreased in price, sometimes to an astonishing degree. The latter inventions include those of a chemical nature, where cheap soda means cheap soap, paper and glass, while cheap sulphuric acid leads to cheap fertilizers and cheap bread-stuffs. The present price of clothing is high, but would be still higher only for the patented machinery used in textile manufacture.

An interesting section of the pamphlet deals with the organization of the large German chemical companies, which employ hundreds of chemists and engineers exclusively upon research work. Other sections of interest treat of "The Gap Between Invention and Commercial Success," and "The Educational Effect of Inventions."

In the final section, "What should be done," Dr. Baekeland points out two ways open to our legislators; one of them "hitting the trusts" by mutilating the best there is in our patent system, while the other is not to put dangerous restrictions on the patent rights defined by the constitution. There is, however, he adds, an urgent need of reform by simplifying procedure at the Patent Office, as well as in the courts.

Dr. Baekeland, moreover, remarks that the history of almost every invention is an epic in itself, the details of which are known only by the few pioneers, who gave their brains, money, talent and even lives, to its development.

UEBER KAUTSCHUK UND GUTTA PERCHA HARZE (RUBBER and Gutta Percha Resins). By Dr. Gustav Hillen. Berne, 1912. M. Drechsel. [Paper, 96 pages.]

Of the various branches of rubber science, none has been more largely the subject of technical disquisition than that of the resinous components of the substance. In Dr. Hillen's work are condensed extracts of what the principal authorities on the subject have written, his references embracing the works of Terry, Weber, Henriques, Harries, Tschirch and others.

In his treatment of the matter Dr. Hillen has dealt with it in two sections—Rubber Resins and Gutta Percha Resins—regarding both of which branches he has supplemented his references to other authors by original chemical and scientific observations. His general conclusion shows, that, of the two, gutta percha resins are more uniform in their nature, while rubber resins, which have been in the past less the subject of investigation, show quite a different composition, largely consisting of greasy masses, difficult of separation, from which in many cases only substances hard to crystallize are to be obtained. Dr. Hillen adds that the resins of the so-called "pseudo-rubbers" such as Pontianak, Almeidine and others, form an intermediate group between gutta percha and rubber resins.

A number of tables illustrate the analytical results obtained by Dr. Hillen in the course of his researches.

His work, though only of 96 pages, has the advantage of concentrating much that has been written on the matter, thus forming a key to the results obtained by previous scientists. He prepared this dissertation in connection with his examination for the Doctor's degree at the University of Berne, where he had the benefit of the guidance of Professor Tschirch, a specialist on the subject. Dr. Hillen's work will be appreciated by rubber chemists generally, as a distinct addition to existing literature concerning rubber resins.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

AN important action in reference to the use of proofing formulae came on for trial at the Manchester Chancery Court on May 29, and lasted for three and a half days. The plaintiff was F. A. Shiers, trading as Ferguson, Shiers & Co. at Failsworth, Manchester; the defendants being A. O. Ferguson and L. C. Fuller, both directors of a new proofing company at Hollinwood, Manchester. Mr. A. O. Ferguson is a son of the late Mr. Ferguson, who was senior partner of the plaintiff's firm. After his father's death two years ago Mr. A. O. Ferguson became manager of Ferguson, Shiers & Co., and a few months ago, after a disagreement with Mr. Shiers, left the firm, with Mr. Fuller, his assistant, to start a rival business. The present action was brought to restrain the defendants, by injunction, from using the formulae for the "mixings" in their new business, or any colorable imitation thereof; and also to restrain them from circularizing the trade to the effect that they were in a position to supply similar goods to those so long supplied by Ferguson, Shiers & Co. The case was complicated by the fact that the defendant, Ferguson, had been apprenticed to the older firm to learn the business and all the secrets thereof, with the idea of succeeding his father; thus being in a different position from that of an ordinary employe. The main point of the defence, however, was that the "mixings" of the late Manager Robinson having become obsolete, these had been replaced in recent years by new ones of A. O. Ferguson's own, and that therefore they were his property. The plaintiff and his witness contested the novelty of the new formulae, saying they hardly differed from Robinson's formulae, despite the inclusion of crêpe rubber and guayule, which, of course, testify to comparative modernity. Since the proceedings were started, the defendants for the first time had supplied the plaintiff with a copy of their formulae books, Ferguson's containing 99 recipes and Fuller's 163; and after the commencement of the trial, Fuller gave back his book. The issue was then reduced to whether Ferguson was to be allowed by the court to use his M. S. copy of the Ferguson-Shiers' "mixing" book. Chemical evidence as to the composition of the "mixings" was given by Mr. Hutchinson, F. I. C., for the plaintiff, and by H. L. Terry, F. I. C., for the defendants. The latter said that he had read through the book of formulae and had not noticed anything that could be called a secret process. All the constituents given in the formulae were well known in the trade, and were sold to the trade generally and not to individuals alone. The difference was in the proportions of the constituents and this was largely controlled by price and fashion. He could not say that "mixings" identical with those were common to the trade, with the exception of a certain government "mixing." Proofing managers who were worth anything knew well the general lines on which mixings at different prices were made, and though the same constituents might probably be used by different men, he would expect the quantities to vary, as every proofer was a law unto himself. Asked as to the probable effect of an injunction on the defendant, the witness said that he could no doubt carry on business without using their actual formulae, but it would be impossible to go on without using what would no doubt be held to be a colorable imitation. Further evidence for the defence was given by Mr. E. L. Curbishley, who supported Mr. Terry's statements and spoke to the common practice among proofers of having note books as aids to memory. After evidence had been given at length by the two defendants, discussion took place between counsel and judge, the result being that the colorable imitation clause was abandoned in the claim for injunction. Addressing the court for the defence at considerable length, counsel submitted that all a workman undertook to do when he entered his employment was to use his information and skill to the best of his ability on behalf of his employers. There was nothing restricting him, on originating anything, from making a record of it and from making sure of it for his own benefit after leaving that employment. Counsel then cited decisions to show that so far no court had granted injunctions respecting knowledge, unless it had been acquired surreptitiously, or respecting documents, unless they had been copied in breach of confidence. After counsel for the plaintiff had spoken, the vice-chancellor said he would reserve judgment.

ACTION BETWEEN PROOFING FIRMS.

On June 16 the vice-chancellor in his judgment said that an order must go against each of the defendants, restraining them by injunction from making use of any private or secret recipes used by the plaintiff or his firm, and obtained by the defendants while in the employ of the firm; and from communicating or disclosing to any person, company or firm, any of such secret recipes or any information relating to them, or making use of any confidential information relating to the plaintiff's business, obtained by the defendants while in the plaintiff's employ. The defendants were also ordered to deliver up books or memoranda containing recipes or information. The case, he thought, fell under the general rule that an employe, to whom confidential communications are entrusted to enable him to carry out the business of his employer, might not utilize that information for his own purpose after the employment was determined.

JUDGMENT IN PROOFING ACTION OF SHIERS V. FERGUSON & FULLER.

The extremely cool weather of the summer of 1912 gave a great impetus to new developments in the oilskin trade, and this year the business shows a large increase, though the weather has not been so persistently bad. The developments I refer to are the production of light articles, overalls and coats of oilskin to be worn by the man and woman in the street, the business in the past having been mostly confined to mariners, whose requirements were for something useful rather than ornamental. The oilskin business in Great Britain has not been carried on as a branch of a rubber manufacturer's business, except at the old established works of Messrs. Abbott, Anderson and Abbott at Dod street, Limehouse, London. This firm has long carried on the manufacture jointly with that of ordinary rubber waterproofs, and it is not surprising that they are in the van of the new business. I don't know whether the new goods are being made in America, but at any rate the subject is of some interest, as the oilskin comes into direct competition with the macintosh. In order to get some information on the subject I obtained an interview with Mr. William Abbott, who informed me that his firm had largely extended their oilskin business; new works having been acquired at Harpenden, some miles from London. The Dod street works are now devoted entirely to the making up of rubber-proofed cloth into garments. Mr. Abbott reports the new oilskin trade as exceedingly brisk; they being booked up with orders for months to come. Though the goods are made in different qualities to retail at from 4s. 6d. to 30s. ($1.08 to $7.20) each, the principal demand is for the 30s. oil-silk, known as

OILSKIN WATERPROOFS.

Abbott's "Auto-Soie." These are made in eight colors, and are very light and transparent. What their lasting power is, compared with a macintosh of the same price, I do not know. But I gather that their life is by no means co-extensive; more particularly because they require careful handling. The main point about the business is that they have become popular with ladies who are not too particular as to the price, as long as the thing is fashionable. One of the advantages of the oil-skin over the macintosh, I am told, is that it permits an expensive dress underneath it to be seen by others, and that largely accounts for their appearance this year at fashionable out-of-door gatherings in dubious weather. Although Abbotts may be considered the pioneers in this business, they are by no means without competitors, and in all probability, unless the demand should prove evanescent, we shall see further competition arise.

DANGEROUS GOLF BALLS.

A somewhat sensational paragraph has been going round the English papers with reference to a case in America where a boy lost the sight of an eye by opening a liquid core golf ball. As there is no reason to doubt the authenticity of the case, it would certainly seem advisable that balls containing corrosives such as caustic soda and chloride of zinc should be sold with some notification of their hidden danger. One of the results of the paragraph has been the bombarding of British dealers in golf balls as to the dangers that may lurk therein; the general answer being that such balls are not sold here.

RE-FORMED RUBBER.

Compared with what was the case two or three years ago, one hears singularly little about re-formed rubber nowadays. With regard to the Premier Re-forming Co., of Walthamstow, a new board of directors has been elected, and at a recent meeting it is understood that the financial position was under special consideration. Mr. Rawson, who was the promoter of the company, and who was to act as consulting engineer for a term of years at comfortable remuneration, has now severed his connection with the concern.

TEACHING RUBBER MANUFACTURE.

I have read the editorial headed "The Best Rubber School" in the June issue of THE INDIA RUBBER WORLD with interest, and have little doubt that it will be endorsed by our manufacturers generally. Here, as in America, the best rubber schools are still to be found within the four walls of the factory. Your reference to one of the Polytechnic institutes in London is not quite accurate; the Polytechnic in Regent street being the only institution bearing that title, and ranking among the numerous technical colleges now to be found scattered over the metropolis. Already the initiative of the Polytechnic in founding a rubber department has been copied in provincial technical schools and doubtless the movement will spread under the aegis of education enthusiasts, and the glut of those who wish to turn their knowledge to account as leaders. Some manufactures can no doubt be successfully taught at colleges, but I don't think that rubber can be included in their number, for reasons which it would occupy too much space to elaborate. Mention may, however, be made of the varying procedures in important matters of detail, which occur in the several works and which, if they do not in truth merit the term of secret processes, come near the category of such, and at any rate are kept as quiet as possible by those working them. It seems to me that the teacher of the rubber manufacture who goes beyond general principles will make himself unpopular with, at any rate, some of the manufacturers, and others will be in a constant state of suspense as to whether their particular methods will come out in the lime-light of the classroom. Leaving this point, however, for another, it is certain that the supply of chemists wishing for posts in rubber works will shortly (if such is not already the case) largely exceed the demand.

THE USE OF LIME IN RUBBER.

Compared with what was the case twenty years ago, the use of lime in compounding rubber shows a decided increase. Not only is it more generally used in rubber goods, but, what is more noticeable, the very small proportions of the past are now being exceeded. The main reason for this lies in the fact that whereas in the past rubber used to be kept for weeks—in some cases months—after washing, before being used, a more hand-to-mouth policy now prevails and the rubber is used up at once. Without necessarily being damp, it is apt to be so. Hence the increased use of lime as a preventative of prospective trouble.

THE RUBBER TRADE ASSOCIATION OF LONDON.

WITH the growing importance of London as a rubber market, the necessity had become evident of an organization in which the various sections of the trade would be appropriately represented and which would at the same time serve as an authority on the various questions arising in the conduct of the increasing business of the port.

The foundation in April last of "The Rubber Trade Association of London" has met these requirements. Its establishment under the auspices and with the co-operation of the "Rubber Growers' Association" ensures a continuity of previous efforts. The last named body has four representatives on the committee, which likewise includes six brokers and six dealers.

As defined in the general regulations, the objects of the association are: To promote the best interests of the Rubber Trade as a whole, for the mutual benefit of all concerned, producers, importers, brokers, dealers and consumers in general; to facilitate the settlement of disputes in the trade by arbitration; and for these purposes to make rules for the proper supervision and efficient conduct of the trade, including the regulation of mutual transactions between members of the association.

The entrance fee is £5 5s. ($26.25), the annual subscription being of like amount.

A prominent feature of the association is the "Standard Qualities Committee," whose duty it will be to examine all samples of plantation rubber sold under any of the standard descriptions, for the purpose of certifying before tendering whether such samples conform to the recognized market standards.

The officers and committee for 1913 are: Chairman, Samuel Figgis; vice-chairman, Harry Symington, and treasurer, J. D. Johnston.

The committee consists of the following brokers: A. Bussweiler, Andrew Devitt, Samuel Figgis, Patrick Gow, W. J. C. Hendrey, and Geoffrey Hoare; of the following dealers: E. Berg, J. D. Johnston, Arthur Meyer, E. Stevenson, L. Sutro, and Harry Symington; and of the following representatives of the Rubber Growers' Association: A. Gordon Dickson, E. L. Hamilton, Arthur Lampard, and John McEwan.

The Standard Qualities Committee for 1913 consists of Spencer Brett, Andrew Devitt, W. J. C. Hendrey, L. Jacob, Arthur Jones, F. Loeflund, A. H. Punnett, Roger E. Thompson, and W. S. Worthington.

The secretary is William G. Briggs, and the offices are at 6 Mincing Lane, E. C.

NEW LONDON RULES FOR PLANTATION RUBBER BUSINESS.

One of the first acts of the association has been the promulgation of a set of 30 rules, applicable under arrangement to private contracts, but to which all sales of rubber at public auction are considered as subject. These rules are to govern all contracts made on or before May 1, 1913, but rule 4, abolishing the allowances for draft and discount (referred to later on), will only apply to contracts made on and after January 1, 1914.

In rules 2 and 3 the usual formalities of auction sales are

provided for. Rule 4 fixes the "prompt" (or date of settlement) as the Saturday fortnight from date of sale or tender; sales or tenders dated on Saturday to be "prompt" that day fortnight. Draft ½ per cent., discount 2½ per cent., but on contracts made on and after January 1, 1914, no allowance for draft or discount will be made.

TENDERS.

Under rule 5 tenders are to be made on official forms, which are circulated through the hands of the parties interested. For a tender to be good, the first seller must be in a position to deliver on day of tender. By rule 6 buyers have the option of rejecting any tender of less than 2,000 pounds, except in completion of a contract.

Rule 8 provides that rubber sold under standard descriptions, before being tendered, must be certified by the Standard Qualities Committee of the association.

WEIGHTS.

According to rule 12, rubber is to be taken at reweights. Rule 13 provides for the final deliveries on contracts to be within 100 pounds of the weight contracted for, but in any case the nearest admitted by the average weight of the cases of the final tender

ARBITRATION.

The following rules apply:

DEFAULT. RULE 14.—Whenever it may be admitted by the seller or decided by arbitration that the seller has failed to fulfill the terms of the contract, the buyer shall "close" by invoicing back the rubber to the seller at once, at a price and weight to be fixed by arbitration, which price shall not be less than 2 per cent., and not more than 10 per cent. over the estimated market value of the shipment contracted for on the day upon which the default occurs, the difference to be due in cash in seven days.

SHIPMENT CONTRACTS. RULE 16.—When a parcel of rubber is sold under one of the standard descriptions for a specified shipment or for shipment by a specified steamer, and found inferior, or if any portion tendered be found inferior, buyers shall have the option of rejection; and the quantity so rejected, whether the whole or any portion, shall not constitute a delivery on the contract, but should the time for delivery have expired the seller shall be allowed three clear working days to replace the quantity rejected (provided that such quantity was in the opinion of the arbitrators a *bona fide* tender), otherwise Clause 14 of these rules to apply.

IF RUBBER IS INFERIOR TO GUARANTEE BY OVER 2*d*. PER POUND. RULE 17.—When a parcel of rubber is sold with a guarantee of quality other than as specified in Rule 15 for a specified shipment or delivery or for shipment by a specified steamer, and found inferior, or if any portion tendered be found inferior, the buyer must accept the same with an allowance, provided such allowance in the opinion of the arbitrators be not more than 2d. (two pence) per pound or otherwise as may be specified in the contract; but should the parcel or any portion tendered be rejected, the seller to have the option (provided that it was in the opinion of the arbitrators a *bona fide* tender) of substituting guaranteed quality on the spot, to fulfill his contract within three clear working days or the expiration of time for delivery as the case may be; otherwise Clause 14 of these rules to apply.

APPLICATION.

APPLICATION.—The final clause provides that these rules shall govern all contracts made on or after May 1, 1913.

RUBBER MANUFACTURING MACHINERY.

Under No. 10915, the Bureau of Foreign and Domestic Commerce reports that a European engineer, at present engaged as consulting and visiting engineer for tea and rubber estates, informs an American consulate that he is confident American manufacturers of rubber-making machinery could find a large market locally if they were willing to undertake the manufacture of machinery slightly different from that now in use on rubber estates. He states that he is willing to submit plans and specifications for machinery such as he believes would find a considerable market among estates, to any American manufacturers who will communicate with him.

RECOVERY OF RUBBER SOLVENTS.

In the application of rubber to fabrics on the spreading machine, the benzine is lost through being converted into gas by evaporation, unless there is a suitable apparatus for the recovery of the solvent. According to the "Gummi-Zeitung," such an apparatus might be constructed as follows: A longitudinal wood frame with a suction appliance is built in the spreading machine, while on the wood frame a funnel-shaped appliance of thin galvanized iron is constructed, in the center of which is a pipe for the suction of the benzine vapors. It leads to the cooling apparatus, which is situated outside the building. The suction pipe lies somewhat higher than the waste pipe, both being connected by a T-shaped piece. The pipes are cooled by cold water, the benzine vapors being thereby again converted into benzine and caught up in a glass carboy or other suitable receptacle.

A RUBBER INSTITUTE!

WRITING to the "Financial Times" of London, under the name of "Robusta," a correspondent suggests that the Eastern plantations should establish in London an institute for dealing with anything and everything which may promote their welfare.

Its activities might be under two headings: (1) commercial, (2) educational. Under the first heading it might be made the chief Rubber Exchange of the world, where the dealers might have their offices and meet their clients at daily markets. It could also be made a rubber technical institute, dealing with all problems in connection with the manufacture of the raw material and the discovery of new uses for rubber. Under the second heading it might become a training schoool, where young men proposing to become planters might receive the necessary scientific training for reaching the highest standard of efficiency.

It should have at its disposal funds for the encouragement of research, by offering substantial prizes for essays, observations, experiments, or technical improvements which might add to the prosperity of the industry.

A PROSPEROUS GERMAN COMPANY.

The Rhenish Rubber and Celluloid Co. reports for 1912 a surplus equalling $658,903, as compared with $617,263 for 1911. A dividend of 30 per cent. has again been paid.

UNITED BERLIN-FRANKFURT RUBBER FACTORIES.

At the recent general meeting of the above company a dividend of 9 per cent was declared for 1912. Prospects for the current year were said to be affected by the political situation, which had restricted purchasing operations.

HYGIENIC EXPOSITION AT LIMA.

An international hygienic exposition will be held at Lima, Peru, from September 2 until December 31, 1913. All exhibits will be admitted free of duty.

INCREASING FRENCH TRADE IN AMERICAN RUBBER SHOES.

United States Consul Carl Bailey Hurst, of Lyons, France, reports that trade in American footwear is increasing in his district, American rubbers, storm slippers and sandals being more widely used.

RUBBER TRADE BETWEEN LONDON AND UNITED STATES.

According to the recent report of Consul General John L. Griffiths, of London, the imports from the United States at that point for 1912 included 441 tons of rubber, valued at the equivalent of $135,488.

The crude rubber exports to the United States represented for 1911, $13,733,753; and for 1912, $28,676,300; while the exports of rubber clothing and manufactures represented for the two years respectively $483,178 and $487,379.

MR. YORKE'S OFFICE IN PARIS.

Mr. H. William Yorke announces to the trade that he has opened offices at 26 Rue de Turin in Paris, for the purpose of dealing in Colonial produce in general, but particularly in crude rubber. He has had twenty years' experience in the gathering, cultivation and manufacture of rubber.

GERMAN EXPORTS OF CRUDE AND WASTE RUBBER.

GERMAN statistics of rubber exports for 1911 and 1912 show the following results: Crude and washed rubber in 1911 represented 4,592 tons; in 1912, 4,943 tons. The amounts were made up as follows:

GERMAN EXPORTS OF CRUDE AND WASHED RUBBER.

To—	1911. tons.	1912. tons.
United States	2,394	2,671
Russia	428	660
Austria-Hungary	648	532
Great Britain	336	392
France	204	188
Belgium	206	164
Sweden	107	99
Italy	64	88
Denmark	42	38
Switzerland	43	25
Netherlands	62	20
Other countries	58	66
Total	4,592	4,943

GUTTA PERCHA.

Total exports were in 1911, 184 tons; and in 1912, 291 tons.

BALATA.

In 1911 Germany exported 220 tons; in 1912, 222 tons. Among the items of export were:

GERMAN EXPORTS OF BALATA.

To—	1911. tons.	1912. tons.
Norway	28	45
Great Britain	77	41
British Malaya	...	35
Other countries	115	101
Total	220	222

RUBBER SUBSTITUTES.

Germany exported in 1911, 198 tons; in 1912, 219 tons.

WASTE RUBBER, GUTTA PERCHA AND BALATA.

These represented in 1911 a total of 2,314 tons, and in 1912, 6,034 tons. The separate quantities taken by the chief outlets were:

GERMAN EXPORTS OF WASTE RUBBER, GUTTA PERCHA AND BALATA.

To—	1911. tons.	1912. tons.
Great Britain	968	2,840
United States	518	1,917
Netherlands	176	379
France	127	249
Austria-Hungary	180	222
Other countries	345	427
Total waste	2,314	6,034

GERMAN RUBBER INDUSTRY OF 1912.

The report of Consul General A. M. Thackara, of Berlin, on industrial conditions in Germany, states that the year 1912 witnessed a brisk trade in rubber goods, prices being, however, depressed. This was specially the case with the manufacture of tires, in which there was marked competition.

DRUGGISTS' EXPOSITION IN GERMANY.

The first South German Druggists' Exposition will be held at Münich from August 14 to 31, 1913.

CENTRAL ASSOCIATION OF GERMAN RUBBER MANUFACTURERS.

AT the general meeting of the Central Association of German Rubber Manufacturers, held in Berlin on May 3, the opinion was unanimous that makers have no reason at present to quote reduced prices. It was pointed out that the quotations for crude rubber differed but slightly from what they were when the last prices of goods were fixed. Furthermore, manufacturers have in many cases stocks of dear rubber, while the other elements of cost are constantly advancing. Even if the prices of crude rubber present certain advantages under special circumstances, these are needed, it was urged, for healing old wounds, and for recouping former losses, instead of spoiling the market by low quotations.

With regard to crude rubber, it was, moreover, represented that it is only a question of time when the price will again be generally higher, while Pará may advance any day. It would be difficult to restore the selling prices which would be affected by reductions at this time.

It would be specially unsafe to reduce prices of goods in which rubber, although a component, does not represent the predominant factor of value. A resolution was adopted expressing the opposition of the assembled manufacturers to any reduction of prices.

The meeting was under the presidency of Herr Kommerzienrat Hoff, who, in his opening address, reported that while in the business year—April to April—most factories had been well occupied, results could not be generally described as favorable. He attributed the reason in a great measure to the labor question. It was for manufacturers to prevent outside organizations from exercising any influence in their factories, at the same time promoting measures for the benefit of the workers.

Herr Hoff likewise drew attention to the need of combined action on the part of manufacturers with respect to the conditions of tender and guarantee in furnishing supplies to railways, expressing the opinion that the conditions of guarantee for brake and heating hose included some which could not be fulfilled. The association would again take up the matter with the railway administrations with a view to the needed reforms being carried out.

With regard to next year's London Rubber Exhibition, it was unanimously resolved that the participation of the German industry is desirable. Kommerzienrat Seligmann, who will be at the head of the German section, urged the necessity of such participation in order to claim the merited attention for German goods.

The annual report dealt, among other subjects, with the difficulties arising from certain legislative enactments prohibiting the employment of rubber containing lead or zinc for nipples, etc. Such articles are bought in foreign countries and the inability to furnish them forms an obstacle to German export trade.

For the purpose of allowing the needful representations to be made to the proper authorities with respect to the Putumayo atrocities, a resolution was adopted promising the moral and financial support of the association in such a course.

INCREASED PROFITS OF BELGIAN RUBBER COMPANY.

The report of the Société Anonyme pour le Commerce et l'Industrie du Caoutchouc, Brussels, shows the profits for the last three years as equalling: 1910, $48,632; 1911, $65,416; 1912, $84,092. These figures show a healthy development of the company's profits.

AMERICAN TIRES IN ITALY.

United States Consul Piero Gianolio, of Turin, reports the fact that although the French Michelin Co. has a large factory at Turin, and tires are also furnished to that market by Pirelli & Co., Milan, foreign makes are still imported in great quantities. Among them are the Continental, Dunlop, Goodrich and Palmer tires.

RUBBER TRADE IN JAPAN.

By Our Regular Correspondent.

TOY RUBBER BALLOONS.

THE Japanese factories specially devoted to the manufacture of rubber toy balloons number about 30 in Tokio and 12 in Osake. Several hundred factories, however, make this article as a supplement to their regular production. Crude rubber is used to the aggregate extent of about 250,000 pounds a year, the principal descriptions employed being Pará sheet and biscuit, in addition to Borneo rubber.

Imports of toy balloons ceased some years ago, the domestic production having been so placed as to exclude foreign competition. The makers of toy balloons have been working under the Japanese patent No. 8785, issued in May 1905 to Mr. A. Fukumori, the inventor of the process thus patented.

Briefly described, the process consists in the rolling of Pará, Indian, Borneo, or other grades of rubber, after mixing, through rollers at a high temperature. After being dissolved with volatile oil, the needed coloring substances are added. These rubber solutions are each kept in a metal or glass box, closing tightly, to prevent volatilization.

Various kinds of molds have been tried in succession, metal, china, and glass molds having been made. From being at first round, their shape has now changed to oval, like the top of a small spoon. The mold has a long handle, by which it is dipped into a solution of chloride of sulphur to facilitate vulcanization.

Dipping the mold into the rubber solution produces a membrane of rubber on the surface of the glass, this membrane attaining a suitable thickness after having been several times immersed. When the mold has been kept for three hours in a clean room to dry, the membrane is vulcanized by dipping it into a solution of chloride of sulphur for one second, this solution being on the basis of one ounce of chloride to half an American gallon of volatile oil. When the vulcanization is concluded, the rubber membrane is peeled from the glass mold and a seamless rubber toy balloon is thus turned out.

Such are the principal features of Mr. Fukumori's patent, of which he claimed that the process of Mr. K. Ogata and the late Mr. R. Kotake was an infringement.

In 1905 the lowest grade of foreign toy balloon was sold at 50 yen (25 cents) a gross; the same thing being now produced in Japan at 15 sen (about 7½ cents) a gross. The Japanese manufacturers who then went into the production of toy balloons made large profits and became wealthy in a few years.

Owing to its simplicity, the patent of Mr. Fukumori of 1905 was infringed by a number of manufacturers. He attached the factories of 20 in Tokio and 7 in Osaka, and 7 succeeded in arranging for a royalty in every case except one, in which a compromise was effected. In many instances, however, the manufacturers did not pay the stipulated royalty, and Mr. Fukumori was forced to take further steps. In 1907, being tired of thirteen years' litigation, he gave up his patent rights, since which time they have been open, with the result that the industry has freely developed. The method has been applied to nipples, finger cots, water pillows, etc.

Toy balloon factories employ many female hands. Among their manufacturing economies is the dipping of 100 molds at one time into the chloride of sulphur solution, each containing a membrane of rubber.

The average daily wage of the women balloon makers is 20 sen (10 cents) for ten hours. Other female hands get the same or a little more. The average daily rate of rubber manufacturing hands (male and female) is 50 sen (25 cents) for ten hours. This low rate of hand labor is calculated to encourage foreign manufacturers contemplating the establishment of factories in Japan, in the same way as has been done by the Dunlop Rubber Co. Far-East, and the Ingram Rubber Co. of Japan.

Toy rubber balloons are principally manufactured from September to February, and to a lesser extent between March and August, vulcanization during the latter period being more difficult. The same manufacturers produce a rubber toy operated by blowing, in which, however, only Pará rubber is used.

Out of the forty toy balloon manufacturers in Japan, three are of importance and finance the smaller makers. They buy the product of the latter for distribution in the cities, towns, and villages of Japan, Corea and China. These three are: C. Kamijo, Sekiya Rubber Branch, and T. Nishimura; all of Tokio.

It is reported that in order to profit by the cheap labor in Japan, a company will be established to export this article. The project is said to have the financial support of a foreign oil company.

JAPANESE RUBBER IMPORTS.

Comparative statistics published of the Japanese crude rubber imports for 1911 and 1912 show some interesting facts. The figures are as follows:

JAPANESE CRUDE RUBBER IMPORTS.

From	1911. *Pounds.*	1912. *Pounds.*
British Straits Settlements	1,223,071	1,214,485
Great Britain	426,013	242,620
British India	121,160	167,063
Dutch India	132,173	124,904
French India	not specified	3,805
United States	112,170	158,176
Germany	4,588	25,600
Mexico	not specified	113
Other countries	35,689	66,977
China	not specified	267
Total pounds	2,054,864	2,004,010

While the net average reduction equals about 2½ per cent., the difference varies in the cases of different countries. While there is a diminution of about 40 per cent. in the imports from Great Britain, there is a sixfold increase in the quantity from Germany, and that from "other countries" is nearly doubled.

In one respect the two years show a like result. The British Straits Settlements in each case supplied about 60 per cent. of the total Japanese crude rubber imports.

That, notwithstanding the development year by year of the Japanese rubber industry, the imports of crude rubber should show a decrease, is a fact which has been attributed to several causes. Japanese manufacturers used in 1912 an increased quantity of reclaimed rubber, of their own reclaiming or purchased in that condition. Another cause was the reduced consumption of "tabi" soles, used by the Jinrikisha men. The development of automobile and electric railway traffic was felt in the reduced demands of these men for the soles named. Still another reason was the general mourning for the late Emperor of Japan, which checked jinrikisha riding. While reclaimed rubber is the principal compound of "tabi" soles, a certain proportion is crude rubber, so that the imports of the latter were to a certain degree affected by the above-named cause. Some of the "tabi" manufacturers, however, turned to making rubber soles for Chinese sandals, and thus to a certain extent offset the falling off in the demand for their products.

RUBBER JINRIKISHA TIRES FOR MANCHURIA.

Solid rubber tires are said to have good prospects in Manchuria. Last spring forty pairs were imported from France, at Hoten, the capital of Hoten-Sho, where all the jinrikishas in the city have changed from iron to solid rubber tires. For this purpose, 2,000 pairs were imported from Japan.

DEATHS OF NOTED RUBBER MEN.

Mr. E. Sugii, proprietor of the Sugii Rubber Works, Tokio, recently died from heart failure. He went to the United States in 1905, where he entered Yale University. After his return to Japan, he established the East Marine Insurance Co., the Commerce Bank, and the Sugii Rubber Works

Mr. J. Iwaya, Japanese vice-consul at Singapore, has died of brain fever. He frequently reported to his government on Malayan and Dutch Indian plantations, and contributed to the development of rubber planting with Japanese capital

Mr. Isamburo Yamada, the first aviator and airship constructor in Japan, lately died, from a carbuncle. His experiments had lasted from 1897 to 1904. His airships, which are oval in style, as shown by the illustrations in THE INDIA RUBBER WORLD, December, 1911, were the only kind used in the Russo-Japanese war. There is no metal used in their construction, and their weight is consequently light. His funeral was attended by many prominent officials and other personages.

NEW JAPANESE COMPANIES.

The Kinshu Electric Wire Co. has been established at Osato, Fukuoka-Ken, with an area of 1¼ acres, of which about one-third is built on. The machinery has been installed by Birmingham makers and by the Japanese Iron Works of Tokio, the total capacity being 100 h. p.

In the equipment are included: 1 calender, 1 mixing roll and 1 washing roll. The product includes weatherproof wire, rubber wire, silk or cotton cord, lead tubes, etc. The officials are: President, S. Fujinami; director, S. Higase; manager, T. Seida, and expert S. Uemura.

The Taisho Rubber (Watanabe's Works) was established through the purchase by N. Watanabe, of the Tokai or Kwanto Rubber Works of Tokio, which were in financial difficulties. Its equipment consists of a 40 h. p. boiler and 15 h. p. engine, 2 mixing rolls and three vulcanizers. The product consists of "tabi" and "zori" soles.

NOMOTO RUBBER WORKS BURNED.

The rebuilding of the Nomoto Works, of Tokio, burnt in March last, is being actively proceeded with. In compliance with the wishes of the owners of adjoining premises, a three-foot wall is being erected, encompassing the factory, to diminish the risk of fire spreading.

WHEELS WANTED FOR RICKSHAWS.

According to the report of an American consular officer in the Far East (published under No. 11015, by the Bureau of Foreign and Domestic Commerce, Washington, D. C.), there is a considerable market at that point for wheels for rickshaws. A local company would be glad to hear from manufacturers of these wheels, with a view to taking an agency. The specifications furnished by this company are as follows: Wheels, 32 inches in diameter from rim to rim, not counting pneumatic tire or cover; hubs, extra strong, 4 inches between flanges, having ⅞-inch spindles, or screwed right and left to suit tubular axle; rims, 32½ by 2 inches, to take tires 36 by 2 inches, made of steel 17½ gauge; axle, tubular, either plain or screwed right and left to suit hub spindles; spokes, best quality, strong gauge, tangent spokes, and nipples to suit.

Vice-Consul Raymond S. Curtice, of Dalny (Darien), also reports that pneumatic-tired jinrikishas have recently been imported at Dalny from Shanghai, the wheels being of smaller diameter than the rubber-tired jinrikishas of Japanese make. The suggestion is made that American rubber manufacturers should note this possible opportunity for extending trade.

PROGRESS OF THE RUBBER INDUSTRY IN DUTCH GUIANA.

By a Resident Correspondent.

IT has long been known that the rubber tree grows in Dutch Guiana, but it has been cultivated commercially on an extensive scale for only a few years, the plantations being situated along the banks of some of the great rivers of the colony.

It is unnecessary to discuss the adaptability of the soil for growing rubber here, for no less an authority than the Editor of THE INDIA RUBBER WORLD, who visited the colony some years back, has declared that the common soil was equal to the best he had seen in the Malay country.

The colony is undergoing a great change in regard to its rubber raising industry, which will undoubtedly prove a source of wealth to those who have already invested, and to others who may put money into rubber growing in the colony. It will be interesting, however, to learn that in all the plantations on which Pará rubber—*Hevea Brasiliensis*—has been planted, the rapid growth of the trees and the large returns in latex have astonished visitors from other rubber producing lands. These facts certainly go to prove that the soil in Dutch Guiana is admirably adapted to the successful cultivation of this product. On plantation "Voorburg," for instance, during the month of March of the present year, tapping operations with 51 laborers at a cost of fl. 31.60 ($12.64) per day, yielded on an average 15 kilograms (33 lbs.) rubber per day. The total expenses, including preparation, etc., came to fl. 3 ($1.20) per kilogram (2.2 lbs.). Two hundred tapping days are calculated upon in the year, which would bring the production up to 3,000 kilograms at a total expense of fl. 6,320 ($2,528), as against a market price of fl. 5 ($2) per kilogram; which shows a profit balance of fl. 8,780 ($3,512). These returns and costs of production from only one plantation with about 7,000 trees, now nearing maturity, will be sufficient evidence that the rubber industry in the Dutch colony will prove highly remunerative, even when the market price of rubber stands at a lower figure than that used in the calculations above. It must also be remembered that the returns in rubber will be increased yearly as the trees grow older.

A little word of advice to those anticipating rubber ventures in the colony may be timely, and may help to remove any prejudicial feelings caused through misleading statements emanating from the late pessimistic Director of Science and Agriculture. This official, for reasons of his own, tried to impress the idea upon the public that the rubber industry in Dutch Guiana would never be remunerative; at least that it would not be nearly as productive as, for instance, in the Far East, where he claims that the soil conditions are superior. It is not our intention to comment too strongly on the unjust statements of this gentleman, as he has since been removed from the colony, for the colony's good, and sent to another part of the globe where he is likely to do less harm. Dutch Guiana is passing through a period of misfortune, and her good name must always be safeguarded against such unwarranted attacks, especially when she is endeavoring to make good what she has lost through repeated "black eyes" from some of her own sons. Incorrect statements from high officials, if left unchecked and unchallenged, tend to convey wrong impressions to those who may be inclined to consider the colony seriously at some time or another. It is pleasant, however, to know that in the face of all the false statements that have gone out from here—and which have been allowed so far to remain uncontradicted by those who by virtue of their prominent official positions, should be the first to make every possible effort to spread the truth about the colony—plantation "New Clarenbeck" was sold at public auction to an American combination.

We repeat, and with the strongest emphasis possible, that the future of Dutch Guiana as a rubber producing country is assured; and we are prepared at any time to contradict any incorrect statements that may be damaging to its reputation.

NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

THE BALATA INDUSTRY.

SOME interesting figures respecting the local balata industry have recently been furnished by the Comptroller of Customs in his annual report for 1912. The statistics given in that report show that last year the output of balata declined by the large total of 446,196 pounds, the value of this reduction being $219,860.22. The Comptroller points out that this reduction is a direct result of the drought, saying: "The upper reaches of the river were so dry that the despatch of expeditions to many of the tracts was considerably delayed; and so the bleeding season was much shorter than usual. The collectors found when they did commence work, furthermore, that the long spell of dry weather had so affected the balata trees that in the process of tapping the yield of latex was much below the normal." Doubtless the drought was the dominant factor, but it is possible that the failure of one or two companies exercised some small influence on the output. The year was an exceedingly bad one, as the figures for the past five years show: 1908-9, 1,090,405 pounds, value $471,076.19; 1909-10, 1,034,076 pounds, value $486,-034.81; 1910-11, 1,162,588 pounds, value $670,192.32; 1911, 1,152,-410 pounds, value $707,284.28; 1912, 705,214 pounds, value $481,-423.96. This year has witnessed a large increase in the exports of balata, and hopes have been entertained that the industry had excellent prospects. The rumors, however, of shortage of rain in the interior, of which I wrote last month, have proved true, and according to information direct from the bush, the bullet trees are budding and it is impossible to bleed them. There is at present in the colony Mr. R. Morrisson, a director of what we formerly called the Demerara Rubber Co., now known as the Demerara and Coverden Produce Co. Mr. Morrisson came out here towards the end of last year, and in January he accompanied the company's balata expedition to the Rupununi District. He has recently returned to town, and has expressed the opinion that the prospects in connection with the balata industry are very poor.

NEED OF RAILWAY BUILDING.

One of the most serious obstacles with which those engaged in the collection of balata in this colony have to contend is the difficulty of traveling in the interior, with the consequent loss of time. The building of a railway, which is still being talked of but about which nothing definite done, would revolutionize the balata industry here. One of the latest proposals in this connection is the construction of a line of railway along the coast of the County of Essequibo, to connect the colony with the Yurawai River District of Venezuela, in the province of Upata. An expedition recently went out to that district from this colony and found the whole region along the route which it has been suggested should be taken by the railway, extremely rich in balata and other products. It is generally believed that if satisfactory arrangements could be entered into with the government of Venezuela for the building of such a railway, along the route I have mentioned, the balata industry of both this colony and the neighboring Latin-American Republic would be greatly benefitted. Now that the prohibition of the importation of Venezuelan balata into this colony has been removed and it is allowed to come over the border on the same footing as the local product, viz., by paying a royalty to the British Guiana Government of two cents per pound, collectors of the latex in the Republic are glad to take advantage of the close proximity of the town of Morawhanna, in the northwest district of this colony, from which point there is a regular weekly service of steamers to the port of Georgetown for the shipment of their balata. In forwarding it by this route, collectors in Venezuela effect a considerable saving, for the expense of transporting the product of the expeditions to the nearest Venezuelan port is much heavier, the distance being so much greater. With the proposed railway in operation, transport would be still easier, and the balata industry in both countries would no doubt receive a great impetus. Unfortunately the lack of railway communication is not the only disability from which the Northwest District of the colony suffers. Dry weather is at present being experienced there, and during the past few weeks if it had not been for the fact that there is a good spring at the rubber station at Ossororo the members of expeditions would have suffered acutely. There are no water pumps in the district, and these are urgently required. The town of Morawhanna, which is the point from which the actual journey to the interior commences, is less than two hundred miles from the capital, but a weekly steamer service has to suffice. Recently His Excellency the Governor (Sir Walter Egerton) made a tour of the district, and the fact that in the course of his journeys he experienced considerable difficulty in traveling has aroused in the breasts of collectors of balata some hope that he will now realize the difficulty attending the prosecution of bush enterprises in this colony, and will extend a meed of sympathy to them.

DIFFICULTIES OF NAVIGATION.

The difficulties that attend the collection of balata would be infinitely less serious if good and experienced bushmen were more plentiful. Even with the most experienced man in charge of an expedition, the difficulties are very serious, as the following account, written to the "Chronicle" by a boat hand, will show: "It may, I think, interest a few of your readers (especially those concerned in the balata industry) to hear of a couple of experiences gained by one who has recently made his first trip to the Rupununi and back. The boats leaving Rockstone have failed pointedly to make the journey under a month, and this too (to use a common phrase), with severe blows, all owing more or less to the heavy dry weather prevalent in the district for the last six weeks or thereabout. Hence, Captain James McDonell, of the firm of Garnett & Company, and his four associates, deserved to be complimented on the manner in which they conveyed to Rockstone on the return trip, from the station known as Inkapati, for Messrs. Sprostons, Limited., one steam launch, one boat and seven steam barges, completing the task in the short space of eleven and a half days without an injury happening to any of the crafts. But for the coolness, the courage and quick presence of mind of this worthy captain, only half of the journey might have been made within that space of time, and who knows if some of these crafts might not have been badly injured, for I many times thought they would be dashed to pieces between the rocks, when such falls as Itonomi, Twashing, Abaquia and Waraputa had to be crossed. Thanks to the humane disposition of Captain McDonell and a few others of his skill and daring, or we should hear of many more accidents than those reported year by year from the Essequibo River when the balata season comes round. Indeed, our children and grandchildren will certainly bless that day when there shall be a railway running between Georgetown and Brazil, whereby much time and comfort will be gained, and whereby we shall feel less anxious about the safety of our lives than hitherto, in traveling through the interior of this colony."

GOVERNMENT BALATA SALES.

Considerable dissatisfaction exists here at present with the system in vogue as to the government balata sales. It appears that the Commissioner of Lands and Mines insists on only sending out circulars inviting tenders for the purchase of balata to those who are holders of balata tracts, instead of putting up the lots to public auction. It is argued that there may be others besides those mentioned above who would be prepared to make bids, but who, under existing circumstances, are ignorant of the sales. I understand that it is not necessary to take out a license in such a case, if one intends to ship the balata away forthwith, but only if it is intended to re-sell in the colony. It is thought that better prices would be realized by public auction than by tender, and that it would be more satisfactory all around.

Some Rubber Planting Notes.

RUBBER STANDARDIZATION IN THE FEDERATED MALAY STATES.

MR. LEWTON-BRAIN, the Director of Agriculture of the Federated Malay States, has been prominent in advocating the standardization of rubber. He has recommended the appointment of two additional chemists to supplement the present staff, with a special view to the efficient treatment of the question.

In supporting the proposal of Mr. Lewton-Brain, the "Malay Mail" enumerates various points in which the fact that the average planter is not deeply versed in chemistry would render invaluable the advice and suggestions of thoroughly professional men. Among such points is the question of premature tapping in order to provide dividends for expectant shareholders, as well as whether age does or does not increase the rubber content in the latex.

The opinion is finally expressed that some very useful results may be anticipated from the proposed addition to the chemical staff of the Department of Agriculture, in conjunction with the new experimental vulcanizing plant acquired by the government of the Federated Malay States. The information thus obtained should, it is added, do much toward bringing about the general standardization of Malayan rubber, which the plantation industry now so greatly desires.

DR. RIDLEY ON PROSPECTS OF RUBBER CULTIVATION.

Dr. H. N. Ridley, late Director of the Royal Botanic Gardens, Singapore, recently expressed the opinion, in a newspaper interview, that there is a great future before Malaya, the rubber plantations of which are enormous as compared with Ceylon.

As to manuring, he thought the time was coming when planters would go in for it scientifically and regularly. In the same way as in the cultivation of agricultural crops, he thought fertilizers would play an important part in rubber production in the future.

Referring to his recent visit to India, he stated that the whole of the plains, from Rajputana to Travancore, was in a backward way as regards agriculture and should be developed.

With reference to processes of curing, he had seen Mr. Wickham's system work and thought it extremely useful.

VARIATION IN QUALITY OF PLANTATION RUBBER.

The report of the Rubber Growers' Association for 1912 speaks of the New York Exposition having been a great success, especially with regard to trade. It is added that the chief American criticism was on the great variation in quality of the plantation product.

At the annual meeting the chairman, Mr. Noel Trotter, urged that if lower grades were better prepared more could be sold on reputation instead of on sample. He urged the standardization of the lower qualities, attention to washing and preparing scrap, and the uniform packing of various grades.

With regard to the near future of prices, Mr. Trotter was optimistic, urging, however, the necessity of economy in cost of production, freights and dock charges.

Mr. Noel Trotter was elected president of the Association and Mr. John McEwan vice-president.

CENTRAL FACTORIES FOR SMALL RUBBER ESTATES.

THE plan of central factories for small rubber estates has been advocated by the Malayan press, and the idea has met with approval in the English financial papers. Such an arrangement, it is urged, is likely to make for economy in working and for uniformity in the type of rubber produced.

MR. LAMPARD ON THE RUBBER OUTLOOK.

Presiding recently over the annual meeting of the London Asiatic Rubber and Produce Co., Ltd., Mr. Arthur Lampard expressed his conviction that there was nothing in the statistical position to cause the slightest uneasiness to shareholders. Stocks in Liverpool and London at the end of December were lower than in either 1911 or 1910. At the end of March, 1913, stocks were 5,968 tons, or 1,530 tons more than in 1912, but considerably less than at the same date in 1911, when the pure was 6s 1½d, ($1.47) compared with 3s 8d. (88 cents) on March 31, 1913. Practically the whole increase had been in plantation rubber. He believed that the drop in price would not be permanent, and that it would not be injurious to the cultivated rubber industry, though it might chasten it a little.

EXPERIMENTAL STATION ON THE MADRE DE DIOS.

Don Emilio Castre, a rubber expert who represented Peru at the International Rubber Exposition in London in 1910, is on his way, with a staff of assistants, from Callao, Peru, by way of Cuzco, to the Madre de Dios river, where they are going to establish an agricultural experimental station in some place to be selected by them which combines the best prospect of producing not only rubber, but food supplies. Don Castre has spent some time in Ceylon, studying rubber cultivation in that part of the world.

EASTERN CROP RETURNS TO END OF MAY.

According to cabled returns to the end of May, the largest plantation companies still show a progressive increase of output. Thus the Anglo Malay Rubber Co. reports for five months 516,080 pounds, against 307,498 pounds for the corresponding period a year earlier. For a similar time the London Asiatic Rubber and Produce Co. shows 362,589 pounds, as compared with 218,705 pounds; while the Selaba Rubber Estates produced 161,528 pounds in comparison with 111,288 pounds. The Sungkai Chumor Estates record for the 11 months ending May 31 a crop of 253,214 pounds, against 98,249 pounds for a similar period in 1911-1912.

The United Serdang (Sumatra) Rubber Plantations (Ltd.) produced in the 9 months ending May, 1913, 800,976 pounds, the product for a similar period terminating May, 1912, having been 347,658 pounds.

POUNDS OR TONS.

IT has been suggested that the returns of the monthly output by plantation companies should be published in tons instead of pounds, the present form becoming increasingly unwieldy and being likely to become still more bewildering to the reader as production further increases. Forward contracts are already made, as a rule, in tons, but at prices per pound. The long ton of 2,240 pounds being about equal to the metric ton of 1,000 kilos or about 2,204 pounds, comparison of statistics would be facilitated by the proposed new form of return.

A RUBBER RING IN LONDON?

The annual report of the Selangor (Malaya) Chamber of Commerce for 1912 states:

"For the producer, a serious development has lately taken place in London, where the dealers and brokers have come to an understanding, and formed a ring, making it impossible for the manufacturer in the future to deal direct with the producer."

SANITATION IN CEYLON.

Sir Patrick Manson, the well-known expert on tropical diseases, recently paid a visit to Ceylon. In an interview before starting for home he said:

"There is no proper sanitation at all in the planting districts. Whatever sanitation there exists is of a very elementary kind. The Government is doing its best now to improve matters by starting a research institute and laying down the lines of a sanitary system. But much cannot be done without the co-operation of the planters themselves, and such co-operation is very badly needed."

It is of interest to note that active measures are being taken for the establishment of a Sanitary Department for Ceylon. A committee has been investigating the question.

MR. WICHERLEY AGAIN IN CEYLON.

Mr. William Wicherley lately revisited Ceylon to look after his business interests in the island. Another object of his visit was to demonstrate a new rubber curing machine, which he described as a cheap portable machine, furnishing not only a ready but economical method of making rubber.

The speaker gave some interesting facts about rubber seed oil. His own plant at Grand Pass is already shipping prepared kernels yielding oil of very fine quality. The average yield of oil was 50 per cent., while the residue has sold very readily at a price equal to that of the best linseed cake. He was to return to England in June and to again visit Ceylon in October.

CEYLON PLANTERS EVERYWHERE.

Mr. Jesse Davis, the ubiquitous ex-Ceylon planter, who lately revisited the island, has stated that he had found the Ceylon planter in all parts of the world where he had been, particularly on the East Coast of Africa, where they were planting rubber, coffee and cocoa nuts.

COST OF CEYLON RUBBER PRODUCTION.

In a recent newspaper interview the Hon. F. W. Collins, general manager of the Malacca Rubber Plantations, Ltd., summarized the results of a month's stay in Ceylon, during which time he had visited a number of the leading rubber plantations. What struck him most favorably was the low cost of production. On some of the estates he had visited the cost is very much lower than it is in the Straits. This, he understood, was largely due to Tamil labor only being employed. Some estates are said to be putting their rubber in Colombo at as low a cost as 8½d. (17 cents).

With regard to yield, Mr. Collins had found the best Ceylon estates producing under 300 pounds of rubber per acre at seven years' old. At that age, some of the best estates in the Straits run to 450, and even 500 pounds per acre. The greater productivity in the Straits he attributed to climate and soil.

As to labor, Javanese coolies had been found the most economical in the Straits, but they had to work mainly with Chinese labor, which was plentiful but costly. In conclusion, Mr. Collins said: "We hope either to bring down the pay of the Chinamen, or to get a larger amount of work from them than we do at present."

These statements from the general manager of one of the largest Malayan companies, are of interest in connection with the proposed introduction of Chinese labor into Brazil.

THE NEW CEYLON DEPARTMENT OF AGRICULTURE.

Official notice has been received from Mr. R. N. Lyne, Director of Agriculture, Peradeniya, Ceylon, that the Royal Botanic Gardens Department has been replaced by a Department of Agriculture. The hope is expressed by the director that the cordial relations hitherto existing between THE INDIA RUBBER WORLD and Peradeniya, will be maintained under the new arrangements.

THE TROPICAL AGRICULTURE COLLEGE.

In a letter to the London "Times," Professor Wyndham Dunstan, president of the International Association of Tropical Agriculture, has advocated the selection of Ceylon as the site of the proposed Tropical Agricultural College. He proceeds to say that Ceylon is best suited for an agricultural college, as it possesses a variety of climates, and opportunities for studying rubber, tea, coconuts, and other tropical crops. It has a large, influential and enterprising planting community, both European and native, and also has the advantage of an agricultural department. Training in Ceylon, following a home course, should, in his opinion, qualify agriculturists for any part of the tropical world.

Commenting on the above and other proposals for a tropical agricultural college, "Tropical Life," of London, remarks: "We feel, therefore, now that East and West have both had their cause fully and carefully laid before the government and the public, it is for them to see which center should have the first college, until, we hope, in the near future, each will have its college of agriculture."

The fact is also referred to that there is a budget of £195,000,000, but not a cent for tropical medicine and education.

WHY RUBBER FELL.

IN discussing the causes of the recent fall in rubber, at an interview reported in the "Financial Times," Mr. T. E. Williams, of Messrs. Marling, Evans & Co., London, stock brokers, attributed the decline, in the first place, to the tightness and dearness of money, both in England and abroad, due to the world-wide prosperity having led to overtrading. Further contributory factors have been the war in the East, the war scares in England, and the trade difficulties in America.

Mr. Williams further pointed out that of the $450,000,000 invested in the plantation industry by English companies, probably three-fourths of the total is under the direct and indirect influence of people who are closely associated with the rubber industry and thoroughly understand the position. Yet there has been no selling of any importance traceable to such sources, those who are most thoroughly conversant with the conditions of the industry evidently showing the greatest confidence in its stability and continued prosperity.

The opinion was likewise expressed by Mr. Williams that owing to their increasing output, forward sales and lower production costs, a large number of companies will be able to maintain a return of 10 to 14 per cent. on the present price of their shares, with rubber where it then stood (about 3*s.* 4½*d.*). This, he added, would be subsequently possible, even with rubber on a declining scale of 3*s.*, 2*s.* 9*d.*, and 2*s.* 6*d.* in 1914, 1915 and 1916, respectively.

Regarding the growth of consumption, he added, in every civilized country the horse is being replaced by the motor. The use of commercial cars, requiring solid tires, is growing at a phenomenal rate, while the demands of the electrical and other industries are constantly increasing.

Finally, Mr. Williams expressed the conviction that the present low price of rubber is largely due to exceptional circumstances, which are now well known and will soon pass away. The low prices have permitted the "rubber barons" who had sold forward at 4*s.* and over, to cover their contracts, and to secure cheap rubber, with the expectation of higher prices when the ordinary trade demand gets into its stride again.

PENSIONS FOR ASSISTANT PLANTERS.

THE Amsterdam Langkat Co. is said to have formulated a scheme for pensioning assistant planters who have been in its employ for fifteen years, the pension obtainable being 1,000 guilders ($400) per year. Monthly premiums are to be paid, on a graduated scale. Pension schemes have also been drawn up by other Dutch companies.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED MAY 6, 1913.

NO. 1,060,624. Means for tripping the inking rollers of printing presses. H. Pearce, R. G. Parker and F. W. Wright, Broadheath, assignors to Linotype and Machinery, Ltd.—both of England.

1,060,777. Nipple for nursing bottles. H. J. Maynard, Newton Highlands, Mass., assignor to Thermolac Mfg. Co., Boston, Mass.

1,060,852. Vacuum massage device. F. O. Parker, Washington, D. C.

1,060,854. Pneumatic wheel. N. Peterson, Teton, Idaho.

1,060,886. Insulator. J. E. Bicknell, assignor to the Findlay Electric Porcelain Co.—both of Findlay, Ohio.

1,060,889. Life preserver. K. Brauer, Lyndhurst, N. J.

1,060,964. Vacuum cleaner. J. T. Atwood, Rockford, Ill.

1,061,015. Tire tool. G. Schaefer, New York.

1,061,017. Hose supporter. M. W. Schloss, New York.

1,061,069. Inner tube valve. J. S. Harber, Youngstown, Ohio.

1,061,184. Alarm for tires. H. E. Knies, White Haven, Pa.

1,061,200. Tire alarm. J. B. Polo, Clear Lake, S. D.

1,061,204. W. T. Smith and C. C. Royer. C. C. Royer assignor to M. Smith all of Bellefontaine, Ohio.

1,061,207. Rubber compound. E. Von Vargyas, Pittsburgh, Pa.

Trade Marks.

68,088. The H. O. Canfield Co., Bridgeport, Conn. The word *Canfield.* Rubber goods for plumbers' use.

68,356. The Manhattan Rubber Mfg. Co., Passaic, N. J. The word *Master.* Rubber gland packing for steam engines, etc.

69,390. Hanover Vulcanite Co., New York. The words *The Golf Club.* Combs made of hard rubber.

69,453. Converse Rubber Shoe Co., Malden, Mass. The words *Rabbit's Foot,* over an illustration of a rabbit.

ISSUED MAY 13, 1913.

1,061,275. Life preserver and pillow. S. P. Edmonds, Catonsville, Md.

1,061,344. Vehicle wheel. M. S. Weist, Sedalia, Mo.

1,061,369. Safety device to keep wheels from sliding. J. A. Gruber, Cincinnati, Ohio.

1,061,391. Tire patching device. G. J. Martel, Chicago, Ill.

1,061,472. Pressure gage. G. T. Hackley, Los Angeles, Cal.

1,061,523. Tire armor. J. J. Bukolt, Stevens Point, Wis.

1,061,524. Tire armor. J. J. Bukolt, Stevens Point, Wis.

1,061,539. Apparatus for administering narcotics. G. Haertel, Berlin, Germany.

1,061,566. Bathing brush. J. H. Pride, Kidder, S. D.

1,061,664. Combined corset and abdominal supporter. E. Drenshtein, New York.

1,061,686. Wrist and sleeve protector. P. J. Nichols, Ames, Colo.

1,061,693. Fountain pen. D. W. Schnebbe, New York.

1,061,722. Device for shaping the outer casings of pneumatic tires. G. W. Bell, Stockport, England.

1,061,748. Filler for ink wells, etc. J. W. Jacobus, Great Neck, N. Y.

1,061,807. Tire. W. A. Binion, Newark, N. J.

1,061,816. Demountable rim. J. H. Champ, assignor to The Standard Welding Co.—both of Cleveland, Ohio.

1,061,872. Nozzle for fire extinguishing apparatus. F. von Schidlowsky, St. Petersburg, Russia.

1,061,905. Tire fastener. L. G. Fleming, Tarrytown, N. Y.

1,061,927. Tire. S. Scognamillo, New York.

Design.

44,042. Waterproof cap covering. P. G. Tilton, Melrose, Mass.

Trade Marks.

62,081. Main Belting Co., Philadelphia, Pa. The word *Anaconda.* Machine belting.

68,791. Traun Rubber Co., Hoboken, N. J. The word *Golddust.* Dental rubber.

68,910. American Gum Products Co., Boston, Mass. The word *Goulag.* Manufactured gum.

69,076. Samuel C. Beck, Chicago, Ill. The name *S. C. Beck's* written through square of rubber.

69,431. The Mindease Co., Louisville, Ky. The word *Mindease.* A preparation for filling automobile tires.

ISSUED MAY 20, 1913.

1,062,024. Pneumatic tire. A. H. Morton, Cleveland, Ohio.

1,062,070. Tire armor. S. F. Wilcox, Garden City, N. Y.

1,062,072. Apparatus for vulcanizing rubber articles and the like. J. S. Wilson, Chelsea, Mass.

1,062,155. Flexible hose protector. J. D. Harris, assignor to The Westinghouse Air Brake Co.—both of Pittsburgh, Pa.

1,062,158. Truss. A. M. Hurel, New York.

1,062,160. Elastic pocket for garments. R. E. Kelly, Cocoanut Grove, Fla.

1,062,200. Wheel for vehicles. C. C. Sill, Seattle, Wash.

1,062,338. Detachable heel or shoe heel. P. Kane, North Brookfield, Mass.

1,062,401. Pneumatic tire cover. J. T. Johnson and F. G. Mason, Caulfield, Victoria, Australia.

1,062,426. Puncture closing compound. W. J. Watkins, Fort Worth, Texas.

1,062,435. Life preserver suit. J. W. Buchanan, Asheville, N. C.

1,062,462. Tire support. A. Harnishfeger, Evansville, Ind.

1,062,519. Vehicle wheel. W. T. Thorp, Litchfield, Ill.

1,062,535. Composition of matter to be introduced into the inner tubes of pneumatic tires for rendering the tires puncture proof. T. S. Causey, Arlington, Texas.

1,062,567. Tire deflation indicator. H. Jacoby, Eberstadt, near Darmstadt, Germany.

Design.

44,062. Resilient tire. H. H. Hewitt, Buffalo, N. Y.

Trade Marks.

60,511½. The Mechanical Rubber Co., New York and Cleveland, Ohio. The word *Meruco.* Rubber mats.

60,512½. The Mechanical Rubber Co., New York and Cleveland, Ohio. The word *Meruco.* Rubber water bottles and syringes.

60,513½. The Mechanical Rubber Co., New York and Cleveland, Ohio. The word *Meruco.* Rubber tubing.

68,002. The Seamless Rubber Co., New Haven, Conn. Fleur de lis in circle with the above company's name and address around same.

69,821. The Beacon Falls Rubber Shoe Co., Beacon Falls, Conn. The words *Rock Ribbed.*

ISSUED MAY 27, 1913.

1,062,618. Attachment to wheels. T. Townsend, Winnipeg, Manitoba, Canada.

1,062,631. Tire protector. G. Bellemare, Winnipeg, Manitoba, Canada.

1,062,730. Coupling for uniting hose pipes with faucets. J. G. Poppert, Portland, Ore.

1,062,786. Sanitary drinking device. A. S. Miller, Monroe, La.

1,062,826. Boot and shoe. S. J. Harris, Randolph, Mass.

1,062,828. Caoutchouc-like substance and process of making same. F. Hofmann, C. Coutelle, K. Delbruck and K. Meisenburg, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.

1,062,912. Caoutchouc-like substance and process of making same. C. Hofmann, C. Coutelle, K. Delbruck and K. Meisenburg, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.

1,062,913. Caoutchouc substance and process of making same. F. Hofmann, C. Coutelle, K. Delbruck and K. Meisenburg, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.

1,062,914. Caoutchouc substance and process of making same. F. Hofmann, C. Coutelle, K. Delbruck and K. Meisenburg, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.

1,062,915. Caoutchouc substance and process of making same. F. Hofmann, C. Coutelle, K. Delbruck and K. Meisenburg, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.

1,062,958. Filler for caoutchouc and process of manufacturing same. L. Elfrink, Modjokerto, Java.

1,062,973. Producing rubber-like compounds. H. S. A. Holt, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany.

1,063,008. Vehicle tire. W. E. Budd, Elizabeth, N. J.

1,063,117. Tire of wheels of vehicles or the like. J. Cairns, Walsall, England.

1,063,161. Spring wheel. O. H. Hinds, Le Mars, Iowa.

Designs.

44,082. Cap for tire valves. W. B. Burke, Cleveland, Ohio.

44,087. Automobile tire. C. A. Daniel, Philadelphia, Pa.

Trade Marks.

62,730. Birdsey-Somers Co., New York. The word *Onist.* Dress shields.

67,899. The Manhattan Rubber Mfg. Co., Passaic, N. J. The word *Paranite* written over line with arrow points at either end.

68,530. F. Barth, Barmen, Germany. The word *Ajax.* Rubber cord, suspenders, etc.

68,535. The Pragma Tyre Filling Co., Ltd., Derby, England. The word "Pragma." Resilient filling for tires.

68,790. The Reality Rubber Co., Massillon, Ohio. The word *Reality.* Rubber gloves.

69,202. The Fisk Rubber Co., Chicopee Falls, Mass. The words *Gold Bond.* Rubber tires.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911 and 1912.

*Denotes Patents for American Inventions.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MAY 7, 1913.]

806 (1912). Dress shields. J. Braunstein, 12 Hillbury Road, Upper Tooting, London.

850 (1912). Inflating tires. A. and E. Kloppenburg, Strackholt, Hanover, Germany.

1,049 (1912). Vulcanizing presses. H. Webb, 38 Glasgow Road, Plaistow, London.

1,087 (1912). Pneumatic tire cover. A. J. Callinan, 281 Collins street, Melbourne, and V. J. Heinecke, Murrumbeena, Victoria—both in Australia.

1,259 (1912). Treads for pneumatic tires. J. F. Cooper, Lyncote, Green Lane, Dulwich, London.

*1,284 (1912). Dress shields. V. Guinzburg, 721 Broadway, New York, U. S. A.

1,289 (1912). Rubber washers for milking appliances. M. Meaney, Codford St. Mary, Wiltshire.

1,321 (1912). Continuous tire. R. T. Smith, 111 Lovely Lane, Warrington, Lancashire.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MAY 15, 1913.]

1,505 (1912). Elastic tires. G. A. Golding, Station Hotel, Haywards Heath, Sussex.

1,509 (1912). Rubber tips for canes, etc. J. H. Bent, 28 Johnson street, Cheetham, Manchester.

1,630 (1912). Massage appliances. M. Laughton, 90 Dickenson Road, Rusholme, and F. A. Coleman, 2 Beech Range, Levenshulme—both in Manchester.

1,649 (1912). Rubber coating for rugs, etc. C. E. Player, Auckland, New Zealand.

1,717 (1912). Mud guards for wheels. D. Jones, 26 Queen's Head street, Islington, London.

1,757 (1912). Inflating pumps. H. J. W. Dunn, 47 Kingsbury Road, Erdington, and R. T. Shelley, Aston Brook street—both in Birmingham.

1,784 (1912). Buttons of vulcanized flexible rubber. H. Jelley, "Westover," Selly Park Road, Selly Park, Birmingham.

1,843 (1912). India rubber compositions. C. Marter, 131 Tottenham Road, Southgate Road, Hackney, London.

1,909 (1912). Air tubes and chambers. A. Whiteway and C. McIntosh & Co., Cambridge street, Manchester.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MAY 21, 1913.]

2,029 (1912). Silk and rubber tire fabrics. W. E. Muntz, 89 Pall Mall, London.

2,075 (1912). Reclaimed rubber. W. E. W. Richards, 50 Great Tower street, London.

2,199 (1912). Continuous elastic tires. N. Thonard, 2 Place du Theatre, Liege, Belgium.

2,246 (1912). Block tires. J. Berry, Kenrick Road, Mapperley, Nottingham.

2,306 (1912). Attaching rubber to metals. E. R. Boyston, Tower Building, Water street, Liverpool.

2,312 (1912). Vulcanized india rubber. Farbenfabriken vorm. F. Bayer & Co., 217 Koenigstrasse, Elberfeld, Germany.

2,313 (1912). Caoutchouc. Farbenfabriken vorm. F. Bayer & Co., 217 Koenigstrasse, Elberfeld, Germany.

*2,332 (1912). Boots, etc. E. Fuller, 352 Weybasset street, and J. Rosenblatt, 80 Clifford street—both in Providence, R. I., U. S. A.

*2,342 (1912). Inflatable suit for aeronauts. A. W. de Meir, Providence, R. I., U. S. A.

2,424 (1912). Rubber tread bands. P. Bold, Darrmietzel, Post Quartschen, Neumark, and P. Richter, Ostbahn—both in Berlin.

2,599 (1912). Dress shields. F. H. Mottershaw and C. Mackintosh & Co., Cambridge street, Manchester.

2,825 (1912). Rubber heels. F. Rossbach, 60 Kettenhofweg, Frankfurt, Germany.

3,042 (1912). Viscose. O. Eberhard, 5 Bergstrasse, Heidenau, near Dresden, Saxony.

3,043 (1912). Viscose; purifying gases. E. Knoevenagel, 28 Zahringerstrasse, and J. Reis, 11 Klosestrasse, and F. Kuckuk, 12 Muhlstrasse—all in Heidelberg, Germany.

3,095 (1912). Rubber heel pads. F. J. Scholl, 5 Manchester avenue, Aldersgate street, London.

3,130 (1912). Hollow rubber tires. A. Cleret, 6 Avenue Gambetta, Paris.

3,145 (1912). Tire puncture closing apparatus. R. Haddan, 31 Bedford street, Strand, London.

3,191 (1912). Washing india rubber, etc. J. E. Pointon, Westwood Works, Peterborough.

*3,226 (1912). Vulcanizers. C. M. Metsch 198 Pennsylvania avenue, East Liverpool, Ohio, U. S. A.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

253,816 (1913). Portable vulcanizing apparatus. C. F. Adamson, East Palestine, U. S. A.

254,747 (1913). L. Schuller, Passau, Germany. Vulcanizing apparatus.

254,891 (1913). F. Estère Arglada, Vergara 10, Barcelona, Spain. Composition for repairing or gluing rubber objects.

254,943 (1913). Ostker A. Alton, Ohenson, Germany. Elastic substance applicable for repairs.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

448,974 (August 12, 1912). Diamond Rubber Co. Process for improving the lower grades of rubber.

449,176 (October 9). T. G. Tye. Process and apparatus for purifying gums or resins.

449,190 (December 16, 1911). H. Carroll. Process for the removal of substances from vulcanized rubber objects.

449,197 (October 9, 1912). L. Hardaker. Improvements in vehicle wheels with double tires.

449,220 (October 10). A. Mantelet fils. Elastic belt with combined horizontal and oblique bands.

449,224 (October 10). C. Terrier. Appliance for vulcanizing repairs to pneumatic tires.

449,250 (August 23). A. Fortini. Tires composed of pieces of leather or other substances.

449,291 (September 27). P. Bellot. Protectors for pneumatic tires.

449,306 (October 9). W. Köhler. Cover and tread for pneumatic tires.

449,425 (October 15). P. Reynier. Improvements in manufacture of pneumatic tires.

449,458 (December 23, 1911). Van Steinbrugghe & Breton. Shaped surgical glove of vulcanized rubber and its manufacture.

449,599 (December 27). Delahaye & Co. Anti-skid hood on rubber tire.

449,601 (December 27). Etablissements Hutchinson. Fabric for aerostat covers.

449,613 (October 17, 1912). J. Bertrand. New mud guard for vehicles adjustable in every direction.

449,714 (December 30, 1911). C. Morel. Elastic vehicle tires.

449,735 (October 23, 1912). N. G. Nevin. Dress shields.

449,767 (September 17). Degrully. Automobile wheel with interior pneumatic tire.

449,793 (October 18). P. Magnus. Covers for automobile or other wheels.

449,818 (October 25). C. H. Nichols. Mud guards for wheels of automobiles and other vehicles.

449,930 (October 29). Godek & Benjamin. Improvements in elastic tires in rubber or other like substances.

449,811 (October 24). F. E. Barrows. Plastic composition and objects containing rubber and their process of manufacture.

450,036 (October 26). H. Ruhnen. Solid automobile tires.

450,157 (October 31). W. Kops. Elastic fabrics.

450,040 (October 30). J. B. Alana. Process of repairing covers of pneumatic tires.

450,147 (November 4). T. Kanticki. Mud guard for automobiles.

450,176 (January 11). H. Brionne. Anti-skid protector for solid or pneumatic tires.

450,206 (November 6). J. Françon. Mixed elastic tire.

450,216 (January 13). J. S. Mariani & F. Husson fils ainé & Vaillant. Seamless dress shields.

450,257 (October 16, 1912). R. L. Fidide. Circular mudguards.

450,309 (November 7). L. Goodman and J. E. Goodman. Pneumatic tire cover.

450,389 (November 6). G. Cros. Pneumatic tire for vehicles, intended to circulate on moving surfaces.

450,395 (November 11). P. C. Fox. Vehicle tire.

450,452 (November 12). F. A. Byrne. Process and apparatus for the coagulation and treatment of rubber.

450,561 (November 12). F. A. Byrne. Process and appliance for the coagulation and treatment of rubber.

450,567 (November 13). Farbenfabriken vorm. Friedr. Bayer & Co. Process of dyeing rubber.

450,527 (October 23). C. E. Moser. Anti-skid tire for motor vehicles.

450,575 (November 13). A. Clément-Bayard. Movable wheel.

450,626 (November 15). M. Schwertführer. Economical tire.

450,650 (November 16). H. Stephens. Piece for repairing pneumatic tires, air chambers, etc.

450,651 (November 16). L. J. Perry. Improvements in tires.

450,667 (November 16). N. J. Spriggs. Improvements in repairing rubber articles.

450,686 (November 18). N. E. Carmont. Improvements in tires and tire covers.

450,739 (November 19). G. H. E. Cooke. Improvements in pneumatic tires.

450,729 (November 19). Motoculture Company. Anti-skid device for wheels of automobiles, traveling on fields and meadows.

450,777 (November 20). D. O. Nation. Improvement in vehicle tires.

450,887 (November 16). E. Windel. Pneumatic tire.

450,914 (November 21). A. Paris & L. Paris. Mudguards for wheels.

450,952 (November 22). T. D. Kelly. Improved vehicle tire.

451,042 (November 26). Julius Rompler Co. Elastic fabric and its process of manufacture.

451,072 (November 27). P. Fequant. Metal wheel with elastic tire.

451,091 (October 3). A. J. Ouvet. Mudguards for all descriptions of vehicles.

451,113 (November 12). U. Sarrat & E. Sarrat. Product and process for repair of air chambers and pneumatic tires.

451,239 (December 2). F. Pavlick. Protective cover for pneumatic tires.

451,258 (December 2). Mlle. Lloyd. Improved tire.

451,266 (February 8). E. Robergel Co. Elastic tires.

451,279 (December 3). A. A. Legrand, G. Depoilly and M. Durvien. Pneumatic mudguard for vehicles.

451,300 (December 3). A. Ducos. Sole of felt and rubber and its process of manufacture.

[NOTE.—Printed Copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

259,253 (September 19, 1912). Process of separation of rubber or balata from latex. Dr. Heinrich Colosseus, Regensburger Strasse 27, Berlin.

259,324 (April 12, 1912). Pneumatic tires with laced tread for motor trucks and similar vehicles. Eugen Fritz, Saarbrucken.

259,421 (December 15, 1911). Improvements in rubber heels. Atleta Rubber Works, Elberfeld-Vohwinkel.

259,721 (June 28, 1911). Process for separation of rubber from latex. Wilhelm Pahl, Dortmund.

259,722 (May 26, 1912). Rubber substitute. Farbenfabriken vorm. Friedr. Bayer & Co., Leverkusen.

260,196 (September 3, 1911). Improvements in vulcanizing presses. A. Olier & Co., Clermont-Ferrand, France.

260,714 (May 21, 1912). Seamless football covers of vulcanized rubber with fabric lining. Moritz Richard Fecht, Leipziger Strasse 8, Dresden.

260,956 (January 31, 1911). Process for production of cellular rubber objects. H. Dogny and V. Henri, Paris.

260,916 (September 21, 1912). Process for vulcanization of rubber, of unsaturated fatty oils and their derivatives. Dr. Hans Klopstock, Berlin-Wilmersdorf.

261,241 (January 20, 1912). Production of elastic substances, having the properties of rubber. Willi Ernst Reeser, Amsterdam.

261,438 (January 16, 1912). Process for making covers for pneumatic tires. Ernest Clark, London.

SANITARY DRINKING CUPS.

Ever since everybody became so much exercised—rightly or wrongly—over the germ theory, there has been a perpetual effort to design the most convenient sort of sanitary drinking cup. The accompanying illustration shows one used in Washington.

Harris & Ewing, Washington, D. C.
SANITARY DRINKING CUP ATTACHED TO RUBBER TUBE.

It will be noted that rubber tubes are connected with the fountain, about long enough for convenient use by a man of ordinary height. At the end of the tube there is a cup; but it is not necessary for the lips to come in contact with the cup, as the force of water carries it about an inch above the cup, so that you can drink water out of the air. Only the most perverse person can imbibe any germs when using this style of cup.

PNEUMATIC TREADS FOR HUMAN FEET.

A NEWSPAPER writer with a well-developed imagination that ought to make him successful in his high calling, recently contributed to "The Lynn Item" a disquisition on "The Possibilities of Rubber Soles," in which he sets forth the theory that because hides have gone up to 20 cents a pound and rubber gone down to $1 a pound, we may soon discard leather soles for our shoes and take entirely to rubber soles, with pneumatic inner cushions. As rubber has still further dropped in price since this was written, and is likely as time goes on to seek lower and lower levels (within certain limitations), and as hides in the meantime are likely to become still more expensive, the writer's dream of universal rubber soling for civilized footwear may quite possibly come true. Here is what he has to say:

"With hides up to 20 cents a pound, and prospects of going higher, and rubber down below $1 a pound and prospects of going lower, and a fashion of rubber soled shoes setting in, the time is at hand for speculation as to whether or not rubber bottomed shoes will take the place of leather bottomed shoes in the same fashion that rubber tired vehicles have taken the place of iron tired vehicles.

"It is not utterly impossible to conceive a pneumatic soled shoe. People wearing such shoes would certainly tread on air, and find life's walk easy, as far as physical exertion is concerned. To make a pneumatic sole, with an inner tube to hold air, would be a simple task in the mechanics of the rubber industry.

"To fill the inner tube with air would not be a difficult task in these days of common air compressors and pumps. The vacuum cleaner of the home might have a reverse gear, which would cause the bellows to pump air into the sole of the shoe, instead of to pump air out of the room and take with it dust and dirt. And if a person did not have any sort of an air compressor at home, he might go to the nearest garage, and use the common air pumps, or, in a final emergency, he might blow up his soles with a little hand pump, the same as is used by bicyclists.

"If people should wear pneumatic soled shoes they would naturally carry with them a repair kit, consisting chiefly of a few patches and plugs to use on those parts of the soles which might be punctured by tacks or bits of glass in the streets, or by rough pavings. Everybody who wore pneumatic soled shoes would be glad to join with autoists in voting 30 days in jail to the careless person who threw nails or glass into the street, and also, in voting to exile the street commissioner who failed to keep the sidewalks and the streets clean and smooth for the passage of the air tread shoes.

"Another possibility is that some cautious persons who might dread a punctured sole and a consequent limp home, might have the inner tubes of their soles filled with one of those substitutes for air that is as thick as molasses, and that is sometimes pumped into auto tires to make them wear forever. And on winter days, when sidewalks were slippery, a person afraid of a fall would naturally put some chains on his shoes and save himself from skidding on the ice.

"But the rubber soled shoes are a reality, not a possibility. Thousands of pairs of rubber soled shoes will be worn this summer by young men and young women, and some rubber soled boots will be made in the fall. The manufacturers of rubber goods are making a great deal of progress in the production of rubber footwear. They are able to buy rubber at about $1 a pound, and to make rubber soles that weigh three-quarters of a pound a pair, and sell them for 50 cents a pair. As time goes on they are apt to get their crude rubber cheaper, and to make their soles lighter, and to sell them for less. It isn't beyond the probabilities of the shoe industry that people will find rubber soles so serviceable and economical for shoes for street wear that they will commonly wear them. A new and unlimited outlet for rubber is thus opened."

Report of the Crude Rubber Market.

THE most prominent feature of the London market for fine Pará during May has been the practical maintenance of the improved values which succeeded the low record of 3*s.* 3¾*d.* on April 15. By April 26, the price had recovered to 3*s.* 4½*d.*, standing on May 24 at 3*s.* 9*d.* This price, with slight fluctuations, has ruled throughout June, the figure on June 25 being 3*s.* 8¾*d.*

While buyers have been cautious in their operations, sellers have not been trying to force business; with the result that there has hardly been any change in values during the month.

In plantation rubber, the course of the market has, on the other hand, presented a different aspect, as may be seen from the subjoined London quotations.

	Pará.	Plantation.
April 26	3*s.* 4½*d.*	3*s.* 2½*d.*
May 24	3*s.* 9 *d.*	3*s.* 3 *d.*
May 31	3*s.* 8½*d.*	3*s.* 2¼*d.*
June 6	3*s.* 9¼*d.*	3*s.* 1½*d.*
June 13	3*s.* 9 *d.*	3*s.*
June 20	3*s.* 8¾*d.*	2*s.* 11¾*d.*
June 25	3*s.* 8¾*d.*	2*s.* 11 *d.*

Thus, while Pará has held its own, plantation rubber has lost about 3 pence per pound within the last month.

During the six months ending with June, about 11,000 tons of plantation rubber passed through the London auctions, as compared with about 7,000 tons for the first six months of 1912. The average price realized at the January auctions this year was about 4*s.* 4*d.*, as compared with about 2*s.* 11*d.* at the June sales; the effect of the larger offerings being thus demonstrated.

The auction of June 3 contained about 1,000 tons, and was marked by a fair degree of activity on the part of buyers. Prices, however, gave way from 1½*d.* to 2½*d.* At the sale of June 17, 900 tons were offered, quotations varying but slightly from those of previous sale.

Attention has been drawn to the prospective effect on the rubber market of the growing demand for solid truck tires.

The attitude of buyers has to a great extent been one of expectancy, there having been a marked disinclination to exceed actual requirements in their operations.

Particulars by mail of the Antwerp sale, held on May 21, show the following results:

	Offered.	Sold.
Congo descriptions ..... *Tons*	573	133
Various descriptions	30	2
Plantation descriptions	212	201

Congo descriptions sold at an average decline of about 6 per cent.; plantation rubber having about realized the valuations. A sale was announced for June 25 of 461 tons Congo and 125 tons of plantation.

The Amsterdam sale of June 11 included 58 tons *Hevea*, which realized 7 per cent. below valuations; and 20 tons *Ficus*, which sold at 9 per cent. below estimates.

At Rotterdam on June 6, 18½ tons *Hevea* and 3 tons *Ficus* were sold at the equivalent of ruling London prices.

NEW YORK QUOTATIONS.

FOLLOWING are the quotations at New York for Pará grades, one year ago, one month ago, June 28—the current dates:

PARA.	July 1, '12.	June 1, '13.	June 28, '13.
Islands, fine, new	100@101	84@85	82@83
Islands, fine, old	.....	.....	.....
Upriver, fine, new	110@111	89@92	87@88
Upriver, fine, old	115@116	.....	.....
Islands, coarse, new	54@ 55	40@41	34@35
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	84@ 85	58@59	54@56
Upriver, coarse, old	.....	.....	.....
Cametá	63@ 64	42@43	42@43
Caucho (Peruvian) ball	82@ 83	58@59	53@54
Caucho (Peruvian) sheet	.....	.....	.....
PLANTATION CEYLONS.			
Fine smoked sheet	118@119	83@..	72@73
Fine pale crepe	117@118	80@..	70@72
Fine sheets and biscuits	113@114	79@80	70@71
CENTRALS.			
Esmeralda, sausage	82@ 83	58@59	53@54
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	80@ 81	55@56	53@54
Panama	.....	.....	.....
Mexican plantation, sheet	90@ 95	.....	.....
Mexican, scrap	80@ 81	56@57	53@57
Mexican, slab	.....	.....	.....
Mangabeira, sheet	.....	.....	.....
Guayule	55@ 56	.....	.....
Balata, sheet	85@ 86	.....	.....
Balata, block	53@ 54	.....	.....
AFRICAN.			
Lopori, ball, prime	.....	.....	.....
Lopori, strip, prime	.....	.....	.....
Aruwimi	.....	.....	.....
Upper Congo, ball red	.....	.....	.....
Ikelemba	.....	.....	.....
Sierra Leone, 1st quality	94@ 95	.....	.....
Massai, red	95@ 96	.....	.....
Soudan Niggers	.....	.....	.....
Cameroon, ball	65@ 66	.....	.....
Benguela	.....	.....	.....
Madagascar, pinky	85@ 86	.....	.....
Accra, flake	27@ 28	.....	.....
EAST INDIAN.			
Assam	.....	.....	.....
Pontianak	5⅞@ 6	.....	.....
Borneo	.....	.....	.....

New York

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During June the demand for commercial paper has been very light, and principally from out-of-town banks, city ones doing but little; rates have ruled strong at 5¾@6 per cent. for the best rubber names, and 6¼@6½ per cent. for those not so well known."

NEW YORK PRICES FOR MAY (NEW RUBBER).

	1913.	1912.	1911.
Upriver, fine	.81@ .92	1.09@1.12	.93@1.28
Upriver, coarse	.54@ .61	.89@ .92	.82@ .89
Islands, fine	.78@ .83	1.05@1.10	.92@1.22
Islands, coarse	.38@ .42	.58@ .63	.58@ .67
Cametá	.42@ .45	.65@ .67	.67@ .76

STATISTICS PARA INDIA RUBBER (IN TONS).

(Including Caucho)

STATISTICS FOR THE MONTH OF MAY.

	Pará.	Caucho.	1913. Tons.		1912. Tons.	1911. Tons.	1910. Tons.
Receipts at Pará	1,800	1,080	= 2,880	against	3,410	3,060	2,150
Shipments to Liverpool	830	490	= 1,320	"	810	1,410	1,020
Shipments to Continental Ports	250	150	= 400	"	320	300	350
Shipments to America	1,090	520	= 1,610	"	1,900	1,010	270
American Imports	890	400	= 1,290	"	1,480	1,170	280
American Deliveries	920	420	= 1,340	"	1,480	1,470	260
Liverpool Imports	942	588	= 1,530	"	1,257	1,517	2,263
Liverpool Deliveries	953	704	= 1,657	"	1,417	1,446	1,684
Continental Imports	40	170	= 210	"	330	330	340
Continental Deliveries	100	80	= 180	"	240	310	270

VISIBLE SUPPLY—1ST JUNE, 1913.

	1913. Pará.	1913. Caucho.	1912.	1911.	1910.
Stock in England, Pará, 1st hands	1,033	...	1,270	4,200	1,187
Pará, 2nd hands	129	...			377
Caucho	...	594	290	860	585
Stock in Pará, 1st hands	330	210	520	1,540	730
2nd hands	70	30	760	690	290
Syndicate	810	...	2,240	2,810	...
Stock in America	120	60	180	340	110
Stock on Continent	100	280	130	90	100
Afloat—Europe	850	540	700	890	920
Afloat—America	590	350	790	620	110
	4,032	2,064			
Total Visible Supply, including Caucho.	6,096		6,880	12,040	4,409

CROP STATISTICS—30TH JUNE, 1912, 31ST MAY, 1913.

	Pará.	Caucho.	1912/13.	1911/12.	1910/11.	1909/10.
Pará Receipts.. 1912/13	31,010	8,840	39,850	36,790	35,780	37,930
Pará Receipts.. 1911/12	30,460	6,330				
Pará Shipments to Europe	16,560	6,290	22,850	18,390	18,590	20,610
Pará Shipments to America	15,740	2,970	18,710	19,400	12,650	16,560
England Landings, net			16,492	13,780	14,350	16,783
England Deliveries, net			16,106	17,290	12,059	15,755
America Landings, net			18,010	21,225	13,260	16,610
America Deliveries, net			18,000	20,945	13,060	17,290
Continental Imports, net			4,570	3,200	3,000	2,880
Continental Deliveries, net			4,285	3,180	2,960	2,810

POSITION—1ST JUNE, 1913.

Decrease in Receipts during May, 1913, against May, 1912	530
Increase in Receipts—Crop, July/May, 1912/13, against 1911/12	3,060
Decrease in Deliveries—Crop, July/May, 1912/13, England and Continent, against 1911/12	79
Decrease in Deliveries—Crop, July/May, 1912/13, America, against 1911/12	2,945
Decrease in Visible Supply Pará Grades, against 1st June last year	784
Increase in Stock, England, May 31st, 1913, against May 31st, 1912	196

WM. WRIGHT & CO., Brokers.

Liverpool, 3rd June, 1913.

During the month 200 tons, including 10 tons Caucho, have been shipped from Europe to America.

Rotterdam.

HAVELAAR & DE VRIES report (June 10):

The result of sale held 6th inst., was relatively satisfactory, particularly in view of the lower prices which had ruled since the catalogue was issued. Most of the lots were sold at the parity of London rates.

Amsterdam.

JOOSTEN & JANSSEN report (June 11):

Out of 81 tons offered at today's sale, 66 tons were sold. The offerings chiefly consisted of *Hevea* and *Ficus*, which realized 7 per cent. and 9 per cent. below valuations.

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound.

	June 28, 1913.
Old rubber boots and shoes—domestic	9⅜@ 9¼
Old rubber boots and shoes—foreign	9¼@ 9⅜
Pneumatic bicycle tires	5 @ 5¼
Automobile tires	9⅜
Solid rubber wagon and carriage tires	9 @ 9¼
White trimmed rubber	10¾@11
Heavy black rubber	4¾@ 5
Air brake hose	5½
Garden hose	1⅛@ 1½
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾
No. 1 white auto tires	11½

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA, 1912 AND 1913.

[IN SHILLINGS AND PENCE PER POUND.]

January 3, 1913	4/7¼	April 4	3/6¼
January 10	4/6½	April 11	3/4½
January 17	4/6½	April 18	3/4¾
January 24	4/5¼	April 25	3/4½
January 31	4/4	May 2	3/5½
February 7	4/2¾	May 9	3/8¾
February 14	4/3	May 16	3/10
February 21	4/0½	May 23	3/9
February 28	4/0½	May 31	3/8½
March 7	3/10¾	June 6	3/9¼
March 14	3/11¼	June 13	3/9
March 20	3/11	June 20	3/8¾
March 28	3/9½		

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weight in Pounds.]

MAY 23.—By the steamer *Christopher*, from Pará and Manáos:

Arnold & Zeiss	5,100	9,600	58,400	37,400=	110,500
General Rubber Co.	1,500	.....	2,700	.....=	4,200
Meyer & Brown	.....	.....	.....	7,800=	7,800
Meyer & Brown	.....	.....	.....	69,300=	69,300
Meyer & Brown	.....	.....	33,700	.....=	33,700
Astlett & Co.	68,800	11,100	32,100	.....=	112,000
Ed. Maurer	5,700	.....	.....	.....=	5,700
Henderson & Korn	.....	.....	78,600	49,800=	128,400
Hagemeyer & Brunn	1,800	2,500	19,800	.....=	24,100
De Lagotellerie	6,400	400	2,000	.....=	8,800
	89,300	23,600	227,300	164,300=	504,500
MANAOS.					
Arnold & Zeiss	14,100	8,700	6,300	51,300=	80,400
Meyer & Brown	.....	5,000	.....	.....=	5,000
Ed. Maurer	10,900	2,300	1,100	.....=	14,300
Henderson & Korn	800	.....	4,400	11,800=	17,000
Robinson & Co.	3,400	.....	.....	.....=	3,400
De Lagotellerie	33,300	.....	.....	.....=	33,300
	62,500	16,000	11,800	63,100=	153,400
Total	151,800	39,600	239,100	227,400=	657,900

JUNE 3.—By the steamer *Aidan* from Manáos and Pará:

	Fine.	Medium.	Coarse.	Caucho.	TOTAL.
Arnold & Zeiss	39,200	53,300	80,800	50,800=	224,100
General Rubber Co.	44,700	11,300	21,600	23,500=	101,100
Meyer & Brown	...	...	10,000	48,000=	58,000
Meyer & Brown	4,100	...	1,700	68,000=	73,800
Meyer & Brown	12,500	...	29,000	19,000=	60,500
Ed. Maurer	20,200	700	32,300	20,200=	73,400
Henderson & Korn	17,300	20,700	22,300	44,500=	104,800
H. A. Astlett	27,800	3,900	44,200	19,600=	95,500
De Lagotellerie	22,800	4,300	19,800	...=	46,900
G. Amsinck & Co.	3,900	200	2,400	2,500=	9,000
	192,500	94,400	264,100	296,100=	847,100
MANAOS.					
Arnold & Zeiss	43,300	2,700	13,000	78,600=	137,600
Meyer & Brown	33,000	4,000	11,000	36,300=	84,300
Robinson & Co.	15,100	...	12,500	2,400=	30,000
Henderson & Korn	...	...	...	5,700=	5,700
	91,400	6,700	36,500	123,000=	257,600
Total	283,900	101,100	300,600	419,100=	1,104,700

JUNE 14.—By the steamer *Crispin* from Manáos and Pará:

	Fine.	Medium.	Coarse.	Caucho.	TOTAL.
Arnold & Zeiss	31,000	21,900	83,100	63,400=	199,400
General Rubber Co.	27,800	10,400	11,300	1,600=	51,100
Meyer & Brown	...	...	31,700	10,600=	42,300
Henderson & Korn	...	...	...	49,800=	49,800
Ed. Maurer	36,500	7,500	25,200	6,000=	75,200
	95,300	39,800	151,300	131,400=	417,800
MANAOS.					
Arnold & Zeiss	70,200	17,800	23,900	106,300=	218,200
Robinson & Co.	36,400	2,400	7,700	10,100=	56,600
Henderson & Korn	...	1,100	...	22,200=	23,300
	106,600	21,300	31,600	138,600=	298,100
Total	201,900	61,100	182,900	270,000=	715,900

PARA RUBBER VIA EUROPE.

	POUNDS.
MAY 22.—By the *Pretoria*=Hamburg:	
Wallace L. Gough (Fine)	3,000
MAY 26.—By the *Lapland*=Antwerp:	
Wallace L. Gough (Fine)	6,000
MAY 26.—By the *Carmania*=Liverpool:	
Meyer & Brown (Coarse)	11,500
Raw Product Co. (Coarse)	24,500
Raw Product Co. (Fine)	11,500 47,500
MAY 26.—By the *Kaiserin Auguste Victoria*=Hamburg:	
Ed. Maurer (Fine)	6,000
Wallace L. Gough (Fine)	2,200 8,200
MAY 29.—By the *President Grant*=Hamburg:	
Wallace L. Gough (Fine)	8,000
MAY 31.—By the *Cedric*=Liverpool:	
Various (Fine)	3,000
JUNE 2.—By the *Caronia*=Liverpool:	
General Rubber Co. (Fine)	63,000
N. Y. Commercial Co. (Fine)	27,000
Arnold & Zeiss (Fine)	180,000
Raw Products Co. (Coarse)	22,500 292,500

JUNE 6.—By the *President Lincoln*=Hamburg:

Ed. Maurer (Fine)	12,500	
Wallace L. Gough (Coarse)	5,000	17,500

JUNE 6.—By the *Maracas*=Ciudad Bolivar:

General Export & Commission Co. (Fine)		12,000

JUNE 6.—By the *Mauretania*=Liverpool:

Arnold & Zeiss (Fine)		33,500

JUNE 7.—By the *Baltic*=Liverpool:

James T. Johnstone (Fine)	2,500	
Various (Fine)	15,500	
Various (Coarse)	13,500	31,500

JUNE 11.—By the *Pennsylvania*=Hamburg:

Wallace L. Gough (Fine)		3,500

JUNE 16.—By the *Campania*=Liverpool:

Arnold & Zeiss (Fine)	45,000	
General Rubber Co. (Fine)	33,500	
Robinson & Co. (Fine)	5,500	84,000

JUNE 16.—By the *Floride* Havre:

Various (Caucho Ball)		33,500

JUNE 16.—By the *Amerika*=Hamburg:

Ed. Maurer (Fine)	3,000	
Wallace L. Gough (Fine)	7,500	10,500

JUNE 16.—By the *Grenada*=Ciudad Bolivar:

Gen. Export & Com. Co. (Fine)	30,000	
Gen. Export & Com. Co. (Coarse)	25,000	
Yglesias, Lobo & Co. (Fine)	4,000	
Yglesias, Lobo & Co. (Coarse)	7,000	66,000

JUNE 17.—By the *Niagara*=Havre:

Adolph Hirsch & Co. (Caucho Ball)	11,200	
Arnold & Zeiss (Caucho Ball)	11,200	22,400

JUNE 17.—By the *Purus*—Pará:

General Rubber Co. (Fine)	400	
General Rubber Co. (Coarse)	11,200	
General Rubber Co. (Caucho Ball)	600	
Meyer & Brown (Caucho Ball)	20,700	32,900

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

	POUNDS.	
MAY 22.—By the *Zacapa*=Colombia:		
Schulz & Ruckgaber		1,000
MAY 22.—By the *Antilla*=Tampico:		
H. R. Jeffords	*35,000	
Continental-Mexican Rubber Co.	*127,000	
Various	*220,000	*382,000
MAY 23. By the *Esperanza*=Mexico:		
W. L. Wadleigh	6,000	
E. Steiger & Co.	6,000	
L. Johnson & Co.	1,600	
Hermann Kluge	2,000	
Willard Hawes & Co.	1,200	
Maldonado & Co.	500	
J. W. Wilson & Co.	1,000	18,300
MAY 26.—By the *Prinz Sigismund*=Colombia:		
Caballero & Blanco	500	
Various	1,000	1,500
MAY 26.—By the *Colon*=Colon:		
F. Rosenstern	12,000	
G. Amsinck & Co.	10,000	
Mecke & Co.	1,600	
W. R. Grace & Co.	400	
Wessels, Kulenkampff & Co.	500	24,500
MAY 26.—By the *Vigilancia*=Mexico:		
A. S. Lascelles & Co.		1,000
MAY 26.—By the *Vestris*=Bahia:		
A. Hirsch & Co.		30,000
MAY 27.—By the *Hawaiian*=Mexico:		
Neuss Hesslein & Co.	2,000	
Alexander & Baldwin	1,000	3,000
MAY 28.—By *El Norte*=Galveston:		
Various		*4,500
MAY 31.—By the *Mexico*=Mexico:		
L. Johnson & Co.	8,500	
E. Steiger & Co.	500	
General Export & Com. Co.	1,000	
Harburger & Stack	1,000	
Mecke & Co.	300	
Various	6,700	18,000
MAY 31.—By *El Rio*=New Orleans:		
Various		1,200
MAY 31.—By the *Almirante*=Colombia:		
G. Amsinck & Co.	6,000	
R. del Castillo	2,000	
Schulz & Ruckgaber	1,000	9,000
MAY 31.—By the *Sarnia*=Mexico:		
Meyer & Brown	2,500	
W. Wadleigh	1,500	4,000
MAY 31.—By the *Guantanamo*=Tampico:		
Arnold & Zeiss	*33,500	
Ed. Maurer	*33,500	
American Trading Co.	*2,200	
Lawrence Import Co.	*300	*69,500
JUNE 2.—By the *Advance*=Colon:		
G. Amsinck & Co.	3,600	
Broedermann & Litzrodt	900	
Shutte, Bunemann & Co.	200	4,700
JUNE 2.—By the *Altai*=Colombia:		
Kunhardt & Co.	5,000	
Various	4,000	9,000
JUNE 2.—By *El Alba*=Galveston:		
Various		*6,500
JUNE 4.—By the *Prinz Joachim*=Colombia:		
Andean Trading Co.		3,500
JUNE 4.—By the *Oruba*=Colombia:		
R. del Castillo		1,000
JUNE 5.—By the *Santa Marta*=Colombia:		
G. Amsinck & Co.	1,200	
R. del Castillo	600	1,800
JUNE 5.—By the *Cleveland*=Hamburg:		
Ed. Maurer		14,500
JUNE 6.—By the *President Lincoln*=Hamburg:		
Ed. Maurer	17,700	
Arnold & Zeiss	62,000	
Various	9,000	88,700
JUNE 6.—By the *Siberia*=Frontera:		
General Export & Commission Co.		1,500
JUNE 6.—By *El Sud*=Galveston:		
Various		*11,200
JUNE 6.—By the *Santiago*=Tampico:		
H. R. Jeffords		*33,500
JUNE 7.—By the *Monterey*=Mexico:		
G. Amsinck & Co.	2,000	
L. Johnson & Co.	2,200	
H. Marquardt & Co.	600	
Coruba Plantation Co.	700	5,500
JUNE 9.—By the *Panama*=Colon:		
G. Amsinck & Co.	7,200	
Piza Nephews & Co.	4,000	11,200
JUNE 9.—By the *Prince Eitel Friedrich*=Colombia:		
Isaac & Samuel	2,000	
De Lima Cortissoz & Co.	1,000	3,000
JUNE 9.—By the *Frutera*=Colon:		
A. Rosenthal & Sons	2,200	
R. G. Barthold	300	2,500
JUNE 9.—By the *Seguranca*=Tampico:		
Continental-Mexican Rubber Co.		*64,000
JUNE 9.—By *El Valle*=Galveston:		
Various		*2,500
JUNE 9.—By the *Byron*=Bahia:		
J. H. Rossbach Bros. & Co.		4,000
JUNE 9.—By the *Portuguese Prince*=Bahia:		
A. Hirsch & Co.		23,000
JUNE 10.—By the *Carl Schurz*=Colombia:		
Andean Trading Co.		4,000
JUNE 13.—By the *Momus*=New Orleans:		
A. N. Rotholz		6,000
JUNE 13.—By *El Cid*=Galveston:		
Various		*10,000
JUNE 14.—By the *Alliança*=Colon:		
Pottberg, Ebeling & Co.	3,500	
Dumarest Bros.	500	4,000
JUNE 14.—By the *Morro Castle*=Mexico:		
Harburger & Stack		1,000
JUNE 16.—By the *Albingia*=Colombia:		
Caballero & Blanco	1,500	
De Lima Cortissoz & Co.	700	2,200
JUNE 16.—By the *Proteus*=New Orleans:		
Various		500
JUNE 16.—By the *Amerika*=Hamburg:		
Various		11,200
JUNE 17.—By the *Tivives*=Port Simon:		
Gillespie Bros.		700
JUNE 18.—By the *Thames*=Colon:		
J. S. Sambrada & Co.	1,200	
C. E. Griffin	1,200	2,400
JUNE 19.—By the *Antilla*=Tampico:		
Continental-Mexican Rubber Co.	*99,000	
Arnold & Zeiss	*33,500	
Ed. Maurer	*170,000	
J. W. Wilson	*1,000	*303,500

AFRICAN.

	POUNDS.	
MAY 22.—By the *Pretoria*=Hamburg:		
Meyer & Brown	19,000	
Arnold & Zeiss	22,500	
Ed. Maurer	10,500	52,000
MAY 24.—By the *Celtic*=Liverpool:		
James T. Johnstone		11,200
MAY 26.—By the *Lapland*=Antwerp:		
Meyer & Brown		1,500
MAY 26.—By the *Carmania*=Liverpool:		
General Rubber Co.	11,200	
Robinson & Co.	6,500	17,700
MAY 26.—By the *St. Paul*=Southampton:		
Arnold & Zeiss		11,500
MAY 26.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Meyer & Brown	108,000	
Ed. Maurer	11,200	
Henderson & Korn	18,000	
Wallace L. Gough	25,000	162,200
MAY 26.—By the *La Lorraine*=Havre:		
Meyer & Brown		78,000
MAY 26.—By the *Zaandyk*=Amsterdam:		
Manhattan Rubber Mfg. Co.		5,000
MAY 31.—By the *Cedric*=Liverpool:		
Various		4,500
JUNE 2.—By the *Caronia*=Liverpool:		
Robinson & Co.	33,500	
James T. Johnstone	1,500	35,000
JUNE 2.—By the *Minnetonka*=London:		
Meyer & Brown	4,500	
Arnold & Zeiss	17,500	22,000
JUNE 4.—By the *Armenia*=Hamburg:		
Various		33,500
JUNE 5.—By the *Cleveland*=Hamburg:		
Ed. Maurer		33,500
JUNE 6.—By the *President Lincoln*=Hamburg:		
Ed. Maurer	11,200	
Ed. Maurer	17,500	
Wallace L. Gough	17,500	
Henderson & Korn	2,200	48,400
JUNE 10.—By the *Zeeland*=Antwerp:		
Various		10,000
JUNE 11.—By the *Pennsylvania*=Hamburg:		
Meyer & Brown	29,000	
Arnold & Zeiss	11,500	
Wallace L. Gough	17,500	
Ed. Maurer	5,000	
Henderson & Korn	4,500	
Various	11,200	78,700
JUNE 14.—By the *Adriatic*=Liverpool:		
James T. Johnstone	2,500	
Henderson & Korn	2,000	
Various	11,200	15,700
JUNE 16.—By the *Campania*=Liverpool:		
Robinson & Co.		4,000
JUNE 16.—By the *Flaride*=Havre:		
Various		11,200
JUNE 16.—By the *Amerika*=Hamburg:		
Arnold & Zeiss	29,200	
Ed. Maurer	9,000	
Wallace L. Gough	25,500	
Various	20,000	83,700
JUNE 17.—By the *Finland*=Antwerp:		
Ed. Maurer		20,000

EAST INDIAN.

[*Denotes Plantation Rubber.]

	POUNDS.	
MAY 22.—By the *Pretaria*=Hamburg:		
Wallace L. Gough		*26,500
MAY 26.—By the *Lapland*=Antwerp:		
Meyer & Brown	*7,800	
Rubber Trading Co.	*22,500	
Wallace L. Gough	*15,000	
Various	*30,000	*75,300
MAY 26.—By the *St. Paul*=Southampton:		
Meyer & Brown	*24,000	
Ed. Maurer	*33,500	
Robinson & Co.	*15,500	
Arnold & Zeiss	*22,500	
William H. Stiles	*4,500	
Various	*4,000	*104,000
MAY 26.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Meyer & Brown	*10,000	
Ed. Maurer	*20,000	*30,000

MAY 26.—By the *Karonga*=Colombo:

Meyer & Brown	*54,000	
Ed. Maurer	*101,000	
H. W. Peabody & Co.	*25,000	*180,000

MAY 26.—By the *Rochambeau*=Havre:

Michelin Tire Co.		*50,000

MAY 27.—By the *Minnewaska*=London:

Meyer & Brown	*33,500	
James T. Johnstone	*80,000	
Charles T. Wilson	*40,000	
L. Littlejohn & Co.	*12,000	*165,500

MAY 28.—By the *Shimosa*=Singapore:

Ed. Maurer	*70,000	
Malaysian Rubber Co.	*33,500	
Ed. Boustead & Co.	*12,500	
L. Littlejohn & Co.	*25,500	
L. Littlejohn & Co.	*11,200	
Various	*30,000	*182,700

MAY 29.—By the *Potsdam*=Amsterdam:

Rubber Trading Co.		*7,000

MAY 29.—By the *Majestic*=Southampton:

Meyer & Brown	*32,000	
Arnold & Zeiss	*25,000	
A. W. Brunn	*11,200	
N. Y. Commercial Co.	*85,000	
Robinson & Co.	*13,500	
Various	*69,000	*235,700

MAY 29.—By the *President Grant*=Hamburg:

Wallace L. Gough		*7,500

JUNE 2.—By the *Minnetonka*=London:

Meyer & Brown	*87,800	
N. Y. Commercial Co.	*190,000	
Arnold & Zeiss	*56,000	
Charles T. Wilson	*35,000	
James T. Johnstone	*16,500	
Raw Products Co.	*13,500	
Robinson & Co.	*12,500	
Malaysian Rubber Co.	*4,500	
Ed. Maurer	*10,000	
Robert Badenhop	*3,000	
Various	*96,700	*525,500

JUNE 3.—By the *Rheinfels*=Colombo:

Ed. Maurer	*13,500	
Meyer & Brown	*11,500	*25,000

JUNE 3.—By the *New Amsterdam*=Amsterdam:

Robert Badenhop	*17,500	
Rubber Trading Co.	*2,000	
Various	*14,500	*34,000

JUNE 4.—By the *Kroonland*=Antwerp:

Meyer & Brown	*80,000	
Various	*20,000	*100,000

JUNE 5.—By the *Oceanic*=Southampton:

Meyer & Brown	*14,800	
Rubber Trading Co.	*18,500	
N. Y. Commercial Co.	*7,500	
Arnold & Zeiss	*145,000	
Charles T. Wilson	*135,000	
Various	*80,000	*400,800

JUNE 6.—By the *President Lincoln*=Hamburg:

Arnold & Zeiss	*3,000	
Various	*4,000	*7,000

JUNE 9.—By the *Philadelphia*=Southampton:

Meyer & Brown	*68,000	
Ed. Maurer	*13,500	
Rubber Trading Co.	*9,000	
Charles T. Wilson	*50,000	*140,500

JUNE 9.—By the *Inverclyde*=Singapore:

Meyer & Brown	*11,000	
Ed. Maurer	*22,500	
A. Hirsch & Co.	*9,000	
L. Littlejohn & Co.	*5,000	*47,500

JUNE 10. By the *Zeeland*=Antwerp:

Meyer & Brown	*27,000	
Arnold & Zeiss	*92,000	
Various	*45,000	*164,000

JUNE 10.—By the *Minneapolis*=London:

Meyer & Brown	*41,500	
James T. Johnstone	*6,000	
Lunham & Moore	*16,000	
Ed. Maurer	*6,000	
Various	*33,500	*103,000

JUNE 10.—By the *Noordam*=Amsterdam:

Various		*3,500

JUNE 11.—By the *Olympic*=Southampton:

Ed. Maurer	*43,000	
Arnold & Zeiss	*33,500	
Meyer & Brown	*7,000	
Rubber Trading Co.	*5,000	*88,500

JUNE 11.—By the *Pennsylvania*=Hamburg:

Ed. Maurer	*7,000	
Charles T. Wilson	*2,000	
Wallace L. Gough	*2,500	
Henderson & Korn	*2,200	*13,700

JUNE 16.—By the *New York*=Southampton:

Arnold & Zeiss	*75,000	
Ed. Maurer	*22,500	
Robinson & Co.	*5,000	
W. Stiles	*1,700	
Various	*3,000	*107,200

JUNE 16.—By the *Amerika*=Hamburg:

Wallace L. Gough		*3,000

JUNE 16.—By the *Poleric*=Colombo:

Meyer & Brown	*85,000	
Ed. Maurer	*22,500	
James T. Johnstone	*4,500	
H. W. Peabody & Co.	*2,200	
Various	*8,500	*122,700

JUNE 16.—By the *Kentucky*=Colombo:

Meyer & Brown	*54,000	
Ed. Maurer	*60,000	
H. W. Peabody & Co.	*25,000	
N. Y. Commercial Co.	*18,500	
Various	*13,500	*171,000

JUNE 17.—By the *Finland*=Antwerp:

Meyer & Brown		*53,000

JUNE 17.—By the *Minnehaha*=London:

Meyer & Brown	*15,500	
Adolph Hirsch & Co.	*11,200	
James T. Johnstone	*7,000	
General Rubber Co.	*50,000	
L. Littlejohn & Co.	*11,200	
Charles T. Wilson	*40,000	
L. Blitz	*8,000	
Various	*12,500	*155,400

JUNE 18.—By the *Welsh Prince*=Singapore:

Ed. Maurer	*90,000	
Malaysian Rubber Co.	*25,000	
James T. Johnstone	*25,000	
L. Littlejohn & Co.	*37,200	
Adolph Hirsch & Co.	*5,500	
General Rubber Co.	*11,500	
E. Boustead & Co.	*11,200	
Broome Rubber Co.	*3,000	*208,400

BOSTON ARRIVALS.

IMPORTS IN MAY, 1913.

	Pounds.	Value.
Gutta-jelutong (Pontianak)	1,505,337	$76,249
India-rubber	113,050	92,496

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—MAY, 1913.

Imports:	Pounds.	Value.
India-rubber	8,339,721	$5,846,621
Balata	52,917	32,081
Gnayule	789,781	341,329
Gutta-percha	15,139	13,575
Gutta-jelutong (Pontianak)	4,173,156	202,503
Total	13,370,714	$6,436,109
Exports:		
India-rubber	93,640	$54,753
Balata	2,320	1,200
Guayule	11,200	8,087
Gutta-percha	240	452
Reclaimed rubber	71,727	11,261
Gutta-jelutong (Pontianak)	.....	.....
Rubber scrap, imported	2,485,811	$225,764
Rubber scrap, exported	313,760	50,476

EXPORTS OF INDIA-RUBBER FROM PARA, MANAOS AND IQUITOS FOR MAY, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	GRAND TOTAL.
Zarges, Berringer & Co.	53,243	41,550	129,828	93,434	318,055	131,999	11,123	34,548	121,077	298,747	616,802
General Rubber Co. of Brazil	45,952	11,747	53,213	52,227	163,139	21,045	6,544	3,559	14,285	45,433	208,572
J. Marques	119,808	31,199	206,086	119,849	476,942	16,480	2,550	31,020	2,520	52,570	529,512
R. O. Ahlers & Co.	1,962	.....	845	68,609	71,416	38,001	.....	18,171	13,842	70,014	141,430
Suarez Hermanos & Co., Ltd.	.....	.....	.....	.....	.....	154,358	1,021	35,601	86,839	277,819	277,819
De Lagotellerie & Co.	15,980	2,550	14,850	.....	33,380	.....	.....	.....	.....	.....	33,380
Pires Teixeira & Co.	5,270	2,890	23,430	.....	31,590	17,850	.....	.....	.....	17,850	49,440
Sundry exporters	1,848	84	1,193	1,250	4,375	.....	.....	2,310	3,640	5,950	10,325
Itacoatiara direct	1,050	.....	1,200	1,800	4,050	1,800	900	2,760	750	6,210	10,260
	245,113	90,020	430,645	337,169	1,102,947	381,533	22,138	127,969	242,953	774,593	1,877,540
Manáos direct	201,807	37,100	72,136	192,236	503,279	370,523	48,028	112,786	354,546	885,883	1,389,162
Iquitos direct	.....	.....	.....	.....	.....	19,055	709	4,357	34,121	58,242	58,242
Total	446,920	127,120	502,781	529,405	1,606,226	771,111	70,875	245,112	631,620	1,718,718	3,324,944

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR MAY, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	GRAND TOTAL.
Zarges, Ohliger & Co.	61,059	13,988	20,712	115,582	214,341	45,131	6,957	20,234	174,944	247,266	461,607
General Rubber Co. of Brazil	14,111	5,911	5,520	18,141	43,683	31,695	8,888	20,350	81,041	141,974	185,657
Ahlers & Co.	26,088	1,610	12,465	26,384	66,547	168,202	17,532	17,687	71,311	274,732	341,279
De Lagotellerie & Co.	15,840	.....	.....	.....	15,840	58,899	12,015	19,081	12,478	102,473	118,313
J. G. Araujo	.....	.....	.....	.....	.....	39,234	2,976	46,565	7,616	96,391	96,391
Mesquita & Co.	.....	.....	.....	.....	.....	498	120	1,582	738	2,938	2,938
Semper & Co.	.....	.....	.....	.....	.....	24,647	.....	9,479	25,279	59,405	59,405
Théodore Lévy, Camille & Co.	.....	.....	.....	.....	.....	.....	.....	1,823	7,868	9,691	9,691
W. Peters & Co.	5,208	1,105	541	.....	6,854	4,449	663	5,566	21,791	32,469	39,323
Suarez Hermanos & Co., Ltd.	.....	.....	.....	.....	.....	3,314	.....	.....	.....	3,314	3,314
Gunzburger & Co.	.....	.....	.....	.....	.....	.....	.....	.....	1,656	1,656	1,656
H. Balding	.....	.....	.....	.....	.....	11,559	.....	2,427	1,692	15,678	15,678
Sundry	.....	.....	.....	.....	.....	.....	.....	1,788	450	2,238	2,238
	122,306	22,614	39,238	163,107	347,265	387,628	49,151	146,582	406,864	990,225	1,337,490
Iquitos direct	17,903	281	2,980	95,728	116,892	19,055	709	4,357	34,121	58,242	175,134
Total, May, 1913	140,209	22,895	43,218	258,835	464,157	406,683	49,860	150,939	440,985	1,048,467	1,512,624

INDIA RUBBER WORLD
CAOUTCHOUC GUTTA-PERCHA

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Antwerp.

RUBBER STATISTICS FOR MAY, 1913.

DETAILS.	1913.	1912.	1911.	1910.	1909.
Stocks, April 30..*kilos*	990,270	437,513	599,114	470,468	607,787
Arrivals in May—					
Congo sorts	241,989	152,024	187,106	128,052	442,098
Other sorts	3,205	12,902	29,125	17,969	64,728
Plantation sorts	184,398	107,367	41,754	44,037	8,235
Aggregating.....	1,419,862	709,806	857,099	660,526	1,122,848
Sales in May.....	365,869	265,369	243,089	116,663	433,610
Stocks, May 31.....	1,053,993	444,437	614,010	543,863	689,238
Arrivals since Jan. 1—					
Congo sorts	1,318,775	1,243,101	1,259,621	1,299,338	1,443,130
Other sorts	46,521	58,637	235,093	138,138	433,700
Plantation sorts	868,109	514,692	299,316	222,131	96,600
Aggregating	2,233,405	1,816,430	1,794,030	1,659,607	1,973,430
Sales since Jan. 1.....	1,690,472	2,046,531	1,768,232	1,657,256	1,879,927

RUBBER ARRIVALS FROM THE CONGO.

JUNE 5.—By the steamer *Elizabethville:*

		Kilos.	
Bunge & Co.....	(Société Générale Africaine)	51,600	
do	(Chemins de fer Grands Lacs)	7,900	
do	(Comptoir Commercial Congolais)	15,000	
do	(Belge du Haut Congo)	750	
do	(Intertropical)	4,800	
do		5,500	
Société Coloniale Anversoise.....	(Comminière)	11,400	
do	(Haut Congo)	11,100	
do	(Cie. du Kasai)	91,400	
Credit Colonial & Commercial (Anc. L. & W. Van de Velde S. A.)	(Uelé)	4,200	
do	(Comfina)	9,700	
do	(Velde)	3,300	
Osterrieth & Co.....	(Lubefu)	4,500	
Willaert Frères		2,000	223,150

Plantation Rubber From the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

(From January 1 to May 19, 1913. Compiled by the Ceylon Chamber of Commerce.)

	1912.	1913.
To Great Britain..... ....*pounds*	2,205,112	3,980,582
To United States	1,268,902	2,599,367
To Belgium	489,501	1,055,089
To Germany	41,978	97,306
To Australia	37,655	220,151
To Canada	12,121	.....
To Austria	11,920	26,075
To Japan	5,708	81,461
To Italy	4,692	22,460
To Norway and Sweden.....	39	.....
To Holland	.....	992
To India	.....	209
Total	4,077,628	8,083,692

(Same period 1911—1,796,522; same 1910—838,280.)

The export figures of rubber for 1913 given in the above table include the imports re-exported. (These amount to 754,967 lb.—613,780 lb. from the Straits and 141,187 lb. from India.—Ed. C. O.) To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date, deduct the quantity of imports from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

[From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.]

	Singapore. May 7.	Penang. March 31.	Port Swettenham. May 14.	Total.
Great Britain....*pounds*	5,861,565	3,377,200	8,894,630	18,133,395
Continent	67,850	13,734	1,101,433	1,183,017
Japan	305,600	.....	.....	305,600
Australia	43,629	.....	.....	43,629
Ceylon	.....	44,800	534,706	579,506
United States.....	2,336,054	67,333	.....	2,403,387
Total	8,614,698	3,503,067	10,530,769	22,648,534
Same period, 1912.....	4,169,266	2,434,719	7,382,645	13,986,630
Same period, 1911.....	1,903,169	1,187,438	4,494,251	7,584,858
Same period, 1910.....	1,012,863	489,755	2,622,166	4,124,784

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THE PRACTICABILITY OF RUBBER PAVEMENTS.

THE contemplation of the great increase in the crude rubber supply within the next few years invariably prompts the question—what will we do with it? And the readiest answer to the question seems to be—rubber pavements.

Any consideration of the practicability of rubber pavements brings us at once to the three examples of this sort of road construction to be found in London, viz., the court yards of the Savoy and Claridge's hotels and the approach and exit of the Euston railway station. These are the noteworthy instances of rubber pavements which have been laid a sufficient length of time to afford a practical basis for discussion. The two hotel court yards were paved with rubber, one ten and the other thirteen years ago, the primary object being to deaden the clatter of the horses' hoofs and the rumble of the wheels. The pavement was in the form of slabs about 2½ inches in thickness. These slabs seem to have served their purpose very satisfactorily. They have worn in spots to one-half their original thickness, but from present appearance give promise of several more years of service. To be sure, they have not been subjected to the extreme wear of the heavy trucking on the ordinary roadway, but in one respect their treatment has been unusually severe, for they have had to endure the wear of the constant turning of vehicles. Another trying experience that has come to them latterly has been the use of studded tires. These steel studs are not beneficial to any sort of roadway, but on rubber their effect is naturally especially injurious. The oil of the motor car is another foe to rubber roads; but notwithstanding these unfavorable conditions the rubber covering in these London hotel yards has given a good account of itself.

The case of Euston station presents even a stronger argument for the possibilities of rubber paving, for part of this paving that is under the arch through which vehicles depart from the station was laid thirty-two years ago and, tho worn in some places to an inch and a half from an original thickness of two inches, is still serviceable and in no immediate need of relaying.

Renewed interest in this subject has recently been awakened by a lecture delivered before the Chemical Engineers of London by Dr. Philip Schidrowitz, the well known writer on matters pertaining to rubber. He devoted much of his paper to the practicability of rubber pavements, going into carefully estimated details regarding the initial cost of the pavement, the expense of laying it and of its subsequent maintenance. Basing his calculations on crude rubber at two shillings per pound, and on a composition that should be one-third rubber, he estimates that a ton of paving material would cost £100, as compared with a cost for asphalt of £2 to £3 and of cement, concrete or stone of £2 to £5. He then compares the cost per square yard of rubber pavement with that of the materials now generally in use, and finds that a rubber road surface of the proper thickness would cost about fourteen times as much as asphalt or macadam and about seven times as much as granite or wood. On the whole, considering its large initial cost, Dr. Schidrowitz doubts the practicability of the rubber pavement, but, he observes, in concluding his discussion of the subject, "the question is replete with interest, and in view of its possibly important bearing on the future of the rubber industry, is at least worthy of a serious experiment."

This lecture before the London chemists will undoubtedly be widely read. It is a valuable contribution to a highly important discussion. Its figures are the result, we may rest assured, of most careful calculations. The initial cost of rubber roadways on a large scale, even with

fifty-cent rubber, would be prohibitive, but with rubber at fifty cents such roadways on a limited scale are sure to come. Their noiselessness and cleanliness—their freedom from rattle, jar and dust—are bound to bring them into constantly increasing favor where these advantages are most desired—as around hospitals, churches, schools and lecture halls, around courts, in fine residential avenues, and even about apartment houses and office buildings of the better sort. When rubber sells at fifty cents there will be plenty of rubber paving.

PRIZES FOR NEW USES OF RUBBER.

IN the department entitled "Some Rubber Interests in Europe," found elsewhere in this number, there is reproduced a letter recently sent out by the Secretary of The Mincing Lane Tea and Rubber Share Brokers' Association Ltd. to the rubber plantation companies—of which there are between 500 and 600—inviting their co-operation in a plan of offering substantial prizes for the suggestion of new uses for rubber. The association gives an earnest of its own interest in this matter by offering a prize of 100 guineas, to be given at the Rubber Exposition to be held in London next summer, for the best new use of rubber submitted at that time; and also by its further offer to subscribe £50 to any fund contributed by the planters.

This episode shows the changing conditions of the rubber industry. Hitherto prizes have been offered for inventions and discoveries looking to an increase in the amount of crude rubber produced, but these new offers are for inventions and discoveries that shall lead to the increased consumption of rubber.

There is no danger—although some pessimistic surveyors of the situation occasionally express such a fear—that there will be too much rubber. Even should the estimates of experts be fulfilled, that the year 1919 will see a production of plantation rubber amounting to over 300,000 tons, which—assuming that the wild output from the Amazon and other localities continues at its present level—will bring the total production well towards 400,000 tons, this amount, vast as it is, could undoubtedly be utilized through the present channels of consumption. When rubber becomes cheap enough it will probably become the universal flooring, and its employment in the paving of streets is capable of an almost unlimited extension. But the problem before the rubber industry today is not so much how to utilize the constantly increasing rubber supply as it is how to use it to the best advantage. That is a problem worthy of the diligent application of the most acute inventive minds. And if the planters shall co-operate to offer substantial rewards for the discovery of new uses of rubber, new uses would undoubtedly be discovered by the thousands; and some of them certainly would be sufficiently practical to utilize all the surplus product of the plantations for many years to come.

GUARANTEEING THE UNGUARANTEEABLE.

AS a matter of fact, isn't the whole tire guarantee idea a fight against nature, an attempt to accomplish the manifestly impossible? From the very character of the service a tire is called upon to perform, can the duration of that service possibly be guaranteed?

It is logical enough to guarantee a watch, because one can predicate the normal treatment of a watch, viz.: that it will be carried quietly in the pocket during the day and wound up with great regularity about the same time each night. The piano can be guaranteed, for the piano runs a normal course. Generally speaking, it stands unmolested in its corner, to be played on with more or less discretion a few minutes or possibly a few hours a day.

But with a tire it is quite different—that has no normal career. When it leaves the factory a dozen different futures may be open to it. It may possibly fall into the hands of a cautious, conservative person who wants to get full service from it and who takes particular pains to inform himself as to how a tire should be treated for its own good, and to the best advantage of its owner. Or possibly it may fall into the hands of the owner's son, just home from college, a reckless scapegrace who regards not principalities or powers, much less tires, and whose only idea of a car is to make it cover the greatest amount of the earth's surface in the least possible time.

Or the tire may be turned over to the tender mercies of a chauffeur, whose business relations with the proprietor of the neighboring repair shop are such that the more abuse the tire receives the better is the chauffeur's financial status. Or, more likely, the tire will fall into the hands of just an average sort of man who has no malicious intention of abusing it, but who doesn't take the trouble to find out how it should be cared for, and who doesn't bother very much about such a trivial matter as proper

inflation, and is likely to let his car stand on its tires all winter long.

So, everything considered, while a tire may leave the factory good for 5,000 miles of travel, it is humanly impossible to guarantee one-half or one-quarter of that amount. So would it not be better if the manufacturer would simply make the best tire within his ability and say "This tire, properly treated, will do 5,000 miles, but I have no idea how it is going to be treated; so here it is and I am through with it"? It would be a great relief, certainly, to the manufacturer, and he could afford to give the consumer considerably lower prices. It would tend to make the sensible consumer much more careful in his use of the tire; and it would make strongly for general veracity, for since time began there has been no other such tremendous temptation to prevarication as the tire guarantee.

DEPENDING ON THE POINT OF VIEW.

A DAILY paper, ruminating on rubber matters, makes the interesting statement that the yearly production and consumption of automobile tires in this country has now reached 60,000,000. As there are about 1,000,000 motor cars in commission, it requires no very profound process of mathematics to determine that each car would be consuming, on an average, sixty tires a year. Making a conservative allowance of $25 per tire, it becomes clear that the average car owner must lay aside from his annual income an item of $1,500 to meet the unescapable tire cost. Possibly there are some timid souls that might shrink from the ownership of an auto if compelled each year to part with $1,500 simply to keep it shod.

But let them take heart, for there is another chapter to this mathematical story. The same writer goes on to say that this yearly output of tires is worth $120,000,000. From which it will appear that the value of tires has dropped to $2 each. Now many a careful car owner who avoids driving over broken bottles and grazing the curb, goes comfortably through the year on a single set of tires —which, at $2 each, brings the auto-shoeing bill down to $8 for the twelve months, or a trifle over two cents a day. Looking at it from this angle, owning an auto is cheaper than staying at home and reading the paper. It all depends on the point of view.

In the meantime, if the statistician of the daily referred to were to revise his figures, placing the annual American consumption of auto tires at six instead of at sixty million, he probably would come appreciably nearer to the facts.

THE DEBT TO THE CHEMIST.

THE motorist, as he skims along the smooth road at 25 miles an hour—or faster, if the fear of the local constabulary has been removed from his heart—may possibly give an occasional thought to the debt he owes to the big factory, with its brawny men and clangorous machinery, that has turned out the tire which enables him to ride on air, while still sticking to the earth. He may even, if he is a man of some imagination, think of the lonely *seringueiro* threading his way through the Brazilian jungle, extracting the latex from one *Hevea* after another. But, as a matter of fact, his real debt is to the patient man who is silently working away in his laboratory surrounded by his tubes, bottles and retorts. The most notable of all laboratories was Mrs. Goodyear's kitchen stove, where, between bakings of the family bread, her indefatigable husband utilized the oven for his interminable batches of rubber, variously compounded. But as he, by the aid of this little kitchen oven, discovered the secret that gave the whole rubber industry its start and made any sort of a pneumatic tire possible, the chemist of to-day in his perfectly appointed laboratory must discover the secrets that will enable the manufacturer to make tires still better, tougher and cheaper.

A WESTERN PAPER HAS MADE THE IMPORTANT DISCOVERY that the rubber plant has been driven from the home and that it no longer dignifies the six rooms and bath that constitute the domicile of the city dweller, nor decorously decorates the craftsman cottage of the suburbanite. According to this authority, it has ceased to be catalogued among the Lares and Penates of American life. And the cause also for this great change is assigned, viz.: that the rubber plant has been of late so extensively exploited in the show windows of the automobile emporiums that it has become thoroughly commercialized and therefore unfitted for the quiet family fireside. Probably the disappearance of the rubber plant from the home—if in reality it has disappeared—is simply one of the whims of fashion; for fashions swing back and forth in matters of household decoration just as they do in the vogue of literature, the choice of dogs and the popularity of dances. The *Ficus elastica* is a comely plant and will undoubtedly be able to maintain its position as an ornament in the home, even tho it has not done very much in the way of adding to the crude rubber supply of the world.

Rubber in Argentina.

By the Editor of The India Rubber World.

Argentine Possibilities—Wild Rubber in the Chaco—The Most Southern Rubber Mill—The Journey to the River Plate—Quebracho—Off Lobo Island—A "Pampero"—Up the River—First View of the City—A South American Paris—Characteristics of the People—To the Rubber Mill.

IT is the habit of Americans to speak wisely and albeit sadly of the immense possibilities of Argentina and of the fact that Europe is profiting hugely by its exploitation while the Yankee is doing nothing. To see if this was notably apparent, and further, because of the rubber interests there, I went to Buenos Aires after visiting Bahia, Rio, Santos and other Brazilian cities.

The rubber interests appeared to be three-fold. In the first place, there was the statement of Ernesto Costa, said to have acquired rubber experience in Madagascar, on the Congo, and in the Bolivian Montana, who discovered rubber trees in the northwestern part of the "Chaco." The Argentine Minister of Agriculture at once dispatched one of his men to explore. He reported that he found a variety of trees called *lecherones* and others called *Ebeas* (*Heveas?*). The latter were the best.

The "Avenida," Buenos Aires.

Across the Plains.

The agent gave as the product of the large *lecherones* from 16 to 20 pounds of gum per tree. He further reported that there were localities where rubber gathering was going on, regular camps having been established, estradas laid out, and workmen employed every year. A year later the government commissioned two agricultural experts to take up the study of these trees, and, as far as known, they started for the province of Salta, where the trees were located. It was further light on this interesting matter that I was seeking.

Then there was another matter. Buenos Aires has a rubber factory, which is undoubtedly the farthest south of any in this hemisphere. I wanted to see that, and a lot more.

The boat that I embarked upon at Rio was English and carried tourists chiefly, with a sprinkling of American, English and Brazilian business men. For example, there was one who represented the American dyewood agglomeration. He was interested in quebracho, a wood much used in tanning. He told of thousands of acres controlled by his company — 400,000 in Argentina and 900,000 in Paraguay — of big mills and up-to-date shipping plants. Then there were men from the American Harvester Co., who told of the use of American machines, "because they couldn't get anything else." Again, there were the freight and passenger-car salesmen, who told of contracts given to Americans only when it was impossible to get goods in France or England or Germany. Allowing for individual prejudice, it did seem as if there was a decided leaning away from things American.

The Docks, Buenos Aires.

The journey was pleasant in that the sea was smooth and the company good. As it was winter north, it was, of course,

midsummer there, and quite hot. Finally we sighted Lobo Island, and passing between it and the sandy shore of the mainland we were in the mouth of the River Plate. While we were ploughing up its coffee-colored flood we ran into

The Writer, Mr. Wilson, Manager, and Mr. Smith, Superintendent.

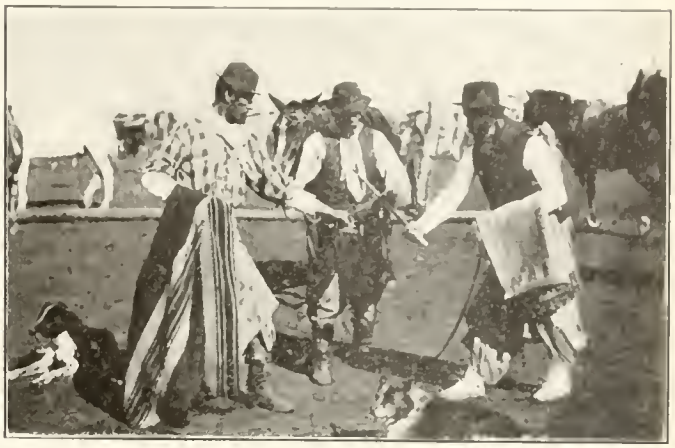
a "Pampero," a cold wind of the "Texan Norther" order, which promptly brought the thermometer down to 30 or 40 degrees, and instead of sweating we were all shivering.

Be it noted, the River Plate is not attractive from a scenic viewpoint. It is from thirty to one hundred miles in width, and the channel, excellently buoyed, is never more than twenty-three feet deep. Big boats therefore cannot get up to Buenos Aires.

The city from the distance, with its big grain elevators and cold storage plants, reminds one of Chicago. We followed a long procession of steamers up the narrow channel and finally tied up at fine granite docks in a basin that is almost in the city's center.

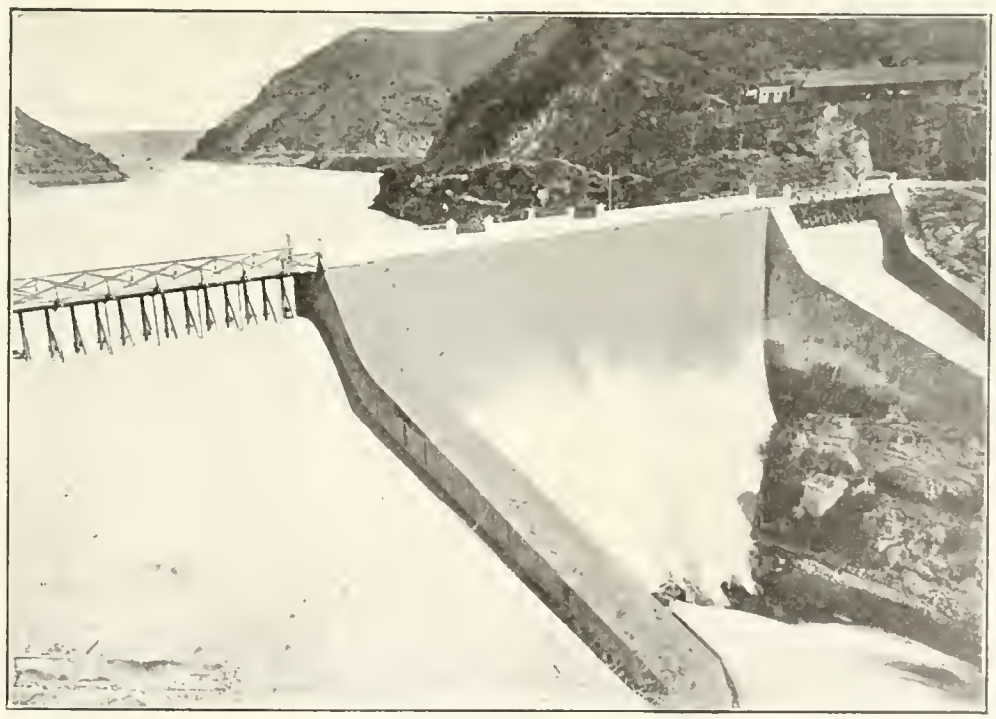
The Aduana passed our luggage quickly and politely, and soon we were at the Plaza, the best hotel, where they charge $12 a day for room and bath and joyfully extort an even larger rate for meals.

Once in the city, it impressed one as being patterned after Paris. The "Avenida" is a wonderful street lined with beautiful buildings and crowded with jewelry stores. No city in the world has the like. Any attractive novelty sells here, no matter what the price may be, for Buenos Aires is the center of everything Argentine. It is the Mecca of all of the



Among the Cattlemen.

well-to-do for the whole country, and it is here that the money made from the vast wheat fields and cattle ranches is lavishly spent. It is a busy city full of electric cars, that almost crowd one off the narrow sidewalks; the people alert, careless, and in spite of the many beautiful saloons, wonderfully sober. There are magnificent public buildings, a jockey club that holds horse races almost daily—with horses that are wonders—and incidentally makes millions annually; and so on. Then only a short distance away is the other side of the picture, the picturesque ranch and farm life shown on as large a scale as anywhere in the world.



The Falls of Igassu.

But about the rubber factory. It is owned by the India Rubber, Gutta Percha & Telegraph Works at Silvertown, England. Mr. Wilson, the manager, whom I met at their well appointed rubber store in the city, took me to the mill. It is situated far out beyond the Golf Club, and while not close to the river, so flat is the land that in time of high water they go to it in boats instead of carriages. The factory makes small molded goods, battery jars and valves, and perforce repairs all of the city's tires, even tho they be nearly beyond help.

The equipment is a washer, mixer, warmer, calender, spreader, two tubing machines and several vulcanizers. It is run in conservative English fashion, not really as an enter-

The Factory from the Railroad.

prise, but as an adjunct to the warehouse and an accommodation to its customers.

Speaking of tires, there are lots of autos in the city and every known make of tire is used. It may be interesting to note also that there are the following who handle rubber goods:

S. Borok, Buchanan Jordan & Co., Buxton Cassini & Co., Continental Tyre Co., B. J. Ebsworth (agents for Dunlop Tyre Co.), Edwards & Fase (agents for Northern Rubber Co.), Harris & McDonald (agents for North British Rubber

Department for Tire Repair.

Co.), David Hogg y Cia., India Rubber, Gutta Percha & Telegraph Works Co., Limited, and Recht & Lehmann (agents for "Michelin" tires).

There is also in the city a worthy Italian—said to have been employed by the Pirellis in Milan at one time—who does more or less in proofing fabrics for his own clothing business. I was not able to visit his factory, nor could I find him. The story was rife, also, that the "American Goodyear Co." was to establish a large factory in "B. A." and that the Jockey Club had subscribed millions—more or less—to the scheme. The story was absurd, of course, but was nevertheless told and retold, with additions, until the project assumed proportions almost gigantic.

(To be continued.)

BRAZILIAN RUBBER EXPORTS.

In a comprehensive report, Consul General Julius G. Lay, of Rio de Janeiro, has grouped various interesting figures regarding the exports of Brazil during the last three years. The totals amounted to: 1910, $310,006,433; 1911, $324,919,767; 1912, $362,346,951.

Of the 1912 exports the United States took about 40 per cent.; Great Britain about 12 per cent.; Germany about 14 per cent.; France about 10 per cent., and other countries about 24 per cent.

The exports of rubber alone were as follows:

	1911		1912	
	Tons.	Value.	Tons.	Value.
Total	36,547	$73,261,558	42,286	$78,125,250
	1911		1912	
Including exports to—	Tons.	Value.	Tons.	Value.
United States	16,146	$31,359,386	21,322	$39,344,927
Great Britain	15,662	32,886,456	14,728	27,042,375
Germany	1,058	1,660,302	1,660	2,399,485
France	3,221	6,403,342	4,436	8,091,635
Belgium	156	316,429	126	433,818

An increase of quantity is thus shown for the United States in 1912, coupled with a reduction for Great Britain. The two countries took between them the bulk of the Brazilian rubber exports.

MANICOBA CULTIVATION IN BRAZIL.

At the recent meeting of the British and Brazilian Rubber Planters and Manufacturers, Ltd., the chairman reported that their representative had been shown a plantation of *Maniçoba* rubber trees which the manager estimated to number 30,000 and to be about seven years old. They had only been experimentally tapped, but they showed plenty of latex, altho it refused to flow freely. The manager thought that there must be some method of inducing the trees to yield fully. In that case they would have an immediate and profitable source of income. Their representative at Lagoa had been making experiments, which he believed to be successful, with that object in view.

According to latest details, 100,000 rubber trees have been planted, mostly ranging in age from one to three years. There are said to be in addition several hundred thousand indigenous *Maniçoba* trees. The company's properties are in the State of Bahia, Brazil.

BRAZILIAN PROSPECTS AS VIEWED FROM MALAYA.

Commenting on a statement that Brazil is getting 17,000 Japanese coolies, the "Malay Mail" remarks:

"Respecting the above we doubt whether the Japanese government will permit its natives to work under anything like existing conditions of rubber collecting in Brazil. If proper plantations are started it may be another question, but serious competition from this source could hardly be expected under, say, ten years. The real fight between the two classes of the product must be such that the fittest will survive. Brazil seems alive to this aspect, and to be doing all she can to prevent the loss of what is to her a very important industry. Plantation interests should not rest under the possibly false security that when rubber is below 3s. per pound, Brazil will cease to be a producer. The selling price will have to be well under that, before hard Pará will cease to come to market."

WILD VS. PLANTATION RUBBER.

A statement is attributed to Mr. A. Lampard, to the effect that against an estimated world's consumption this year of 120,000 tons of rubber, the supply from the plantations cannot be expected to exceed 45,000 tons. The balance must, therefore, come from wild sources of supply. He expresses the opinion that if rubber drops to an unremunerative price for the gatherers of the wild article, it is bound to rise again to a point which will admit of its collection on a profitable basis.

Dr. Muller Holds a Farewell Reception.

DR. LAURO MULLER, Brazilian Minister of Foreign Affairs, and special envoy to this country, sailed for home on the 16th of July on the Brazilian warship "Minas Geraes." A few days before his departure—on Friday, July 11—he tendered a reception on this warship, which was then anchored in the North River at the foot of 79th street, New York, to the officers and representatives of the various official, civic and commercial organizations whose hospitality had kept the ambassador so extremely busy during the four weeks of his visit. About six hundred invitations were extended, including some to people not connected with official or civic bodies but personally interested in Brazil and the development of her vast resources. Among these invitations was one to the editor of THE INDIA RUBBER WORLD, who spent some months last winter in the great South American Republic, and who had the honor at that time of meeting the eminent Brazilian secretary.

THE BRAZILIAN WARSHIP "MINAS GERAES."

The reception was held from 5 till 7 o'clock, and the launches of the worship were kept constantly plying to and from the pier, bringing the coming and returning the departing guests. The ship itself was an extremely attractive spectacle, being decorated from stem to stern with the flags of all nations, but particularly with a great number of American and Brazilian flags, which practically formed a canopy over the deck. The band of the "Minas Geraes" proved adept in American music—not to mention a variety of "tango" and "turkey-trot" pieces; which by no means went to waste, as at least two hundred couples took part in the dancing on the deck, which continued through the greater part of the reception. The young Brazilian officers, by the way, showed themselves quite as clever at these dances as the American girls who acted as their partners. They could dance together even if they could not converse together, for very few of the younger officers knew much English, and not many New York girls are very deeply versed in Spanish or Portuguese. But this lack of a common linguistic ground was merely an incident and did not interfere at all with the general enjoyment of the occasion.

Among those present were Major General Thomas Barry, commander of Governor's Island; Captain Gleaves, of the Navy Yard; Captains Smith and Rodeman, of the American dreadnaughts "Arkansas" and "Delaware," which acted as convoys for the "Minas Geraes"; Ambassador De Gama; Lewis Nixon, Charles M. Schwab, and many other representatives of American industries particularly related to matters in Brazil. It might be said in passing, that the refreshments, including wines and cigars, were supplied on a lavish scale, and were enjoyed with hearty American appreciation.

Dr. Müller paid a very graceful tribute to American hospitality in the following words: "I came to America to pay off a debt, but I find I will leave it owing a still greater one. The people here are most cordial, in spite of their industrial energy. In fact, I think the United States a great nation. I regard your country as a world within a world. Your progress has been wonderful in commerce and everything else as well. I am delighted with this event." He gave further expression to this feeling of pleasure

over his treatment at American hands in an official letter which he sent to Secretary Bryan on the day of his departure.

It might be added that the "Minas Geraes," the latest addition to the Brazilian navy, is a first-class battleship of 21,000 tons, with a speed of over twenty-one knots. It has 100 officers and 900 men and marines. It carries twelve 12-inch guns and twenty-two 4.7-inch guns, and is altogether a ship of which any navy might well be proud.

THE PARA RUBBER CONGRESS AND EXHIBITION.

THE program drawn up by the organizing committee enumerates the following subjects for discussion at the Rubber Congress to meet at Pará, August 15, on the invitation of the Commission of Economical Defence of Amazonia:

SUBJECTS FOR DISCUSSION AT CONGRESS.

I. Old and new methods of extracting and preparing rubber.
II. Measures against adulteration and abuses.
III. Measures for improving the situation of the *Seringueros*.
IV. Reorganization of the commerce in rubber.
V. Organization of the agricultural industry of rubber.
VI. The cultivation of cacao.
VII. Other cultures to be recommended.
VIII. Stock-raising industry.
IX. Instruction in agriculture and stock-raising.
X. Colonization.
XI. Economical and commercial defence.
XII. Manufacturing industries. Do our economical and social conditions allow of their advantageous organization and maintenance? Development of indigenous raw materials.

RUBBER EXHIBITION.

The exhibition to be held at the same time will be divided into the following groups: A—Botanical; B—Technical; C—Commercial; D—Economical and Social; E—Agricultural.

Group B is divided into four sections and nine classes, as follows:

SECTION I. EXTRACTION OF LATEX.

Class 1. Processes now in use. Implements. Trunks of rubber trees cut with the *machadinho*. Drawings and photographs.

Class 2. Improved instruments invented in Brazil. Trunks or photographs showing their operation.

Class 3. Instruments used in the East and their application.

Class 4. *Tigellinhas* and other vessels for collecting and holding latex. Ingredients for the preservation of latex in a liquid state.

SECTION II. METHODS OF PREPARING HEVEA RUBBER.

Class 5. Smoking and its adjuncts, old and new.

Class 6. Appliances for smoking in sheets.

Class 7. Other methods of preparation.

SECTION III. CAUCHO.

Class 8. Methods of extracting and preparing caucho.

SECTION IV. MURUPITA

Class 9. Methods of extracting and preparing the latex of "Murupita."

Group C has the following sub divisions:

Class 1. Types of rubber now on the market.

Class 2. Present mode of treatment and samples of rubber prepared by any process.

Class 3. New types of rubber to be introduced in commerce.

Class 4. Preparation and packing of rubber for export; types of cases, bales, etc.

Class 5. Diagrams and statistical tables.

Group D includes maps and plans illustrative of the rubber industry from an economical standpoint.

Group E includes plans and photographs relating to the agricultural phase of the subject.

Such are the principal features of the proposed congress and of the exhibition in connection with same.

OFFICIAL PROGRAM.

According to the official program, just to hand, the congress will be formally opened on August 15, and closed on August 24; this arrangement leaving eight days clear for discussing the subjects to be presented.

The officials of the Congress will be formally elected at the preparatory session of August 15; while the Exhibition will be open from the 15th to the 24th. During the time of the Exhibition and the Congress, papers of an economic or scientific character will be read by experts on the subjects named in the above schedule.

On certain days, excursions will take place to various points of interest; such as: Mojú Rubber Plantation and Improvement Co., Ltd.; Museu Goeldi; the Pará Experimental Station, and the Agricultural Institute of Santo Antonio.

Meetings of the Congress will be held from 7:30 to 10 p. m. Each speaker will be entitled to 20 minutes for his address, with privilege of the same length of time for his reply to any criticisms.

In the July issue of The India Rubber World, on page 514, particulars were given as to the composition of the Organizing Committee and other points of interest regarding the Congress and Exhibition.

A BRAZILIAN CONSUL GIVES ADVICE ON GETTING TRADE.

Consul General Julius G. Lay, stationed at Rio de Janeiro, contributed to the June 26 number of the "Daily Consular and Trade Reports" a valuable article entitled "Imports into Brazil for Last Year." It will be well worth the while of any manufacturer wishing to establish trade connections with Brazil to get this number and read the consul's report. There is one particularly interesting paragraph, with the caption "How to increase American trade," and which reads as follows:

"The only way to get business in this country is to get after it, and when it pays, establish a branch and not depend on European commission houses here just because they are willing to pay cash in advance. These houses have already more lines of goods than they can handle properly, and in the majority of cases cannot possibly secure the amount of business that this important field offers. The trade in very few articles justifies the large expenditure of sending a capable representative to Brazil and Argentina even to remain long enough to establish selling connections, and in still fewer articles will it justify establishing branches in these expensive countries, but often concerns making non-competitive but allied lines can jointly afford the expense of a traveler. If it can be avoided, agency arrangements should not be brought about by correspondence."

PLANTATION REQUIREMENTS.

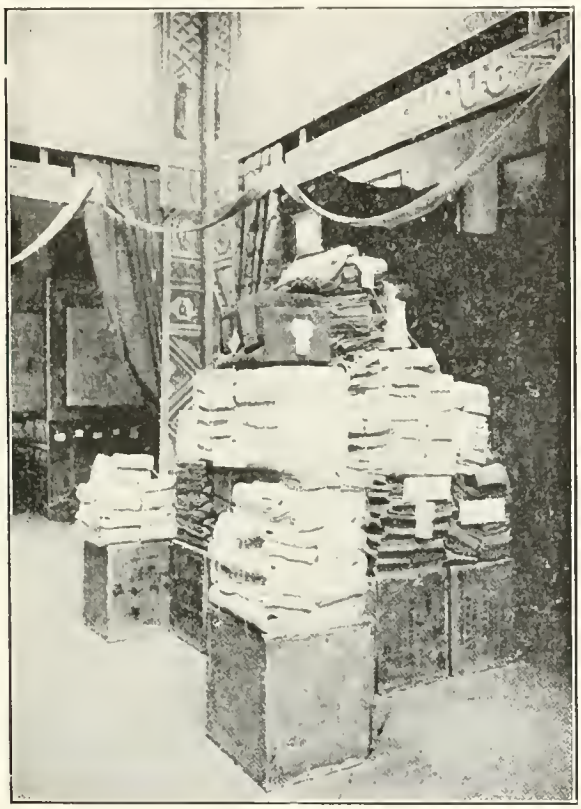
Under Number 11,111 the Bureau of Foreign and Domestic Commerce, Washington, reports an inquiry received by an American consulate from a foreign business firm for plantation requirements. This firm wishes to deal with American manufacturers, if their prices and goods compare favorably with those of European makers. The principal articles required are machinery for dessicating factories, rubber machinery, pumps, steel wire rope, lubricating oil, motor cars and appliances, steel plates and sheets, pig iron, etc. Prices to include cost, with freight and insurance to foreign port.

RUBBER AT THE GHENT EXHIBITION.

IT will be recalled that a "Universal Exhibition" is now open at Ghent, with the object of concentrating displays of Belgian and other products. A prominent section is the "Colonial Exhibition," representing the varied exports of the Belgian colonies. Of these rubber forms one of the most salient features, coming under the heading of "Colonial Cultures."

The arrangements of the rubber section have been under the skilled direction of the "Association des Planteurs de Caoutchouc" or "Rubber Planters Association," the headquarters of which are in Antwerp, and which has been one of the most important factors in the development of rubber cultivation by the aid of Belgian capital.

At the head of the Committee of Patronage is M. Jules Renkin, the Belgian Colonial Minister, the other members of the committee being leading government officials. The



Lot of Rubber Exhibited by the Societe Financiere des Caoutchoucs.

corresponding technical members of this committee include M. Auguste Chevalier, of Paris, Professor D. O. Warburg, of Berlin, and Professor W. Dunstan, Director of the Imperial Institute, London.

In addition to the Committee of Patronage, there is a working committee, under the presidency of M. Ed. Bunge, of Antwerp, president of the Federated Malay States Rubber Co., Limited. Among the vice-presidents are MM. Paul Osterrieth and Emil Grisar, of Antwerp; while the body of the committee includes Dr. E. de Wildemann, of Brussels; MM. Alfred Grisar and Léon Osterrieth, of Antwerp; Dr. W. R. Tromp de Haas, of Java, and Mr. Herbert Wright, of London.

The Editorial Committee numbers among its members M. Emil Grisar, of Antwerp, and Dr. E. de Wildemann, of Brussels, the secretary being M. Jules Tilmant, of Antwerp.

The subject of "Colonial Cultures" has received full attention from these prominent technical and commercial authorities on rubber. It had been confided to them by the Belgian Colonial Minister, with the co-operation of M. E. Leplae, director general of agriculture for the African colonies of Belgium. The actual carrying out of the preparatory arrangements was undertaken by a special committee, which included M. Robert de Decker, M. R. Ehrhardt and M. Léon Osterrieth. The services of the last named gentleman largely contributed to the successful display made by the association at London in 1911.

The May and June issues of the "Bulletin" of the association deal with the general features of the exhibition. These include the compilation of a "History of Rubber," in which its later developments are touched upon, in addition to its earlier features. Tapping and coagulation are then dealt with, as well as rubber in its finished condition. The various subjects are illustrated by specimens and photographs grouped in the various sections of the "Rubber Museum," which constitutes a leading feature of the exhibition. A neat folder accompanies the May issue of the "Bulletin," with several cuts illustrating, amongst other subjects, "Clearing on a Katanga farm," and "Rubber plants from Elizabethville (Katanga)."

While the subject of rubber cultivation is thus fully represented by the exhibits, special interest attaches to those dealing with rubber in its complete form. The Société Financière des Caoutchoucs has an effective display of the grades made by the companies it controls. One lot of exhibits is reproduced by annexed illustration. An interesting feature is a collective display of the various grades of rubber handled on the market of Antwerp.

With over 1,000 exhibits, it cannot be questioned that the rubber section at Ghent has done full justice to the subjects with which it has been called on to deal.

That the organizers of the exhibition appreciate the importance of the subjects handled may be seen by the subjoined extract from the "History of Rubber," already referred to.

"Modern life without rubber cannot be imagined. It is the necessary associate of copper in all the electrical industries—telegraphs—telephones—lighting. Rubber is the creator of the cycle and of the automobile, for which it is indispensable. . . . The astonished mind asks—not what rubber is used for, but rather, what are the purposes for which it is not employed?"

COLONIAL CONGRESS AT GHENT.

The program has been issued of an International Colonial Congress to be held from August 24 to 28 at the Ghent Universal Exhibition. Among the papers to be read are the following:

Regulations to be applied to vines. Dr. E. de Wildemann, of Brussels.

The cultivation of rubber in the Belgian Congo. M. Gisseleire, Minister of the Belgian Colonies.

RUBBER EXPORTS FROM THE FEDERATED MALAY STATES.

According to information cabled by the Federated Malay States Government to the Malay States Information Agency, the exports of plantation rubber from the Federated Malay States for the month of June amounted to 4,491,200 pounds, as compared with 2,744,000 pounds in May, making the total for the six months of the present year 23,492,129 pounds, as compared with 15,382,265 pounds last year.

Appended are the comparative statistics for 1911 and 1912:

	1911.	1912.	1913.
January .....*pounds*	1,329,170	2,730,576	4,787,280
February	1,490,849	2,715,767	3,936,529
March	1,916,219	3,089,583	3,890,880
April	1,235,917	2,285,390	3,642,240
May	1,147,488	2,255,034	2,744,000
June	1,229,754	2,305,915	4,491,200
Total	8,349,397	15,382,265	23,492,129

LAMP BLACK AND CARBON BLACK.

THE valuable and interesting paper read by Mr. Godfrey L. Cabot, of Boston, at the recent New York Congress of Applied Chemistry, on the subject of "Lamp Black and Carbon Black," deals with the question under its technical and industrial aspects.

According to the definition in Webster's dictionary, lamp black is the fine impalpable soot obtained from the smoke of carbonaceous substances only partly burnt. This definition is correct from the chemist's point of view, covering also the substance known to the trade in this country and elsewhere as "carbon black." In his title Mr. Cabot has used both names, because in the American trade the term "lamp black" is usually understood to be a soot deposited by the smudge process and made from oil, resin, or some other solid or liquid raw material. "Carbon black," on the other hand, is the term applied to a black deposited by actual contact of a flame upon a metallic surface.

LAMP BLACK.

Using the term "lamp black" in its wider sense, as embracing any commercial form of soot, it may be prepared in three different ways—first, by the combustion of dead oil of tar, pitch, resin or some other carbonaceous raw material with an inadequate supply of air, and the collection of the floating particles of soot which escape unburned from the flame and slowly deposit themselves on the walls and floors of the collecting chambers; or second, it may be formed by the direct impact of a flame upon a collecting surface; and third, it may be formed by heating carbonaceous vapors to a decomposing point, apart from the air or flame.

Soot has ceased to be used for its former purposes, its composition of 50 per cent. of grit, empyreumatic matter and other impurities rendering it unsuitable.

Considering "lamp black" in its more restricted sense of a commercial soot, deposited by the smudge process from various dead oils, from 15 to 35 per cent. of its weight can be obtained in the form of lamp black by deposition in suitably arranged chambers.

The quality of the black is determined by the size and shape of the furnaces in which the oil is burned, by the heat to which it is subjected and other attendant circumstances. It has been found that the best grades of black, generally speaking, are obtained in furnaces of moderate size.

Mechanical devices have been used for churning the air, and causing the condensation of the smoke in masses sufficiently large for it to deposit itself.

Resin, resinous woods, tar, pitch and other raw materials are to a certain extent used in the manufacture of lamp black, but the quality is greatly inferior to that obtained from the dead oil of tar and other substances.

Still another source of lamp black is acetylene gas, obtained from the refuse of carbide of calcium factories. This process is very hard on the apparatus, the black produced being very inferior in color and strength to that obtained from natural gas. The irregularity of its supply and price limits its use to cases where its bluish tinge obtains for it a preference in certain trades.

CARBON BLACK.

Carbon black, as already remarked, is the trade name given in this country, and to a certain extent abroad, to lamp black made upon the surfaces of metal or stone by direct impact of flame. The first carbon black produced in this country and sold commercially was made in 1864 by J. K. Wright, an ink maker of Philadelphia, for use in printing ink. This industry is thus a comparatively new one in this country. Mr. Wright made black on sheet iron cylinders, revolved over gas jets, from which the black was removed by stationary scrapers.

The first process of commercial importance patented was that of John Howarth, who received in September, 1872, a patent for the manufacture of carbon black from natural carbureted hydrogen gas. Owing to the cheapness of the raw material, as compared with the artificial gas previously employed, the price gradually dropped from $5 to $1.25 per pound.

Mr. Howarth worked his patents with success at New Cumberland, West Virginia, and later at Saxonburg, Pennsylvania. Owing to his superior ability, Mr. A. V. Nolan, who had started a competing factory at West Cumberland, West Virginia, bought out the original company. In 1883, L. Martin & Co., of Philadelphia, became interested in a plant at Foster's Mills, Pennsylvania.

A factory was started by Samuel Cabot about the same time at the village of Worthington, Pennsylvania, where efforts were made to confine and economize the gas. Owing, however, to the inefficiency of the foreman, the plant remained to a great extent fruitless for some years.

The Grantsville, West Virginia, works of Samuel Cabot now produce about 10,000 pounds of black a day, and are operated by five gas engines. This is said to be the largest factory in existence. The leading position of this factory was largely due to the system it had introduced of 24 inch plates, with a rotating burner and a black box radially placed.

In 1883 E. R. Bland, of Warren, Pennsylvania, began making black on the roller principle, the details of manufacture being subsequently improved by his son's processes, until the black has been shown to possess some valuable qualities, and is very profitable to its owners—the Peerless Carbon Black Co., of Pittsburgh. This company was for many years the only one in this country making carbon black from natural gas, but there are now three such factories.

In the decade 1883-1892 the process of making carbon black introduced by Mr. A. R. Bland, became the most important as to output and total value of black produced. The prices of black rapidly fell, reaching 7 cents per pound in 1887 and 4 cents in 1889. They then considerably improved, the total output at the close of 1902 reaching about 10,000 pounds a day, worth at that time on the average about 6 cents per pound.

TOTAL PRODUCTION.

The total value of the carbon black made in a year would, it is said, represent about one million dollars, while the total value of the world's output of lamp black would probably be two or three times as much. Yet the real importance of these two commodities to humanity is inadequately represented by these figures. These articles form the basis of black printing inks, are largely used in black paints and for coloring rubber, leather and other substances. Each has its distinct uses; carbon black being preferred for black ink, stove polish and vulcanized rubber. Lamp black is much better for coloring oilcloth, leather and certain forms of rubber, being much more widely used in paint than carbon black.

Within the last ten years the Pennsylvania factories (with three unimportant exceptions) have all been moved to West Virginia.

The total value of United States imports of carbon black, gas black and lamp black were: 1908, $493,907; 1909, $514,951; 1910, $679,607; 1911, $640,911; 1912, $907,623.

Such are a few of the points brought out by Mr. Cabot in his interesting paper.

FRENCH EXPORTS OF RUBBER GOODS TO UNITED STATES.

In a recently issued report, Consul General Frank H. Mason, of Paris, calls attention to the increased exports to the United States of rubber goods from his district. The figures were: 1911, $272,836; 1912, $474,850.

Notes on the Acclimatization and Cultivation of the Guayule

(Parthenium Argentatum Gray.)

By Francis E. Lloyd, MacDonald Professor of Botany, McGill University, Montreal, Canada.

A PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912.

SINCE the time when, as a result of the then probable prejudice to the natural supply of guayule shrub, the problem of its cultivation was attacked, the question as to: What changes in the responses of the plant might be expected on the increase of water supply—has been uppermost. An answer has been obtained as yet only in general terms, and, from the practical point of view of the guayule rubber manufacturer, it is less satisfactory than from that of the plant physiologist. Indeed, in searching for a complete answer, the time element is so great that a number of years is required for working out satisfactory data. Those available to the present writer have been obtained from plants

PROFESSOR FRANCIS E. LLOYD.

grown for two seasons at Cedros, Zacatecas, Mexico; for three seasons at Tucson, Arizona, from material derived from Cedros, and from the Stockton plateau, Texas; from a single plant grown by Dr. H. H. York, at Austin, Texas, also from Stockton plateau material. At Auburn, Alabama, plants have been grown both in the open and in the glasshouse, both from Cedros seed and from Texas stocks, for three years. Seedlings two years old, grown in Tucson, have also been available.

The information based upon the above material will be briefly presented in what follows. The situations indicated include the semi-arid Chihuahuan and Sonoran deserts—within the former of which the guayule has its natural habitat—the moister climate of Eastern Texas, and the relatively wet region of middle Eastern Alabama, which has a rainfall of 45 to 55 inches. Before contrasting the plants from these widely different places we may profitably compare those growing naturally within the proper area of distribution. It has already been shown* that the guayule is by no means uniform in structure within this area, the differences being such as may be referred to differences in the amount of available moisture, which may in turn be attributable either to greater rainfall or to the character of the soil, chiefly mechanical. The structural differences referred to are those of relative thickness of the "bark," or, more properly speaking, the cortex, these being such that, the greater the available water, the relatively thinner the cortex.

Correlated differences in the length of the annual accretions of stem are to be noted. The more rapidly grown stems display a greater tendency to obvious shrinkage of the cortex, so that, in place of the rounded surfaces of the slowly-grown stem, longitudinal corrugations are to be seen. I am creditably informed that such characters are displayed by the guayule from the easternmost region of its distribution area, in the State of Nuevo Leon, to an extent so marked that the practical extraction of crude rubber is reduced, roughly speaking, to about 4 to 5 per cent. on mill weight. This may not necessarily be taken to mean that the amount of rubber relative to the volume of the rubber-bearing tissues is less than elsewhere, but that the volume of woody tissues (wood, hard bast, etc.) is greater. Nevertheless, this may be the case, and I know of no studies which have been made to settle the point. But, in the light of what we do know about the relation of water supply to the amount of rubber secreted, it is not improbable that the actual intracellular secretion in these Nuevo Leon plants is somewhat less than in dryer regions.

The well-known habital differences between the so-called *"macho"* and *"embra"* guayule furnish another case in point. *Macho* guayule is sparingly branched, has thick "bark," and the younger branches shrink little on drying, and, at all events, do not show longitudinal wrinkles. *Embra*, on the other hand, is very much branched, the younger twigs become furrowed on drying, and the bark is relatively thin. In the former the flowering shoots are sharply delimited from the leafy shoots; in the latter, the *embra* guayule, they are not. Whether these two types represent racial differences or not I do not care to discuss here, but it is well known in Mexico that, from the practical point of view, the distinction is important, as *macho* guayule is considered distinctly better as regards rubber content. Since both types may be found associated in the same locality it seems improbable that the intracellular secretion is unequal in them, but that the inferiority of the *embra* is due to the greater relative volume of the woody cylinder, and the relatively greater number of smaller branches. It is significant that when guayule of any type is put under cultural conditions, and supplied with abundance of water, the habit of the plant swings away from the *macho* toward the *embra* type of growth, in that there is a tendency for the leafy shoots to run out into flower stalks, and toward the greater development of wood.

These tendencies are to be seen whether the plant is grown in the desert under irrigation or in regions of higher rainfall, and are a summation of differences in minor details which I have treated more fully elsewhere. Of these I need mention but one, and that, in general terms, to the effect that the greater the water supply, up to the limits thus far observed, the greater the rubber-barren, fibrous or woody tissues in volume and in hardness, the greater the irregularity of growth, and the larger the number of smaller twigs and of leaves. This condition is one which presents difficulties to the manufacturer of guayule rubber due to the greater relative volume of the bagasse, and this will obtain wherever the plant may be grown with an abundant water supply. In speaking of acclimatization, therefore, we may avoid, for the purpose of this paper, further description of the tissue development. It will suffice to confine attention to the rate of growth, tenure of life and the total amount and rate of rubber secretion.

TENURE OF LIFE.

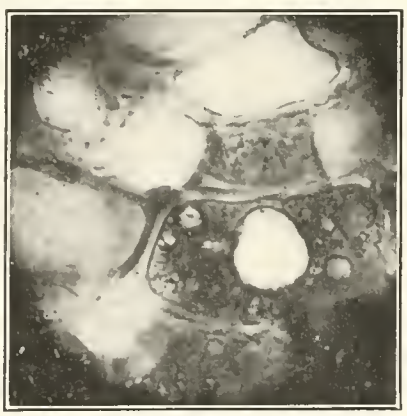
When a plant is removed from its own to another habitat, the

*Publication 139, Carnegie Institution of Washington.

new combinations of environmental factors may prove fatal, whereas any one factor, taken in different combination, might not. So it comes about that the guayule can withstand a greater cold much more effectually under arid than under moist conditions. Of a lot of guayule plant grown outdoors at Auburn, Ala., both from seed and from stocks, in 1910, only one in 25 was living in 1912. In no case did death overtake them in the warmer periods, nor early in the winter, but rather late in winter during a cold snap following heavy precipitation. The evidence that the winter of Alabama offers untoward conditions is clear, however, before the plant is killed—it has a bad color, and a generally disheveled look, due to the numerous dead unshed leaves. The wet and cold weather conjoined constitute the limiting factor. This may be taken to mean saturated soil and a minimum temperature of 10 degs. Fahr., approximately that of the normal habitat. The part immediately affected appears to be the root, the cortex of which quickly disintegrates.

The tenure of life in a new habitat depends further upon the ability of the plant to resist new enemies. In Alabama, thrips and nematodes have been seen to affect the guayule badly. A strong tendency to form large and irregular lenticels on the lower portions of the plant in contact with the soil and nearby above its surface may be due to this proximity alone or to insect stimulation. The seed is poorly developed.

In the semi-arid desert, on the contrary, no case of death has been noted during three years, save as the result of insufficient irrigation. It is clear from this behavior that the resistance of an irrigated plant to drought is much less effective than that of



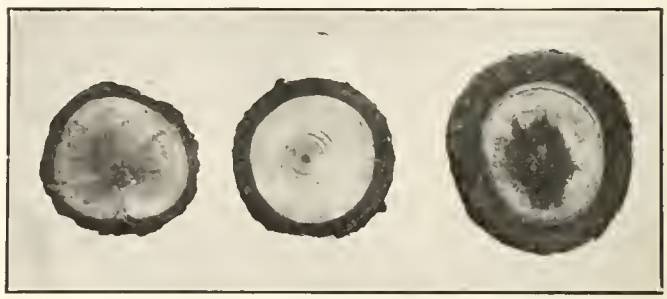
Typical Cell from Bark; Rubber Foamy in Appearance, Filling the Cell.

one grown under the usual conditions. Though attacked by a fungous parasite, it has never been known to be seriously affected. The development of seed is abundant, and it has a vitality approximately equal to that of field plants.

Rate of Growth.

When grown under irrigation in the semi-arid desert plants from transplanted stocks have attained in two seasons a maximum weight of 4.5 pounds, 3.5 pounds being a good-sized plant. These were a meter and over in diameter. The average weight for such plants would probably be 2 pounds. The dry weight of such plants, by which the rubber content must be calculated, is about 30 per cent. of the fresh weight. Allowing, therefore, a dry weight per plant of one pound, a not too conservative estimate, and assuming 10,000 plants to the acre, a 2 per cent. rubber content would yield 200 pounds of rubber in two growth seasons, followed by, say, six months of suppressed irrigation. At 60 cents per pound we have a return of $120 per acre for two years, or $60 per acre per year, against which should be charged, in addition to the usual costs, that of obtaining plants from seed for planting the ground. There is no evidence forthcoming that the percentage of rubber is greater, under the above-described conditions, than about 2 to 4 per cent. Assuming it, however, to be 6 to 7 per cent., guayule would even then scarcely be able to compete with onions in irrigated land.

The assumption is made that it would not pay to grow the plants longer than two years. In what follows under the head of rate of rubber secretion the reason for this will be seen in part. As to the rate of growth merely it may be said that the



Stem of Good Field Guayule from Zacatecas. | Stem of Guayule from Isidro, Chihuahua. | Irrigated Guayule from Zacatecas.

[Same amount of wood in each stem.]

rate of increase of weight will be found to drop off rapidly after the second season's growth, to which must be added the fact that the smaller and therefore younger twigs contribute little to the accumulation of rubber. The rapid production of cork characteristic of the irrigated plant, results, it is probable, in the destruction of rubber. I find that the rubber in the cells which are active in giving off the innermost and therefore younger cork cells becomes broken up into small globules, and these disappear before the cork cell in which they are found gets very old. The cork as a whole appears, as a result, to be devoid of rubber, although in point of fact minute quantities are present in the cells referred to. It is practically impossible to measure this loss directly, but it may very well offset the further gain by growth quite materially. The death of various twigs and branches due to competition *inter se* must also contribute to loss of rubber. These circumstances, coupled with the reduction of the growth rate after the second season, indicate the economic maximum to have been reached.

In the moister climate of Auburn, Alabama, one suitable, as everyone knows, to the development of cotton, the rate of growth is less rapid than in the desert under irrigation. In the first season, a height of 8 to 10 inches is attained, but in the second season the additional growth is meagre. This fact, coupled with the uncertain tenure of life during the winter, would force the issue of considering the rubber secretion of the first season alone. This, as we shall see, is practically nil. It must be concluded that the possibility of growing guayule in this region is excluded by its abnormal development and slow growth, quite aside from other considerations. I do not raise the question of the character of the soil and its possible causal relation to the manner of growth, beyond saying that it is not related, it would seem, to the lime content, since the plant grown in the limestone soil of Austin, Texas, behaved in a very similar manner.

Rate and Character of Rubber Secretion.

Normal field plants. In the study of the rate and character of rubber secretion in experimental plants, the field plant has always been taken as a standard. The method, that of microscopic observation, does not enable one to state the results in terms of percentage relative to the total weight of the plant. Only chemical methods can be used for this purpose. Nevertheless much useful information can be gained by means of the microscope, particularly in regard to the method of secretion and the amount of rubber within the cells which secrete it

METHOD OF SECRETION.

The first evidence of secretion is seen in the occurrence of very minute granules in the protoplasm. With the increase in their number and size they migrate into the sap-vacuole, and can be seen there by their Brownian movements. The analogy of this condition with that in the latex vessels of latex rubber plants is obvious, and indeed there may be more than mere analogy. In the definitive condition the rubber takes the form of a large droplet, almost filling the sap-vacuole, and rendered heterogeneous in its internal structure by the inclusion of encystments of solutions containing, probably, albuminous, carbohydrate and hydrocarbon

Two Seasons' Growth from Stock Under Irrigation, Zacatecas.

substances. It is important to note here that the rupture of the wall separating two adjoining cells would be followed by the contact and merging of the two contained rubber droplets. This is the more sure result, the larger the droplets, and this explains the ready agglomeration of guayule rubber into "worm rubber" in the pebble mill when field plants rich in rubber are used. Conversely, the smaller the droplets, the more increasingly difficult is the same result, calling for special methods of treatment. The droplets can be so small as to be impossible of mechanical extraction in the usual sense; this happens when they are so small as to form a suspension. The agglomeration of the suspensoids might be possible by the use of a minimum of water and the action of a "coagulating" agent, involving technical difficulties, the overcoming of which would be of the highest interest, but probably not economically of importance in this special case.

The largest rubber content under irrigation with known conditions was attained by plants of two seasons' growth in Zacatecas. At the close of the second season's growth the rubber content appeared as in the first stage of development, namely as minute droplets or granules. Seven months later, after practically continuous drought, the amount of rubber in the cell was less than the maximum, but not by more than, say, one-fifth. It occurred as a continuous mass, almost identical in appearance with the normal. In this case, the small percentage of rubber, on dry weight, is due in very large part to the great development of tissues which do not contain rubber in appreciable quantities. The use of abundant water in irrigation cannot be said to have inhibited the secretion of rubber, but rather to have increased the growth of barren tissues.

The problem from the economic viewpoint is, therefore, in such case not the possibility of extraction so much as the increased cost of handling a much greater volume of bagasse, though it is probable that this in itself would lend some hindrance to extraction.

The material grown at Tucson from stocks showed its rubber cells to contain a dense emulsion-like mass, filling the sap cavity in August of the third season's growth. In the previous August the same cells showed only minute granules. Seedlings in August of their second seasons contained in each cell an irregular solid mass of rubber occupying one-tenth to one-eighth of the sap-cavity, accompanied by quite small droplets elsewhere. As the irrigation had not been controlled or definitely applied and suspended, it is probable that the conditions had not been the best possible for the secretion of rubber.

Practically the same result was obtained for plants grown from stocks at Auburn when examined early in September (1912) in their third season. If we compare these cases from Alabama and from Arizona with the mariola (*Parthenium incanum*) we find but little difference between them, either as regards the amount of rubber in the cells or its character.

Two Seasons' Growth at Auburn (Ala.) from Texas Stock.

The conclusion is inevitable, I believe, that the determining factor in the cultivation of the guayule is: control of the water supply. In the presence of an abundance of water applied irregularly and at too frequent intervals, it will require more than three years for the maximum cell content of rubber to be attained. A quantum approaching the maximum is reached, on the other hand, if plants which have been well irrigated for two seasons are then subjected to drought conditions for six to eight months. That merely rate of growth is not correlated with the secretion of rubber is shown by the condition found in a plant grown from seed in a 12-inch pot in limestone soil for two years, and planted out for a season (summer of 1912) at Auburn. These plants were in some cases at a standstill for a year previous to planting out, and for various reasons grew but little in the open.

BEST TYPE OF FIELD GUAYULE.

In all the specimens examined, the rubber was in the form of a dense suspension, and had not formed a solid mass.

TO PREVENT THEFTS OF EXTRA TIRES.

The number of people who would like to help themselves to another man's automobile when they see it left unprotected in the street is unfortunately very large; and the number of those who, while they would hardly care to run the risk of taking the whole machine, are quite willing to run the risk of taking any movable part of it, is still larger. The extra tire which most motorists carry with them is particularly attractive to the motor sneak thief, and many tires have been lost in this way. The American Chain Co., of Sherrill, New York, has put on the market a chain made of flat links covered with duck or leather, that, with the help of a padlock, secures the extra tire to the running board or to some other part of the car.

AN OLD INNER TUBE AS A LIFE PRESERVER.

A correspondent writing to one of the popular magazines describes an inexpensive life preserver that he has devised. He has taken a discarded inner tube and cut it to the proper length, to fit around his body under the shoulders, leaving a sufficient length so that the two ends can be joined. This he accomplishes by sandpapering the outside of one end and the inside of the other, inserting the smaller in the larger, and fastening together by rubber cement. He finds that this improvised preserver will hold the weight of any ordinary man.

This home-made life preserver will undoubtedly work well, provided the joint is secure, but it would be rather unfortunate to have it in operation in deep water on a non-swimmer and have the joint separate.

PROOFERS WANT PROTECTION AGAINST DISHONEST PRACTICES.

WE print below a letter received from a proofing company, which seems to indicate that this particular company has had some unfortunate experiences with certain raincoat manufacturers. If many of the proofers have had similar experiences, it would seem to be wise for them to follow out the suggestion made in this letter and to confer as to the best means of protecting themselves from any manufacturer who might be given to the sharp practices described.

Mr. Pearson, Editor,
INDIA RUBBER WORLD, New York City.
Dear Sir:

Having heard of you as being at all times interested in using your influence and prestige in doing good for the various branches of the rubber trades, we wish to acquaint you with some of the abuses of the raincoat proofing trade, and ask your assistance in getting the various proofers to meet in a convention and agree to rules to eliminate such abuses.

Raincoat manufacturers ship converted cloths to proofers to rubberize or waterproof, and we reliable proofers use a compound that we guarantee waterproof and warrant against decomposing or becoming hard or soft within six months after proofing; but a certain percentage of the raincoat manufacturers are unscrupulous and there have been proven instances where a raincoat manufacturer has purposely kept his goods in conditions that are destructive to rubber and then has returned such made-up coats to the proofer charging him a higher price per coat than he sells for to the trade —and the proofer, fearing to let the case go to court, with all the uncertainty involved, will very often deem it the wiser course to allow these charges, extortionate though they may be, in order to avoid a law suit, though in paying these charges the profit of an entire season may be wiped out.

We issue with our acceptance of orders a provision, in the shape of a printed form, which describes very thoroughly the proper handling of waterproof material in order to prevent any subsequent damage; but this is no protection against the dishonest manufacturer who takes advantage of the keen competition among the proofers in order to make the proofer the scape-goat for any loss that should fall upon him by reason of having bought poor cloth in the first instance, or by reason of mistakes in his work shop, or lack of proper care in stocking and handling after his goods are made up.

These are but a few of the abuses which the proofing trade is called upon to endure at the hands of an unscrupulous manufacturer, but they could be eliminated if all the proofers were to get together and agree on uniform conditions and rules under which they would allow claims for any defects for which they are responsible, but would refuse to allow any claims obviously dishonest in their character.

Very sincerely yours,

FAIR PLAY.

BOOKLET OF THE COTTICA RUBBER AND COFFEE CORPORATION.

The Cottica Rubber and Coffee Corporation, incorporated under the laws of the State of New York, with headquarters in Buffalo, has just issued a booklet of 32 pages describing the purpose of the company, which is "to obtain and develop plantation estates in Surinam (otherwise known as Dutch Guiana), the principal object being the planting of rubber trees (*Hevea Brasiliensis*), coffee and cacao trees, bananas and various catch crops, such as corn; also the carrying on of this business in all its branches from planting to gathering and marketing all of its products."

The little booklet is generously illustrated and contains a good deal of interesting information, whether one is anxious to invest in rubber plantations or not. Incidentally, it quotes quite freely from letters by Mr. Pearson which appear in THE INDIA RUBBER WORLD of the first five months of 1911, in which he described Dutch Guiana, where the company's plantations are located. The company is capitalized at $250,000, divided into 50,000 shares of $5 each, and this little pamphlet is intended to convince the reader that it is to his interest to own some shares.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

THE Boston market is in its usual midsummer condition. Some branches are above normal, while others are simply holding their own. The makers of automobile tires continue to report good business, and most, if not all, are prospering. Despite the fact that many concerns have increased their output, there seems to be no great accumulation of tires in the factories or salesrooms. The druggists' goods business seems to be affected somewhat by the large consolidated interests in the retail drug trade. Those corporations which run chains of stores have formed a habit of advertising fountain syringes, hot water bags and similar lines at remarkable cuts from the usual drug store prices, with the result that while these corporations are large buyers, the smaller stores suffer, and jobbers find their sales of these goods falling far below normal. As the large buyers are probably enabled to secure as good as, or even better terms than the jobbers, the result must be a falling off in the total demand, unless these buyers purchase as much more in the aggregate as the orders from jobbers fall short.

* * *

The clothing trade continues prosperous, with a demand which keeps the factories busy. Few mills making these goods are willing to extend vacations for longer periods than the usual two weeks. Mechanical concerns have had a good trade in hose, which, however, is now falling off, while the call for belting and packing is rather unsatisfactory. There is but little doing in the boot and shoe business, and many of the factories have shut down for a longer or shorter term during the month just closed.

* * *

During the early part of the month, while the shoe buyers were in Boston, according to their semi-annual custom, the selling agencies of the United States Rubber Co. were well represented in this city. W. H. Jones, Southern selling agent, of Baltimore; Richard C. Hall, Western selling agent, and A. F. Solberg, of Chicago; Wm. E. Barker, manager of sales, of New York, and Homer E. Sawyer, general manager, were —for different periods of time—at the Boston office. The selling agents are here not so much for the purpose of selling goods as to meet their customers, who come here at this time to purchase leather goods.

* * *

Will we ever hear the last of that case against Warren B. Wheeler, Stillman Shaw and G. Alden Whittemore? They have been indicted again in connection with the sale of stock of the North American Rubber Co., makers of synthetic (?) rubber, and are now claiming irregularity in the proceedings, contending that, by reason of their books being seized before the grand jury proceedings were started, they were forced to give testimony which was later used against them; while Whittemore further claims immunity on the ground that when he testified before the grand jury he was not informed that his testimony might be used against him. At present writing, Judge Dodge, of the United States District Court, before whom the hearing was held, has not rendered any decision.

* * *

Improvement is the order of the day at the B. & R. Rubber Co.'s factory at North Brookfield, where a fine new engine has just been installed, in place of the old Brown engine of ancient type which has done excellent duty for many years. The company is prospering, and the town (which for some years went backward when the old Batcheller shoe business was discontinued) is now more flourishing and gives employment to more workmen than at any previous time in its more than two hundred years of existence.

* * *

A certificate of incorporation has been granted the Granite City Rubber Co., which will soon start manufacturing in the neighboring city of Quincy, where the two principal incorporators reside. W. A. Prince was until recently manager of the American Chemical Co., of Cambridge. George Reinhalter was an assistant in the chemical laboratory of the Hood Rubber Co. at East Watertown. The third incorporator is I. W. Pollard. It is an interesting fact that the two first named gentlemen began their business careers in the local drug store of C. C. Hearn, Quincy, an experience which not only led them into scientific experimental work, but also sealed a friendship and a mutuality of interests which have led to this union in a business enterprise.

* * *

The Aetna Rubber Co. is the style of a concern which was incorporated last month, with a capital stock of $2,500. The incorporators are Abe Kosow, Philip Samack and Samuel Goldstein.

* * *

A new industry somewhat allied with the rubber business is the Bay State Felt Co., which will soon start manufacturing at Westboro, Massachusetts. This is a new Massachusetts corporation, with a capital stock of $250,000. James Whitaker is president and Benjamin Kendrick treasurer.

* * *

The American Rubber Co.'s clothing department has been somewhat crippled the past month, through a strike of a few of the cutters. Business has been good right along, and the company has enough orders ahead to keep the factory running to full ticket—which was the intention until this trouble started. The management will, however, be likely to shut down for a few weeks if the strike assumes sufficiently large proportions to seriously interfere with the work.

* * *

The murder of one man, the wounding of another and the suicide of the murderer served to raise a portion of the Hood Rubber Co.'s employes to a high pitch of excitement one day last month. The aggressor, having been nagged by his fellow workers until his patience was exhausted, assailed his tormentors, then fled, and, being pursued, turned the pistol upon himself with fatal result.

* * *

The newspapers have just become cognizant of the fact that young Elisha S. Converse, son of Col. Harry E. Converse, and namesake and grandson of the late Deacon Converse, is working at the Edgeworth mill of the Boston Rubber Shoe Co. The fact has been blazoned forth under such scareheads as "Millionaire Converse Works at the Bench," "Rich Man's Son Now a Worker" and similar sensational titles. The report goes on to state that the young millionaire drives over from Brookline in his automobile, dons overalls and jumper at 7 a. m. and works until 5 p. m. in one of the hottest rooms of the factory, where the thermometer is never less than 100 degrees. "At present," this account says, "he is clipping red-hot heels from the furnaces (sic) to be placed on rubber boots. At 5 o'clock he enters his touring car, which awaits him at the factory entrance, and speeds to his home."

While this may seem somewhat marvelous to the average reader, it is nothing surprising to those who are familiar with the policy of the Boston Rubber Shoe Co. Many a man who afterwards became prominent in the rubber footwear business began learning the rudiments of the trade in that Edgeworth factory, or in the Fells factory of that company. General Manager Homer E. Sawyer served his apprenticeship making boots; some of the men now in the factory were his fellow workmen and today consider him a personal friend. There are other men in the United States Rubber Co.'s plant who can build a Boston short boot as well as any man now

in the place, while other graduates from that Edgeworth factory are holding various offices in the company.

Young Elisha Converse, grandson of Deacon Elisha S. Converse, founder of the Boston Rubber Shoe Co., and also grandson of Deacon John H. Parker, of leather sole rubber boot fame, is but working out the practical policy, long established, of learning the business "from the ground up," and the knowledge thus gained is likely to stand him in good stead when he is called higher in the interests of the business started so long ago by his distinguished and revered ancestor.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

THE large balloon "Goodyear," which has been given many trials in and about Akron during the last few months, was a winner in the National Race held July 4 from Kansas City, which makes it one of the contestants representing America in the International contest to be held in France in October. The "Goodyear" in its flight from Kansas City on the Fourth was in the air twenty hours and during that

The "Goodyear" Balloon at Kansas City.

time traveled approximately 650 miles. The landing was at West Branch, Michigan. The balloon was in charge of Ralph Upson, pilot, and R. A. D. Preston, aide. One severe storm was encountered, at 2 o'clock July 5, when passing the state line between Iowa and Illinois—a severe wind and rainstorm, which cooled the atmosphere materially, thus causing the gas in the immense bag to contract, thereby shortening the flight. Mr. Preston obtained many interesting views during his trip, several of which were taken above the clouds.

The Goodyear Tire and Rubber Co. is building another new branch, in Long Island City, New York, to be completed in about six weeks. It is located at the corner of Jackson avenue and Honeywell street and is to be four stories high, 275 feet long and 50 feet wide, equipped with a complete showroom, warehouse, wheel shop and general repair shop.

The Goodyear company is promoting a new system of advertising, whereby at a minimum cost dealers are supplied with signs which will advertise their local business and at the same time carry mention of the Goodyear company. This minimum cost is brought about by the purchasing of a great number of these signs and supplying them to the trade at less than purchase price.

The wireless apparatus of the Goodyear company's Detroit branch supplied the news to the steamer "City of Detroit," cruising from Detroit to Cleveland, on which the semi-annual meeting of the Society of Automobile Engineers was held. This apparatus, which has been in service over a year, was installed in order to gain quick and at all times efficient communication with the factory in Akron. During the recent flood, when all other lines of communication failed, the Goodyear home office was in close touch with the branch at Detroit, and during the terrific windstorm on the Lakes this tower was gratuitously offered to the D. & C. company, which was thus enabled to keep in connection with its boats.

A large number of Englishmen and members of the Society of Automobile Engineers made a trip from Cleveland to Akron to visit various rubber factories, having attended the semi-annual meeting of this society aboard the steamer "City of Detroit." The point that impressed the English visitors most was the idea of specializing, as being developed in the American tire factories.

E. R. Hall, chief of the experimental department of The Goodyear Tire and Rubber Co., says: "Several years ago America looked to Europe for ideas in not only structural tendencies in foreign motor cars, but also in tire designing. But now the tables are turned and it is safe to say that America is fully several years ahead. In this country we have special tires made for different classes of work; special tires for electrics and gasoline cars; special tires for trucks. The tires are being built more for the particular work they must do than formerly."

Storage room during business hours for the automobiles of the Goodyear company's officers and department heads is requiring more space as the capacity of the plant and the working force increase. The East Market street building, which has been occupied as a garage, is now found to be inadequate for this purpose, and another building of equal capacity is soon to be erected by the company.

* * *

The Firestone Tire and Rubber Co., which only recently took possession of a new addition to its already extensive plant, has started work on another new structure, a building permit having been granted for a four-story brick and steel factory building, to cost $90,000. The Firestone plant, which now covers fifteen acres and gives employment to more than 3,000 persons, is said to be the largest plant in the world devoting its energies exclusively to the manufacture of tires, the daily output of its finished product having been stated by a director of the company to be fifty tons. This enormous business was started about fifteen years ago, when H. S. Firestone, president of the company, commenced operations in a small way at Miller and Sweitzer streets, manufacturing "The Firestone Side-Wire Carriage Tire." With the growth of the enterprise, additions have been erected from time to time, each in its turn embodying all the latest ideas in sanitation, fire prevention, etc. It is aimed to complete this latest

structure about the time the president of the company, H. S. Firestone, returns from Europe. Mr. Firestone and his family are now enjoying a motor trip on the continent, their intention being to tour Italy, Switzerland, France and possibly Germany.

Robert E. Lee, former superintendent of the Cincinnati Traction Co. in Cincinnati, is now in the employ of The Firestone Tire and Rubber Co., at its home office.

Mr. A. G. Partridge, assistant sales manager, left Akron July 9 for a six weeks' trip to Northwestern Canada, Washington, Oregon and British Columbia. On this trip Mr. Partridge will visit 30 or 40 cities where the Firestone company is represented.

The "Panama-Pacific Road Race" from Los Angeles to Sacramento—443.6 miles—July 4 was won by Verbeck in a Fiat; Waterman in a Buick, second; Oldfield in a Fiat, third. All three used Firestone tires, and the first and second cars never changed a tire during the whole race.

On Saturday, July 5, The Firestone company held its annual picnic at Silver Lake. A special program was furnished until late at night and the expenses were paid by the company.

* * *

The same day was given by the B. F. Goodrich Co. to its employes as a holiday, and in addition each employe was presented with a dollar, this to take the place of the regular Goodrich picnic, which, on account of the large number of employes, it was found very difficult to have at one pleasure resort on a single day.

The Goodrich company, which recently paid a semi-annual tax of $96,400, is the largest taxpayer in the city of Akron.

Mr. C. S. Thompson, formerly advertising manager of the Diamond Rubber Co., and since its consolidation with the B. F. Goodrich Co., connected with that concern, has resigned, Mr. Tibbets now having full charge of the advertising department.

* * *

All Akron rubber factories are running day and night and are still unable to fill all their orders.

* * *

Manufacturers of rubber goods of all kinds are now using more aluminum flake in their work than ever before. This is due to the high quality of this pigment, combined with the low prices which now prevail.

Aluminum Flake, which is the product of The Aluminum Flake Co., Akron, is claimed by this company to have a distinct toughening effect on the rubber and at the same time to add life and elasticity. New concerns are being added almost daily to the already long list of satisfied users, and the older ones are using more than they have in the past. The trial of a sample by a prospect almost invariably results in an enthusiastic and steady customer. The officers of the company are very well pleased with the increase in its business.

THE RUBBER FACE AND THE POET.

A "fakir" I have seen upon Broadway,
Who holds between his finger and his thumb
A small red rubber face, now grave, now gay,
On which both smiles and frowns by turns will come.

A pressure slight—it wears an awful frown,
A little twist—a smile will wreathe the face.
I envy quite that small red rubber clown,
That smiles with such calm courage into space.

I would that I could wear a smiling face,
When down my lofty idols all are hurled;
Would I, tho weary in a prizeless race,
Could look with smile serene upon the world!

O. C. A. C.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

THE employes of the United States Tire Co. held a meeting a few evenings ago at 355 Valley street, Providence, to take steps for the organizing of a permanent social, literary and athletic association to promote a feeling of harmony and good fellowship among the men. A provisional association was formed with temporary officers, and working committees on by-laws were appointed. It was decided to hold a moonlight excursion on August 15 for the benefit of the association. A membership of 52 names has already been secured.

* * *

The Alice rubber shoe mill of the Woonsocket Rubber Co. at Woonsocket, and the Millville rubber boot mill at Millville, shut down on July 24 for four weeks, ending August 22. For several years it has been customary for these mills to close for one or two weeks during August, but this year the vacation period will be extended to four weeks, as the company intends making a number of unusual alterations. It is also going to install considerable new machinery, which, it is said, may necessitate the erection of another building. If this is done, the new structure will probably be located on Fairmount street, Woonsocket. It is stated that the company has orders enough ahead to guarantee work for a long time. The Alice mill employs 1,500 hands and the Millville plant 800.

* * *

One of the most interesting features of the Fourth of July parade at Bristol was an ancient coach belonging to Col. Samuel P. Colt. It is more than a century old and the family history of the Colts refers to one of Col. Colt's ancestors, James De Wolf, who rode from Bristol to Washington when he was elected a United States senator. The coach attracted much attention in the Natal Day parade, and its occupants—Col. Samuel P. Colt and his brother, United States Senator Le Baron C. Colt—received frequent applause.

* * *

The work of installing a first-class steam engine plant at the factory of the International Rubber Co., West Barrington, is progressing rapidly. It will be fully equipped with all modern improvements as regards boilers and pumps.

The shop recently vacated by N. C. Wallenthin in the Snell building on County street, Attleboro, has been taken by the Hospital Rubber Co., of which George J. Kelley, of Attleboro, is the principal owner and general manager. Extensive alterations and improvements are being made in the new plant.

* * *

A baseball diamond has been laid out on the grounds of the National India Rubber Co.'s factory at Bristol, and bats, balls and suits have been supplied for those of the employes desirous of playing the game.

* * *

Manager Le Baron C. Colt, of the National India Rubber Co., Bristol, arrived a few days ago from an extended business trip to Canada and the West. He at once assumed charge of the improvements being made at the company's plant. The erection of new structures to accommodate the cable wire department is being pushed, and the size contemplated in the original plans has been materially extended.

* * *

On July 15 the American Wringer Co., of Woonsocket, began paying its quarterly dividend to its stockholders, both common and preferred.

* * *

The Davol Rubber Co., 69 Point street, Providence, has

been calling for a number of girls to whom permanent employment will be furnished in the various departments of the plant.

THE RUBBER TRADE IN SAN FRANCISCO.

(By a Resident Correspondent.)

IF each of the automobiles sold to residents of this state beginning with February of this year averaged $2,000 in value, then there would have been spent for automobiles during that time $36,000,000. No matter what other departments of the rubber trade may be doing, it stands to reason that the tire business on this coast is good. There does not seem to be a great deal of activity in regular mechanical lines, but the demand for tires goes on without abatement and seems to be growing all the time. The duality of trade conditions indicates that the quietness in the mechanical branch must be of a temporary nature. There is money in the state, as is shown by the activity in automobile sales, but new projects of development, investments of capital, and the like, to cause renewed activity in the mechanical departments, are lacking for the time being, owing to the general conditions throughout the country which have affected capital—the tariff, the currency banking bill, etc.

* * *

The American Rubber Manufacturing Co., whose factory is situated at Emeryville, California, and whose offices have heretofore been located on Beale street, near Market, has taken fine new quarters at 408-410 Mission street. Here it has the first floor and basement of a recently erected concrete building, 45 by 113 feet in dimensions. This firm is doing a good steady trade, and has found it necessary to acquire bigger warerooms and salesrooms in order to handle the increased business. It has recently taken on the Hoyt Short Lap Leather Belt line, and has also undertaken an agency for the new Perkins Rubber Heel. This heel is being manufactured at its Emeryville factory, and is proving a good seller. The inventor is Wm. Perkins, a man well known to the rubber trade on this coast. He has made a heel which shows many marks of superiority to the regular rubber heel, and believes that it is going to be a success.

* * *

R. H. Pease, Jr., treasurer of the Goodyear Rubber Co., returned from his visit to Europe some weeks ago. He was to start on July 22 for a motor car trip to Portland, accompanied by A. B. Watson, assistant treasurer of the company, Mrs. Watson and Mrs. Howell. They expected to make the run to Portland in four or five days. Mr. Pease will remain in Portland indefinitely, taking charge of the business there. Mr. Watson, however, expects to return in a few days, by rail. Mr. R. H. Pease, Sr., reports that business is keeping up as well as at this time last year, altho there is still room for improvement.

* * *

B. H. Pratt, Pacific Coast manager for the Fisk Rubber Co., states that the double pneumatic tires which are being used on trucks are doing very well on this coast. Here the test is severe, because automobile trucks are bought with the idea of increasing the speed of delivery, and the roads are in many instances rough and not kept in good repair. The pneumatic double tire, however, seems to be better for the auto truck—for cars having a carrying capacity of from one to two and a half tons—than solid tires.

H. E. Argus, who had charge of the Pacific Coast mechanical department for the Diamond Rubber Co., has resigned his position, and will leave shortly for Akron. He has been with the Diamond company for 16 years, and has been in San Francisco with the firm during the past eight years.

W. G. Rigdon has just returned from his Eastern trip in the interests of the Gorham-Revere Rubber Co. This company reports a steady business in all branches, but an exceptionally lively trade in tires. Mr. Gorham is in San Francisco now, and is planning a campaign which will bring in plenty of business for all departments.

J. E. Newerf, manager for the northern California territory of the W. D. Newerf Rubber Co., reports that Miller tires are holding their own with excellent results on this coast. The fast road race in which many automobilists participated, between Los Angeles and Sacramento, showed not only the resisting qualities of the Miller tire, but also what an improvement has been made in all tires, to stand the present day tests.

Mr. Dodge, of the Western Belting and Hose Co., has returned from his six months' visit to Los Angeles, where he went to see that the branch store in that city got well established.

The Western I. & A. L. Purchasing Corporation, of Los Angeles, has changed its name to the I. A. L. Tire Co.

The Frontera Hardwood Rubber Co. has recently been incorporated at Tacoma, Washington.

THE RUBBER TRADE AT TRENTON.

(By a Resident Correspondent.)

THE fire which on July 2 destroyed one of the buildings of the Woven Steel Hose and Rubber Co., of Trenton, New Jersey, has not seriously interfered with the filling of that company's orders, shipments being made with reasonable promptness. Plans are under way to replace the burned building with others of improved construction which will afford more than double the floor space. The line of Squirt Hose for locomotives which this company has lately added to its manufactures is meeting with favor, in the Canadian market as well as here. This steam hose embodies the same ideas that have made so increasingly popular the "Protector" brand Woven Steel Pneumatic Tool Hose put out by this company, which also includes among its products Automobile Brake Lining and Friction Rings for automobile clutches.

John S. Broughton, of the United and Globe Rubber Co., is president of the company; Karl G. Roebling, treasurer; J. R. Kelson, vice-president and general manager.

The Mercer Rubber Co.'s plant is one of the busiest in this section of the country; orders for garden hose, fruit jar rings and fire hose keeping the operatives working day and night. Fruit jar rings are a specialty with this concern, millions of rings having been made during the past six months, the most successful half year in the history of the company. This concern has made big shipments of late to Mexico.

Every local rubber plant is rushed with business these days.

DEVELOPMENT OF MEMPHIS, TENNESSEE.

Those whose ideas of Memphis are mainly associated with cotton in its various forms, would be struck by the artistic "Views of Memphis," a copy of which (through the courtesy of Messrs. Towner & Co., of that city) has reached The India Rubber World. Memphis has much to be proud of, with its magnificent park system, its unequaled driveways and its boulevards. It has also high class residences with private grounds. Progress on a more extensive scale than that achieved by other cities with a population of 130,000, is shown by the handsome booklet received. One of the features of the city is constituted by its manufacturing districts, which are rapidly growing.

The Annual Mid-Summer Outing of the Rubber Club of America.

WHENEVER a notice goes out that the Rubber Club of America will hold an outing, the members send the return post-card to the Secretary and at once proceed to restring their tennis racquets, to polish up their golf clubs and to hunt up their baseball bats, catching gloves and wire-cage mats—for the outing of this club numbers among its regular features tournaments of athletic sports, with worth-while prizes attached thereto; and while most of the contestants play for the sport of it, no one has ever been known to decline any prize which the judges have awarded to him.

The edict went forth that the outing this summer would be held at the grounds of the Belmont Springs Country Club, a beautiful spot in Waverly, a suburb of Boston. Thither on Monday, July 14, went the members and their friends, to the number of nearly a hundred and fifty. Many went in their private automobiles, but others were content (or had to be) to take the special trolley cars provided by the committee to carry them to Waverly station, whence, some law or ruling preventing the trolley's crossing the steam railway track, automobiles conveyed the pilgrims the remaining two or three miles to the clubhouse and grounds.

The day was perfect, neither too hot nor too cold. There were comfortable piazza chairs for the lazy and plenty of sport for the active. The tennis players found well made courts on which to try out their prowess. The golfers found a course which gave them plenty of opportunities to show their ability, and the baseball enthusiasts, players and spectators, secured a fairly satisfactory field, not more than a mile away, reached by trespassing through a hay-field and a dog-protected chicken yard.

The company scattered somewhat, by reason of the various contests in progress, but by far the largest contingent strode over hill and dale to the extemporized ball field, where a stone wall served as grandstand and a prostrate picket-fence as the "bleachers."

The two nines were convened and duly named. Captain Clapp called his nine the "Red Sox," though no one was able to find any hosiery of that particular hue. Captain Pitcher's nine rejoiced in the name of "The Giants," yet none of them measured more than six feet-eight. C. H. Booth, of the Michigan Shoe Co., umpired the game. Some of his decisions were remarkable, but only once did the spectators arise in their wrath and run him off the field. On his promise to do better he was allowed to return and finish out the six innings allotted to the game.

There were some wonderful plays, in fact so many that it would be invidious to mention any in particular. No severe casualties were recorded, but enough to make noticeable the absence of Doctor Stedman, who has never before deserted the club at an outing.

Members and Guests of the Rubber Club at the Annual Outing.

The personnel of the two nines, and the number of runs made were as follows:

"Red Sox."			"The Giants."	
Feinburg,	0	p.	Chipman,	0
Tyer,	1	c.	Page,	0
Clapp,	3	s. s.	Young,	2
Russ,	1	1 b.	Pitcher,	0
Clifford,	2	2 b.	Feinburg,	0
Norton,	2	3 b.	Lovejoy,	1
W. Page,	0	l. f.	C. T. Wilson,	0
Phipps,	1	r. f.	C. R. Wilson,	0
Rice,	1	c. f.	Wood,	0
	11			3

Chickering, the Boston photographer, as usual, was present as official photographer, and the company present looked as "pleasant" as requested, when the lens was uncapped. A half-tone of the result is presented as an illustration to this veracious narrative.

After the base-ball, there was a putting contest and a quoit pitching tournament, both of which found numerous entrants. W. L. Proctor, of the Enterprise Rubber Co., had supervision of the putting, and the score is given here in full, to show how close was the contest.

H. C. Benchley	27	A. W. Stedman	24
C. A. Pastene	28	H. C. Pearson	29
W. E. Piper	28	W. J. Kelly	31
F. G. Bowne	29	W. 1. Swasey	27
F. H. Jones	26	H. C. Mason	27
Geo. B. Hodgman	26	F. C. Hood	25
Phil. E. Young	26	J. F. Kimball	26
W. G. Page	27	R. B. Price	27
L. B. Page	27	N. Lincoln Greene	28

The tennis prizes interested but four experts. C. H. Roper defeated Quincy Tucker 6 to 1 and 7 to 5. F. S. Dane beat R. B. Price 6 to 1 and 6 to 1. Roper beat A. A. Glidden 6 to 0 and 6 to 3, and Dane beat Roper 6 to 2 and 6 to 3.

By this time all the score cards had been turned in on the golf tournament, the full score of all the contestants being as follows:

	Gross.	Handi-cap.	Nett.		Gross.	Handi-cap.	Nett.
M. G. Hopkins	108	20	88	H. C. Pearson	116	20	96
J. F. Kimball	101	18	83	F. G. Bowne	125	27	98
C. A. Pastene	96	14	82	W. E. Piper	117	27	90
F. C. Hood	87	6	81	W. L. Wadleigh	93	12	81
Geo. E. Hall	102	16	86	W. G. Page	96	7	89
J. Frank Dunbar	100	18	82	G. B. Hodgman	119	25	94
F. H. Jones	98	13	85	H. C. Mason	107	14	93
J. H. Learned	105	15	90	A. W. Stedman	108	20	88
C. L. Parker	125	26	99	W. J. Kelly	110	27	83
R. S. Hodges	104	12	92	L. B. Page	89	6	83
G. A. Clapp	112	22	90	Philip E. Young	97	8	89

The quoit pitching tournament, in which the winners were decided by elimination, resulted in favor of McGraw and Benchley.

So much for the sports, which interested the rubber men during the entire afternoon. The dinner, which was to have been served at 6 o'clock, was still untasted at 7, as it was found difficult to tear people away from the putting and the quoit matches. The Lynn Cadet Band did its full duty in rendering music, from opera to ragtime, and although nothing stronger than pop and ginger ale was dispensed, everybody was jolly and happy, but also hungry, and when the line of march was taken to the handsome club-house, which had been transformed to a dining hall, all took their appetites with them.

The tables formed an immense E, the little middle portion taking care of the tail-enders who found all the other seats filled. However, there was room for every one, and food for every aching void. Though there was no sea-shore within an appreciable distance, there were clams, fish and lobsters, all hot, and swiftly absorbed.

Between mouthfuls, the diners, musically bent, sang chorus after chorus—most of them in tune. One song, however, did not get beyond the first few lines. Some one—unaware of the club's loss in May of a much esteemed member—started up "Has Anybody Here Seen Kelly?" That tune has always been a signal, at past dinners and outings, for a march down the hall and a stately measure back by the two Kellys—Wm. J., of Poel and Arnold, and Edward B., of the Mechanical Rubber Co. This time, the music stopped almost as soon as it began, and William Kelly spoke feelingly of the loss, by death, of Edward B., and proposed a silent toast to the departed. Captain Appleton, in a few well-chosen remarks, seconded this request, and Mr. Kelley's memory was honored in a silent tribute.

As is the invariable rule at these dinners, no set speeches were made. President Hodgman awarded the prizes, as follows, with short and appropriate remarks:

Golf.

First Prize, Gold Pocket Knife to F. C. Hood.

Second Prize, Thermos Carafe to Wm. L. Wadleigh.

Tennis.

First Prize, Smoking Set to F. S. Dane.

Second Prize, Cocktail Shaker to C. H. Roper.

Putting Contest.

First Prize, Cut Glass Vase to A. W. Stedman.

Second Prize, Tray and Coasters to F. C. Hood.

Quoits.

First Prize, Cheese and Cracker Dish to E. L. McGrew.

Second Prize, Gold Cigar-Cutter to H. C. Benchley.

The supper ended at 8:45 and soon the automobiles were speeding away for the city. Every car owner had plenty of friends to fill the extra seats, and the two cars provided by the management made several trips to the railway station.

During the day a meeting was held of the Executive Committee, at which President Hodgman presided. At that meeting, resignations as officers were received from Secretary H. P. Fuller and Assistant Secretary John P. Lyons. These were accepted, and resolutions were passed appreciative of their services. In accordance with a previous action of the management to employ the services of a paid secretary, Mr. H. S. Vorhis was appointed to that position with offices at 354 Fourth avenue, New York City.

The following applications for membership were received and approved:

ASSOCIATE MEMBERSHIPS.

F. J. Dunleavy, Boston-Bolivia Rubber Co., Boston;

Frederic Feinburg, D. Feinburg Co., Boston;

Jas. J. Clifford, Technical Supt. Boston Woven Hose Co., Cambridge;

W. H. Norton, Enterprise Rubber Co., Boston;

F. E. Lovejoy, American Rubber Co., Cambridge.

FIRM MEMBERSHIPS.

Chicago Rubber Clothing Co., G. G. Bryant, Secy., Chicago;

Walpole Tire & Rubber Co., A. T. Baldwin, Walpole and Boston, Massachusetts;

Lee Tire & Rubber Co., Edward Lee, President, Conshohocken, Pennsylvania.

Some consideration was given plans for the coming season, and the meeting adjourned, to meet at call of the president in September.

The Hodgman Glen Island Outing.

OF the many annual field days and outings that the Hodgman Rubber Co. has given to its employes none have approached that of June 28 in this the 75th year of the company's existence. Beautiful Glen Island was the place chosen for the day's outing. A most capable committee arranged everything, to the smallest detail, far in advance, so that every event came in its proper place, every employe had a good time, and there were no delays and no accidents. When the 2,000 employe guests arrived at Glen Island at noon they found a big barbecue just ready to be discussed. Then came a hotly contested ball game, in which the Hodgman nine came off victorious. Then in rapid succession followed events such as "Shoe race" (boys)—Fifty-yard dash (girls)—Potato race (girls)—One-third mile run (men)—Egg and Spoon race (girls)—Hobble skirt race (girls); and a Tug of war between representatives of the Mt. Vernon and the Tuckahoe factories, which the latter won. In addition, the regular amusements at the Island—such as roller coasting, bowling, billiards and bathing—were all well patronized by the visitors.

A monster banquet was the beginning of the evening's entertainment. After the dinner—which was excellent—President George B. Hodgman made a brief speech of welcome. He was followed by Mayor Fiske of Mt. Vernon, and he in turn by the editor of THE INDIA RUBBER WORLD. Then came the adjournment to the dancing pavilion, and some hours later the return to Mt. Vernon and Tuckahoe, and the "Best Hodgman Outing" and one worthy to commemorate 75 years of successful existence came to an end.

BALL GAME AT THE HODGMAN GLEN ISLAND OUTING.

BANQUET AT THE HODGMAN GLEN ISLAND OUTING.

NEW TRADE PUBLICATIONS.

CINCINNATI RUBBER MANUFACTURING CO.

In catalog C, lately issued, the various features of the mechanical rubber goods made by the Cincinnati Rubber Manufacturing Co., Cincinnati, Ohio, are fully listed and illustrated. Commencing with an effective cut of the factory buildings, the reader's attention is called by the catalog to the four varieties of plain belting, followed by two of stitched and three varieties of friction surface. Next in order come beltings for various special uses, such as oil wells, conveyors, elevators and other purposes. Several pages are devoted to the use of rubber belting, with a formula for determining the horse power represented.

The subject of hose is a big one and is appropriately dealt with by comprehensive illustrated lists of steam, water, lawn, fire, mill, brewers' and pneumatic tool varieties. Other specialties are qualities for use in automobiles, chemical engines, etc.

Packing includes the well-known "Norka," "Old Crow" and "Cincinnatus" grades in various forms, while a complete line of tubing is also represented. Rubber covered rolls make a special feature of this concern's product.

Numerous other specialties complete the line as shown in this highly useful and interesting catalog, dealing with the entire range of mechanical rubber goods.

A COMPREHENSIVE CATALOG.

Covering as it does druggists', chemists' and perfumers' glassware, as well as druggists' sundries, the annual price list of the Whitall Tatum Co. gives a comprehensive idea of the lines manufactured and carried by this enterprising concern. The number of articles handled may be inferred from the fact that the index to the principal ones includes nearly 600 items; while the catalog itself numbers 198 pages, copiously illustrated. Glassware occupies 72 pages, the remainder of the space being given to druggists' sundries.

The importance of rubber as an element in the manufacture of druggists' sundries is shown by the catalog itself. That the baby from its earliest age is a factor in the consumption of rubber is shown by the cuts of nipples, comforters and "toothers," of which a large variety is displayed. Following these are various makes of hard rubber syringes, after which come water bottles, atomizers and sanitary goods. Hospital specialties, such as ice bags, invalid's feeding cups, bandages and thermometers carry the line further, till the important heading of hard rubber combs is reached, of which some forty numbers are listed, many of them being illustrated.

Attractive in form and compiled with much care, this catalog is a handy guide in the purchase of druggists' glassware and sundries, and as such will be appreciated by all interested in that branch of trade.

SOME NEW GOODRICH ISSUES.

GOODRICH ROAD GUIDES.

Among the many advantages offered by the automobile is the facility it affords of traversing the distance between populous centers. To fully appreciate this point it is necessary to accompany the motorist in spirit on his journey. Such an opportunity is afforded by a perusal of the folder issued by The B. F. Goodrich Co., "Omaha to Kansas City." The intending or actual tourist finds in this convenient pocket guide a full reference to the landmarks distinguishing the way between the two cities named. The fullness of the information may be inferred from the fact that there are no less than about 150 references, covering the distance of 221 miles.

Niagara Falls being the objective point of numerous summer motorists, a neat card issued by the Goodrich Co. is of special value just now. The route from Buffalo to Niagara Falls (22½ miles) is indicated, with references to eight points on the way. For the benefit of the motorist continuing his journey into Canada, the routes to Hamilton (49½ miles), and thence to Toronto (42½ miles), are shown on the same principle as that of the guide from Buffalo to Niagara Falls.

FURTHER GOODRICH LITERATURE.

In a new group of folders the B. F. Goodrich Co. has further emphasized the merits of certain specialties in its product. These include the ever present subject of rubber bands. As the folder explains, the peculiarity of rubber bands is that they are often not to be found when wanted; this elusiveness being obviated through the "Goodrich Bank Band Assortment," which contains seven sizes in a neat box. This handy device is sufficiently large not to be easily misplaced, forming a useful adjunct of the busy man's desk. The bands, moreover, are of the standard Goodrich quality and are guaranteed for five years against defects of material and manufacture.

Another specialty, tho different in character, is the "Goodrich Rubber Bucket" holding over two gallons and when collapsed taking up a space of only 9 x 2½ inches. Its practical advantages include a strainer in the spout which keeps back all impurities. This convenient motor accessory is more easily handled than the ordinary bucket and deserves the attention of every motorist.

Lawn tennis retaining its popularity as an outdoor game, it is of interest to note from still another folder that the Goodrich ball has been adopted for the season of 1913 by the United States National Lawn Tennis Association. It may be used in all tournaments under association rules.

POPULARIZING A PASTIME.

While the automobile and the motorcycle have done much to affect the popularity of the bicycle, there are still many adherents of the latter. To such the question of tires is of primary interest. A neat folder recently issued by the B. F. Goodrich Co. explains the advantages of two special tires: "Roadworthy," price $5.50 per pair, and "Maxecon," price $5 per pair, in the standard sizes. It is claimed that these tires embody the highest quality consistent with their low prices.

POCKET RULE BOOK OF GOLF—1913.

Seeing that handiness is the chief desideratum in a booklet containing the rules of any popular game, the B. F. Goodrich Co. has assuredly furnished golf players with just what they want. In a neat stiff-covered booklet, 6 x 3, are condensed into 42 pages the rules of golf, both for ordinary playing and matches; while in the remaining six pages the merits of the Goodrich golf balls are fully explained and illustrated. The "Stag," "Moose," "Comet," "Meteor," "Scotty," "Final" and "Bantam" are no longer mere names, but by the aid of the cuts become realities, of interest to all golf players.

THE GOODRICH FOREIGN SERVICE.

Now that a large number of American motorists are in Europe, a folder issued by the B. F. Goodrich Co. has a special interest for the actual or intending tourist. It gives just the information needed by the automobilist or bicyclist as to where he can obtain standard Goodrich tires in American sizes with inch measurements, distinguished from those in millimeters. The company has its own houses in England, Germany, France and Belgium with agents carrying a stock of tires at some fifteen various points in nine different European countries. For the benefit of motorists, the Goodrich company issues an "Auto Map and Guide to Europe," which is available free, on request made to the Goodrich Touring Bureau, Akron, Ohio.

REDUCTION IN REPAIR PRICES.

The retail tire dealers and repairers of Toledo, Ohio, have done a wise thing. The last of June they made a general agreement to reduce their prices for tire repairs and materials, on the ground that the cost of tires had been considerably lessened during the last two years. Charges now are 25 cents for vulcanizing a nail puncture, as against 50 cents, the former price. The charge for patches has been reduced about 40 per cent., and the price for re-treading has been lowered 15 per cent.

The Editor's Book Table.

L'APPAREIL LATICIFERE DES CAOUTCHOUTIERS. BY DR. Alphonse Meunier, Professor at the University of Louvain; 1912, Brussels. Imprimerie Industrielle & Financiere. [Paper; text, 52 pages; plates, 8 pages.]

This highly artistic treatise constitutes the first section of a series of "technical memoranda," published by the Agricultural Service of the Belgian Colonial Ministry, and deals with the latex-conveying system of the rubber tree. In his introductory remarks, the author comments on the fact that the discernment of suitable varieties, and the choice of the forms of cultivation and exploitation most appropriate to each description, are questions of grave interest; particularly when plants are removed from their natural habitat, for the benefit of regions newly opened to human activity. This subject, it is added, specially affects the Belgian Colonial Ministry, with a view of avoiding the recurrence of the difficulties experienced in the past, and of assuring future success.

In this connection, the anatomical structure of trees containing rubber calls for attention, the scientific knowledge of the distribution of the latex-conveying system being the necessary foundation of any judgment formed on the question.

Dr. Meunier, in view of the importance of the subject to the Belgian Colonial Administration, has devoted hs initial researches to the following varieties which have been adopted in the colonies for systematic cultivation:

I. Asclepiadaceæ—*Periploca* and *Cryptostegia.*
II. Apocynaceæ—*Clitandra, Landolphia* and *Funtumia.*
III. Euphorbiaceæ—*Hevea* and *Manihot.*
IV. Urticaceae—*Ficus* and *Castilloa.*

As known, the structure of the latex conveying system, as well as that of the other constituent systems, remains more or less alike in the different representatives of the same natural group; harmony being thus demonstrated between the internal and external characteristics displayed by members of the one family. This fact has enabled the author to dispense with the multiplication of the subjects treated.

In the text of this comprehensive summary, the four varieties named are treated in detail, and conclusions drawn regarding them.

The eight graphically executed colored plates. each containing some ten botanical representations, form a valuable addition to the work and emphasize its salient features. Much credit is due to the author and artists engaged in the production of this compendium.

TRADE MARK LAWS OF THE WORLD AND UNFAIR TRADE. By B. Singer. Chicago, 1913. [Cloth, 686 pages. Price, $5.]

While the American import commission merchant has plenty of worries in his relations with foreign countries, the export merchant is exposed to special troubles in the matter of trade marks. Owing to the lack of uniformity in the laws of the various commercial nations of the world, experience with one country is of little service when dealing with another. Hence the value of such a detailed and comprehensive work as that of Mr. Singer..

It is not sufficient for a work to contain information. but it must be in such form as to be easily accessible when wanted. This object has been attained in the case of Mr. Singer's book, by alphabetical division of the countries of the world, and a classification of the regulations affecting each branch of the trade.

A feature of practical utility consists in the introductions leading up to the details regarding the respective countries, in which the principal geographical and statistical facts affecting each nation are condensed. The work displays the result of much painstaking and arduous labor, involving close study of international trade-mark legislation.

ZOLL-HANDBUCH FUR DIE GUMMI INDUSTRIE. BERLIN, 1910. Union Deutsche Verlagsgesellschaft. [Cloth, 232 pages.]

Duties form such an important factor in modern business calculations that anything tending to their simplification is necessarily of value. Hence the "Handbook of Duties for the Rubber Branch" is a valuable help to those engaged in the export trade. The duties levied on rubber goods in 71 countries of the world are shown in detail. As a work of reference this summary will be appreciated for its careful and accurate compilation.

DUNGUNGSVERSUCHE IN DEN DEUTSCHEN KOLONIEN. BERlin, 1912. Reichs-Kolonial Amt. [Paper, 72 pages.]

One of the principal characteristics of the last decade in German agriculture has been the recognition of the necessity existing for the systematic use of artificial fertilizers, to replace the nutriment drawn from the soil by the constantly increasing volume of the crops harvested. Even in the least progressive districts of Germany there is hardly an agriculturist who has not tried these substitutes, and in consequence incorporated them in his plans.

In the above report on "Trials of Fertilization in the German Colonies," the Imperial Colonial Office remarks that the practical neglect of this subject in the German possessions may be explained by two facts. In the first place, the idea has been prevalent that the virgin soil of the hitherto uncultivated area is sufficiently rich not to require, for a long time to come, the same measures as have been found necessary in Germany as to fertilization. Another reason has been that the principal forms of cultivation in the German colonies are without a parallel in agriculture at home, belonging there rather to the forest industry. Hence it was concluded that fertilization was not required in the German possessions.

The Colonial Office expresses the opinion that, however plausible these two views may seem as to the needlessness of artificial (or of any) fertilization, they will not stand close investigation.

In the year 1911-1912 there were made in the German colonies 97 tests of fertilization, including 14 of rubber. The number for 1912-1913 was estimated at 139. Full details of the various tests are quoted in this valuable report.

WORLD-WIDE ECONOMICS.

In an issue of 376 pages, the new German quarterly, the "Weltwirthschaftliches Archiv" has taken its place in the economic field, under the direction of Dr. Bernhard Harms. The first number contains an editorial on "Universal Economics." Herr Karl Thiess, of Dantzig, deals with "The Universal Railway Gauge," while Herr Fitger handles the subject of "Marine Insurance in the World's Commerce." Professor Liefmann describes the "International Organization of the Frankfurt Metal Trade," and there are other interesting articles on economic subjects.

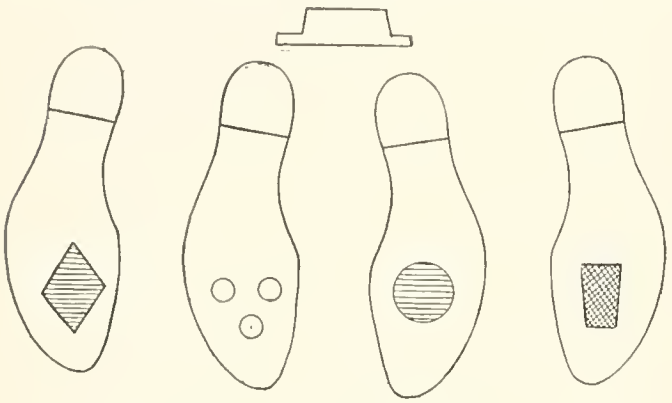
The current literature affecting international commerce is fully noticed. and certain sections deal with the newest books on the various subjects of special or general commercial interest. Statistical returns of the international trading of the leading nations form an interesting feature and enhance the value of the publication as a work of reference. It is evidently the result of much careful investigation and compilation.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

NON-SKID SHOES FOR DANCING.

THE old adage says "There's nothing like leather." But this does not mean that there's nothing better than leather. The up-to-date faddist finds that leather can be less satisfactory for some purposes than some other substance. And the up-to-the-minute dancer has found that rubber, as an auxiliary, at least, has it uses in the Terpsichorean freaks and fads of the concert hall and ball room.

Time was, and not so long ago, either, when the dancing-pump had a sole as polished and shiny as brush and burnisher and heel-ball could make it, and the dancer could glide over



Rubber Plugs for Dancing Pumps.

the polished floor with lissome grace to the strains of the seductive waltz. The janitors, however, learned new stunts in waxing and polishing, until the floors rivaled plate glass in smoothness, and glacier ice in slipperiness.

Meanwhile, the character of the dances changed, and even as the stately minuet of past cultures gave way to the polka and the galop, these have been followed by the "barn dance," the "turkey trot," the "tango," and by steps and dizzy gyrations which would make a whirling dervish turn green with envy, could anything change his color, or reveal it, under the dirt incrusted on his skin.

There are modern dances which require a course in gymnastics as a preliminary to their accomplishment. Perhaps the stunts of the cabaret and the vaudeville stage are responsible for the present-day fad. At any rate, modern dancing is to some degree dangerous, and the remedy is—rubber.

Today dancing pumps have as glassy soles as ever, but not all over. Even as the automobile must have a brake, the pump requires one friction-spot, at least, to save the wearer from the slip and fall which are made possible by the wild contortions, the speedy steps and the quick changes of direction in the dances. And the remedy is a little piece of rubber in the sole.

There are two stories as to the origin of this marked improvement, which is now becoming so popular that manufacturers are adding it to their lines of samples; so that what has hitherto been a made-to-order specialty is now a mercantile proposition.

It is said that a couple of vaudeville stars, whirlwind dancers, found that while their act required them to wear shoes or slippers with polished, slippery soles, some of their steps were difficult and positively dangerous, because of this very fact. How to combine two opposite qualities in a sole was solved by inserting a plug of rubber where it would serve as a safety tread, much the same as the friction plug does in the rubber heels of the present day. These actors, having found by experiment the value of such a combination, imparted their discovery to others, and in the end brought about a demand for dancing pumps having this improvement.

The other story is that a well-known firm of Boston shoe dealers, which makes a practice of sending its salesmen, with samples, to all the college towns throughout the country, found that the young college chaps complained that the glassy soles of the dancing pumps were too slippery. The head of the house, himself a society man and a dancer, set to work experimenting. First a half sole of rubber was tried. It didn't slip, but it didn't slide. Further experiment proved that the insertion of rubber golf plugs at the ball of the foot was fairly effective. The smaller ones, of half an inch in diameter, were not large enough, but the inch-wide circular golf studs or plugs, set three in each sole, and pared down even, or nearly so, with the sole, answered the purpose. But as is usually the case, tastes or experiences differ, and while some prefer an irregular square of corrugated soling, others order a two or a two and a half inch circle, while another favorite shape is a square, set corner-ways, as shown in the diagrams.

The method of inserting these safety patches is to cut out a portion of the sole to the shape of the rubber, which is cut with a flange all around, similar to a golf plug. This lip or flange is cemented to the under surface of the sole, thus securing it in place. Some are finished even with the face of the sole, while others are left with their corrugated surfaces slightly higher than the leather.

In use it has been found that the leather wears away faster than the rubber, thus allowing the latter to do its work. The dancers soon learn to glide on the shiny leather surface, and to stand firmly on the rubber.

As has been said above, manufacturers are now showing these new pumps among their samples, and shoe dealers who cater to the society and the college trades are carrying them in stock, and working up an increasing business. Thus a new use of rubber has been discovered and utilized.

BALATA BELTING AS VIEWED BY AN EXPERT.

IN the Akron letter in our June issue mention was made of the fact that Mr. Anthon Berg, of Christiania, Norway, had just completed the installation of a balata belting and asbestos sheet packing plant for the Goodyear Tire & Rubber Co. of that city. Mr. Berg recently sailed for his home in Norway, but expects to return in the fall and may install other balata belting plants. He is a great enthusiast on this sort of belting. It is a well known fact that balata belting is the toughest kind made. In Mr. Berg's opinion it is at least 100 per cent. stronger than leather belting. He states that in Norway twenty years ago belting was about evenly divided between leather and rubber, but that now there is no rubber belting in that country, about one-third of the belting there used being made of leather, the other two-thirds of balata; and he states that this same condition exists practically all over Europe.

In this country probably not over 5 per cent. of the belting used is made of balata, but the proportion is constantly increasing. Besides the Goodyear Tire and Rubber Co., where balata belting machinery was recently installed, there are three other companies, viz., the New York Belting & Packing Co., the Republic Rubber Co. and the R. & J. Dick Co., Ltd., which are making balata belting.

In addition to its superior strength, a balata belt takes a more tenacious hold on the pulley and is practically stretchless, while other belting stretches from 6 to 10 per cent. This stretchless quality, which eliminates the necessity of stopping machinery to tighten up a belt, makes it less expensive to use, and its lightness also makes it economical.

The Obituary Record.

FREDERICK M. SHEPARD.

FREDERICK M. SHEPARD, for five years president of the United States Rubber Co., for over a third of a century president of the Goodyear Rubber Co., and for sixty years a prominent figure in the rubber industry of America, passed away after an attack of appendicitis, at his summer home in Norfolk, Connecticut, on June 30, in his 86th year.

Mr. Shepard was born in Norfolk, on September 24, 1827. His father was Captain John Andrus Shepard, a farmer, hotel-keeper, the postmaster of his town, and a prominent character in that community. Mr. Shepard's original American ancestor was Edward Shepard, who came from England and settled in Cambridge, Mass., in 1638—from which it will be seen that Mr. Shepard might very properly be referred to as belonging to the "old stock." After graduating from the local school he helped his father for a short time, and then, being an ambitious youth, went to Hartford and secured a position in one of the largest stores of that city. But he had his eyes on a still wider field, and about the time he reached his majority he went to New York and became connected with a retail shoe store. Soon after, in 1853, he entered the rubber industry (where he was destined to be conspicuous for two generations), becoming secretary of the Union India Rubber Co., of which he was later the president.

In 1872, in association with the late Joseph A. Minott, he established the Goodyear Rubber Co., becoming its president, a position that he continued to occupy until seven years ago, when he retired because of advancing years; still, however, remaining on the board of directors. In 1896 he was elected president of the United States Rubber Co., which important post he held for five years. During his incumbency, and largely through his activities, this corporation secured control of the Boston Rubber Shoe Co., then—as for many years before that time—the largest rubber footwear manufacturing concern in the world. In addition to these rubber associations Mr. Shepard was connected in an influential capacity with the Lambertville Rubber Co. and the Rubber Clothing Co.

Important and commanding as were his relations with the rubber industry, they by no means engrossed his entire attention, as he was an active director during the greater part of his life in a variety of other undertakings. In 1868 he took up his residence in East Orange, New Jersey, and soon became prominent in its business and civic affairs. He was chiefly instrumental in establishing the East Orange Safe Deposit and Trust Co., The East Orange National Bank and the Orange Water Co. He was also one of the commissioners who constructed the fine system of parks in Essex County, for which $4,000,000 were raised. He took a profound interest in the social and religious welfare of the community, acting as president of the Free Library, and as a member of the advisory board of the Orange Memorial Hospital, erecting and equipping for that institution a large pavilion for the treatment of tubercular diseases, as a memorial to his son. He was extremely active all his life in the work of the local Presbyterian Church and officiated as superintendent of the Sunday School for over a quarter of a century. His chief benefactions, however, were directed toward the welfare of the little Connecticut village where he was born. They included a public park for the town, a lawn and fountain adjoining the railroad station, ample grounds for one of the churches, and various school improvements; and in all possible ways he showed his interest in the development and well-being of the village where he continued to have his summer home during the greater part of his life.

Mr. Shepard was a man of the soundest business judgment, which was reflected in the practically uniform success of every undertaking upon which he embarked; but, notwithstanding his financial success—which enabled him to accumulate a fortune generally estimated at several millions—he was personally most unassuming and democratic. He showed the same discrimination in his charities as in his business affairs, and his benevolences were all of a practical character. It was his good fortune to be permitted to round out a long life of honorable and successful industry and continuous tho unobtrusive usefulness.

FREDERICK M. SHEPARD.

He was married in 1854 to Annie C. Rockwell, who, together with two sons and three daughters, survives him. The funeral was held at his summer home in Norfolk, and the burial was in Greenwood cemetery, Brooklyn.

ANTHONY N. BRADY.

The death of Anthony N. Brady on July 22 in London, at the age of 70, has removed from the scene a noted financier of the later school. Wall Street did not know of his existence previous to 1891, when he secured a suburban trolley contract and rapidly rose to power in the world of finance. Apparently, everything he touched prospered, and he gradually extended his operations to include railroads; gas, electric light and power companies; banks and industrial enterprises.

Mr. Brady was born August 22, 1843, in Lille, France, whither his parents had fled from Ireland to escape political persecution. They emigrated shortly afterwards to America, settling at Troy, New York, where the son attended school till he reached the age of 13, when he had to assist in the support of the family. He occupied one position after another at the Delevan House, Albany. This brought him into touch with many public men, and was the foundation of ultimately valuable friendships, which later on helped him to carry out his different plans.

At the age of 21 he found the wished-for opportunity of starting in business on his own account, opening a tea store in Albany. This venture proving successful, he established a chain of such stores in Albany, Troy and other neighboring cities. The money he made in tea, he invested in stone, cornering the supply of granite available for paving and building operations in Albany.

The boldness of this stroke impressed various prominent

financiers, such as Roswell P. Flower, E. C. Benedict and Edward Murphy. Consequently, when Mr. Brady sought their aid in consolidating the Albany gas companies, he readily secured it, and was made president of the new combination. The results obtained by the use of a new water-gas process were highly profitable for the four members of the syndicate.

He next turned his attention to the electrification of the Albany and Troy horse car lines, being a pioneer in the substitution of overhead electrical wire for horse traction. Subsequently, he reorganized and consolidated the Chicago gas companies.

Anthony N. Brady.

His Western connections brought him into touch with oil, the possibilities of development in Ohio attracting him in connection with fighting the Standard Oil Co. The Manhattan Oil Co., of Lima, Ohio, was pushed into competition with the former. Mr. Brady soon got into touch with leading financiers regarding a score of ventures in which oil and gas figured. Electricity followed, until he came to be regarded as the most influential single factor in traction, lighting and power lines.

Pursuing his onward way, Mr. Brady came to New York in 1891, securing a contract for equipping with new rails a street railway in the Bronx, nicknamed the "Huckleberry." Being unable to collect the money due him, he took over the road, organizing for its operation the Union Railway Co., afterwards leased to the Metropolitan Street Railway Co., which Mr. Brady helped to organize, and which had a capitalization of $30,000,000.

About this time, in conjunction with Thomas Ryan and the late W. C. Whitney, he acquired the Edison Co., capitalized at $25,000,000; and having purchased other companies in the same field, he organized the New York Gas and Electric Light, Heat and Power Co. The last named combination was taken over by the Consolidated Gas Co., with $80,000,000 capital, of which Messrs. Brady, Whitney and Ryan were elected trustees.

Later on, Messrs. Ryan and Brady had a disagreement, after the former had suffered in the Wall and Cortland street deal.

In 1894, Mr. Brady, in conjunction with the late Roswell P. Flower, secured control of 250 miles of Brooklyn surface railways, organizing the Brooklyn Rapid Transit Co., with a capital of $20,000,000, and becoming chairman of the executive board. The efforts made some half a dozen years ago by Metropolitan interests to control the Brooklyn Rapid Transit Co. forced Mr. Brady to make a counter alliance and to repel the attack.

Among other combinations, Mr. Brady organized the Metropolitan Traction Co., which was the foundation of the present New York trolley system, and which is now the New York Railways Co. Providence, Washington, Philadelphia and many other cities also engaged his attention in public utility organizations.

To tell the story of Mr. Brady's career in Wall Street would be to recount the financial history of the past 20 years. Some sixty corporations are said to have been working under his guidance, while his heavy investments are understood to have been in Brooklyn Rapid Transit, American Tobacco and United States Rubber. In addition to these, a number of smaller holding go to make up the total of $100,000,000 at which his estate is estimated. Since 1898 all of the New York lighting and power companies have been under his control, and his son is president of the New York Edison Co.

One of the most noteworthy events of Mr. Brady's life was the merger which he brought about in 1905, between the Rubber Goods Manufacturing Co. and the United States Rubber Co., a work for which he was probably better fitted than any other man in the financial world.

Mr. Brady was a member of the syndicate which in January, 1899, organized the Rubber Goods Manufacturing Co. In May, 1905, a new syndicate was formed which secured control of the capital stock of the company. He acted on behalf of that syndicate (known as the "Brady" Syndicate) in the negotiations with the United States Rubber Co., which resulted in the merger of the two corporations. In June, 1904, Mr. Brady became a director of the United States Rubber Co.

Mr. Brady recently sailed from this country for Europe, intending to spend his vacation abroad. His trip was undertaken against the advice of his physicians, who regarded his condition as being unfit for prolonged travel. When the gravity of his illness became apparent, Mrs. Brady was called from this side, and reached London before her husband's death. The remains have been brought over by the *Baltic*. He is survived by his wife, Mrs. Marcia Myers Brady; two sons, Nicholas F. and J. C. Brady; and three daughters, Mrs. James Farrell, Mrs. Marcia Tucker and Mrs. Mabel Garvan.

Mr. Brady, while able to do twice the average man's work, never seemed in a hurry. His mind was extremely active and he got at the bottom of things quietly and accurately. He was considered a firm friend, never forgetting a favor.

Z. T. LINDSAY.

Zachary T. Lindsay, one of the most highly esteemed members of the rubber jobbing trade in this country, died on June 30, after an illness of a few weeks, at his home, "Highridge," Omaha, Nebraska. Mr. Lindsay was born in Iowa in 1848, and at the age of 16 he showed the sterling stuff of which he was made by enlisting in the Iowa 45th Infantry. Tho the war came to a close not very long after, he saw much active service. In 1868, at the age of 20, he joined the Western pioneers and went across the plains in a wagon to California, where he tried his luck at mining—a very uncertain occupation then as now. Three years later he returned to Iowa and opened a shoe store, which was the beginning of the career that he was to continue for over forty years. In 1878 he moved to Council Bluffs, where he opened a larger store; and six years later he made another move, to Omaha, and soon had under his management four shoe stores, in which rubber footwear formed an important department, the business soon developing into a large wholesale rubber trade. This enterprise was so successful that in 1898 the business was purchased by the United States Rubber Co., and the name changed to The Interstate Rubber Co., Mr. Lindsay being retained as president and manager, a position he continued to hold to the day of his death. In the management of this large Omaha distributing concern he held not only the confidence of the great corporation with which he was connected, but of every member of the local trade—and this implicit trust imposed in him by all who had any business relations with him was perhaps the largest factor in his success.

He did not, however, confine his attention solely to his own private affairs. He was conspicuous in all civic and community interests. He was one of the charter members of the Commercial Club of Omaha and served at different times on nearly all its important committees. He acted as chairman at the Board of Trade meeting which decided on the Trans Mississippi Exposition held a few years ago at Omaha; and the success of that enterprise was very considerably due to his initiative and good

Zachary T. Lindsay.

judgment. He was also deeply interested in the religious life of his community, being a staunch Presbyterian and continuously active in the work of that church.

He is survived by his wife, who has been prominent for many years in the artistic and literary life of Omaha, and by two children—a son, Harry S. Lindsay, of Excelsior Springs, Iowa, and a daughter, Mrs. George N. Peek, of Moline, Illinois.

The accompanying illustration is made from a recent photograph and gives an excellent likeness of Mr. Lindsay as he appeared in his later years.

WELLING SICKEL KATZENBACH.

A remarkable instance of bravery during a long illness is afforded by the last years of Welling Sickel Katzenbach, of Trenton, who died July 18 at the early age of 29. His career, tho short, was notable.

Born on April 18, 1884, after passing through the Phillips Academy, Andover, Massachusetts, he entered Princeton University in 1900. His work there was largely in the department of chemistry, rendering him a master of that profession. In 1904 he graduated from Princeton, with the degree of A. B. and high distinction in chemistry.

After his graduation he was engaged in analytical chemistry, being subsequently appointed secretary of the Charles F. Scholes Chemical Co. of New York. Altho' the state of his health caused him to resign that position and while a great sufferer, he organized and established the business now conducted by the Katzenbach & Bullock Co. of Trenton and New York, with extensive connections both in America and Europe. Some three years ago, with his father and Mr. E. L. Bullock, an old friend, he incorporated the company, being made its president.

His unfailing courage and ability enabled him during his illness to so formulate and guide the policies of this company that it has materially developed since its first establishment. By the help of the long distance telephone, which he had constantly by his bedside even in the hospital, he was in a position to watch over the growing business in detail.

His popularity at college was such that his classmates at their reunion of 1912 were placed in communication with him by telephone, being thus able to express appropriate greetings.

The brief yet eventful life of the deceased has been a notable instance of a courageous fight against a fatal disease and will serve as an inspiration to his surviving associates.

THE RUBBER INDUSTRIES OF NEW JERSEY.

THE annual volume of industrial statistics of New Jersey has been issued, bearing testimony to the labors of Hon. Winton C. Garrison, Chief of the Bureau of Statistics of that State. It embodies the records of the factories for 1911 as collected by the State census officials in 1912.

In the State there are 2,475 factories, of which 2,172 are divided among 70 industries. Among the latter are 53 rubber factories (hard and soft) in respect to which the following results are shown:

Persons Employed.—The total number was 8,221, composed as follows: Men over 16, 6,832; women over 16, 1,287; children under 16, 102. The total of 8,221 showed a decrease of 238 as compared with 1910, when there were 8,459 workers in the same number of 53 factories. The average yearly earnings per worker were in 1910, $514.96, and in 1911, $533.25.

Of the 53 factories only 2 were operated by private firms, the remaining 51 being corporations. The total amount of capital invested in the rubber industry of New Jersey was $30,140,119, made up as follows: Land and buildings, $5,414,299; machinery and tools, $5,489,063; bills receivable, stock in process of manufacture and cash on hand, $19,236,757. The capital invested in 1910 in the 53 factories represented $28,902,913; there having been thus an increase of $1,238,206.

The production of the 53 factories amounted in 1910 to $34,733,592, and in 1911, to $36,057,242. An analysis of the principal elements of cost would show that the stock used represented in the earlier year $23,647,377 and in the later, $23,657,966. Thus a production increase to the extent of 4 per cent. was obtained from about the same value of raw material. The production in 1911 of $36,057,242 involved among other payments: Stock, $23,657,966, and wages, $4,383,385, the margin left applying to other elements of cost.

Steam was used for driving 117 engines, with 22,575 h. p., and electricity for 188 motors, with an aggregate of 1,966 h. p. The business done represented 78.77 per cent. of the total capacity of the factories, a result surpassed by only about 10 of the 90 classifications of New Jersey factories. The rubber industry of New Jersey thus seems to be steadily improving its position.

A RUBBER TOY PUT TO USE.

Occasionally an article meant for a serious purpose is diverted into the channels of amusement. And the reverse is also true, where an article intended for a plaything is put to serious purpose. For instance, a storage battery that doesn't quite fill its box can be effectively packed by the insertion of a few of the little toy rubber balls sold in toy stores and general stores. They can be secured in various sizes and squeezed in between the battery and the outer box, serving very satisfactorily as bumpers to lessen jars and jolts.

An American consular officer in Canada reports under No. 11,367 that $2,500 have been appropriated by a city in his district for the purchase of an automobile fire truck and hose. Further particulars can be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C.

Under No. 11,328, a consular officer in a European country sends the Bureau of Foreign and Domestic Commerce, Washington, D. C., an inquiry from a business firm for "paracote" roofing, said to be a prepared material resembling paper, manufactured in the United States.

New Rubber Goods in the Market.

RUBBER FLOWERS FOR BATHERS.

ORIGINALLY, of course, the province of the bathing suit was to be worn while bathing, and the plainer the better. But with the increasing popularity of the seaside resort the bathing suit has come to be an outfit for general display on the beach, and consequently it has grown more ornate with each succeeding year. However, as it has not yet come to be quite good form to put on a bathing suit and not bathe at all, it is still customary before returning to the dressing room to take at least a momentary dip, which necessitates a suit that will stand water. Hitherto bathers in search for adornment have been barred from the use of feathers and flowers, because these would be ruined in even a momentary dip; but the coming summer, so the fashion experts say, will see fine floral decorations on many a bathing suit at the smarter beaches—roses, violets and everything else known to decorative botany. Nor will they

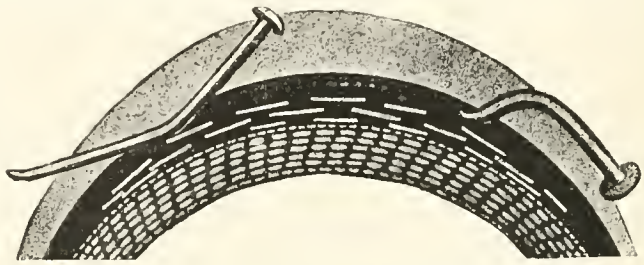
be injured, no matter how delicately hued, even tho the bather remains in the water indefinitely, and they can be worn day after day through the season, for they will be made of rubber.

GOOD FORM WHILE BATHING.

A keen summer correspondent at New Bedford writes to one of the Boston dailies of a great discovery that he has made, viz., that the women bathers at that resort are employing rubber corsets, made, as he describes them, of two sheets of rubber with pieces of whalebone between. He says that the whalebones are taken direct from the local whaling wharves, and he appears to think that this is entirely a local industry; but in this he is in error, because these rubber corsets for particular ladies came on the market a year ago and are to be had at nearly all the large city stores as well as at the seaside emporiums. The sale of this particular article has not yet assumed vast proportions, but it is growing.

STEEL PLATES TO PREVENT PUNCTURES.

A puncture proof tire is something that every motorist wants. Of that there can be no doubt. There are many tires so named, but unfortunately a good many of them, notwithstanding this designation, will puncture. Here is an illustration of a tire of English construction, in which, in a very thick layer of rubber and cotton—or rather a series of such layers—coming immediately under the tread, small steel plates are inserted in such a way that, while they do not touch, they overlap, making it impossible for a nail or tack to get through them. The manu-

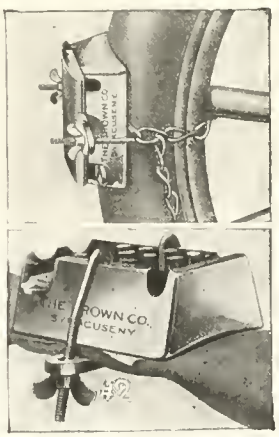


A Puncture Proof Tire.

facturers claim that on a trial of 54 of these tires on vans which, with their load, weighed nearly three tons, the average distance covered by the tires, without a puncture or road stop of any kind, was a little over 6,000 miles. (Non-Puncture Inner Case Syndicate, Ltd., Kensington, England.)

A LIGHT, INEXPENSIVE VULCANIZER.

To repair a tire so that it will stay repaired it has been found necessary in most cases to use a vulcanizer; and the light and inexpensive vulcanizer which can be quickly and easily used has come to be in great demand. Here are two illustrations of the "B. Co. Gasoline Vulcanizer." It weighs only 3 pounds and can be tucked away in the tool-box. It is quite simple, consisting only of the body, the cover, measuring cup and two clamping fixtures. Cut No. 1 shows this vulcanizer at work on the outer shoe, where it is used perpendicularly, being clamped around the tire and rim with a chain. In this position it is necessary to pour the gasoline into the little cup before it is ignited. In cut No. 2 the vulcanizer is shown in a horizontal position as it is used on an inner tube. In that case the cover is put under the tube so as to press the place to be repaired up against the body of the vulcanizer. When used in this way the gasoline is simply poured into the body and ignited. It will be noticed that in the body of the vulcanizer there are a number of upright iron rods, which serve to absorb and distribute the heat and carry it down to the rubber. [The Brown Co., Syracuse, New York.]



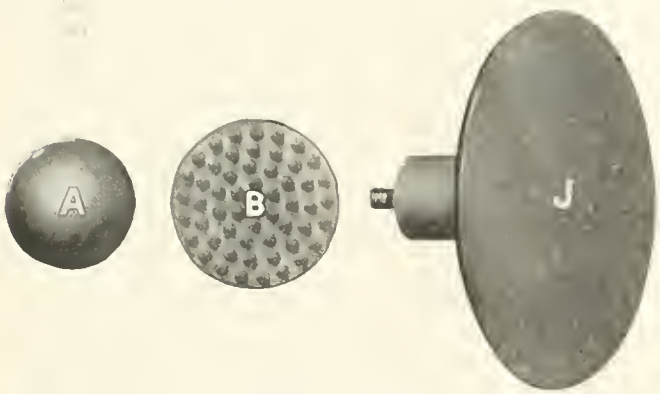
The B. Co. Gasoline Vulcanizer.

A WAX FOR INSULATING WIRE.

An English firm is introducing a new wax for insulating and impregnating cables and wires. It apparently has no rubber in it, but it is described as being a "rubber-like product," resistant to weather and to water, and also to acids, and with a high electrical resistance. This compound can be vulcanized and can be melted at 75 deg. C., but is not sticky in hot weather nor brittle in cold.

RUBBER TO START CIRCULATION.

A hundred years ago when a doctor got a new patient he proceeded immediately to cup him, and the more blood he could draw the greater doctor he was. Fortunately our ancestors were fairly hardy and quite a number of them survived this treatment. Then came the era of drugs, and thousands of worthy citizens were dosed to death. But matters are improving, and now it is a very general opinion that the less we have to do with pills, powders and serums and the more we rely upon the forces of nature, the more likely we are to enjoy good health. Among the natural contributions to health now generally recognized is a proper amount of exercise; and under this heading comes massage. The value of massage has been recognized for many years, but its application has only been perfected within the last few years—since the invention of electrical appliances by which the patient could give himself massage, or at least could get it through the aid of his friends, without calling in experts. The accompanying picture of a case, with its contents, shows a massage outfit which can be used by connecting the little motor with the ordinary electric lighting current. It contains various appliances, made of either hard or soft rubber, three of which are shown more in detail, viz.: the cut marked "A," which is a hard rubber ball applicator, to be used where deep vibration is required; the disc marked "B," which is a soft rubber brush applicator used for scalp and spinal treatment, and the large disc, "J," which is a hard rubber applicator used in abdominal treatment. While this outfit can be used by the patient himself, it is also popular among the doctors for use in their practice. [Shelton Electric Co., 4 East Forty-second street, New York.]



Shelton Vibrator Appliances.

A COAT THAT WILL FLOAT A HALF-DOZEN MEN.

A coat, which is described as looking like any ordinary Norfolk, and which is made of khaki in brown or blue, lined with some sort of fibrous material much lighter than cork, is alleged by its manufacturers to be so buoyant that it will sustain in the water a dead weight of 21 pounds—which is enough to hold up several men. Its description does not indicate that any rubber is used in the coat, but it is an interesting article and is vouched for by a number of reputable people,—State quarter-masters and other officials. It is made by the American Life Saving Garment Co., 53 State street, Boston, Massachusetts.

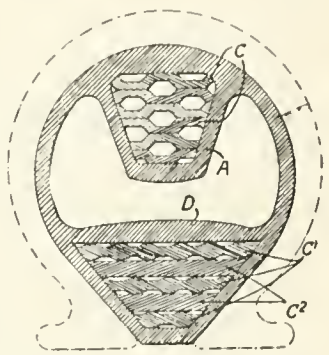
A FIRM SUPPORT FOR WEAK ANKLES.

Probably the noble red man who ranged the primeval forests was not greatly troubled with weak ankles or falling arches, but our vaunted civilization has brought with it both of these troubles, and a great many people find it extremely difficult to get about without some artificial support. A New England manufacturing concern has contributed to the comfort of weak-ankled people by making the ankle support shown in this illustration. The front of it consists of seamless rubber, and the back is of elastic construction, sufficiently strong to give the ankle firm support. This same support serves equally well for fallen arches. [H. J. Collis Manufacturing Co., Taunton, Massachusetts.]

The Collis Ankle and Arch Support.

A PNEUMATIC THAT WORKS WHEN DEFLATED.

A Frenchman has invented a pneumatic tire—cut of which is here shown—which is designed to work, at least comfortably well, even when it is entirely deflated. In addition to the air chamber, which is of peculiar shape—shown by the white space in the center of the cut—there is an upper chamber (A) and a lower chamber (D) which are packed with elastic strips (C). While of course the tire is intended to be inflated, if a puncture should occur it would be possible, according to the inventor's idea, to get along without discomfort on the resiliency imparted to the tire by these two bodies of elastic strips.



A SLEEVE FOR INNER TUBES.

The accompanying illustration shows an inner tire sleeve made of heavy chrome leather with strong metal buttons along one edge, and a corresponding series of button-holes along the other, with an inside flap. Each sleeve has two rows of button-holes, so as to fit two different sizes of tires. The sleeves come in two lengths, 10 and 15 inches, or can be made any other length if so desired. [The Leather Tire Goods Co., Niagara Falls, New York.]

PROTECTING THE EAR IN TARGET PRACTICE.

There is something very fine and heroic in firing off these enormous 10-inch, 12-inch and 14-inch guns that carry their missiles so accurately five, six and even eight miles. But it is terrifically hard on the ears of the gunners; in fact many of them have been made deaf for life by the awful concussion. A simple little protector has been devised, consisting of a celluloid tube on which there are two rubber discs, the whole being small enough to insert in the ear, over the drum. A peculiarity of this device is that, while it enables the wearer to hear ordinary conversation without difficulty, it is a perfect protection against injury from the concussion made by the discharge of these enormous guns.

News of the American Rubber Trade.

THE DERBY PEOPLE HAVE AN OUTING.

THE annual outing given for the employes of The Derby Rubber Co. was held on July 5 at Morris Cove, near Lighthouse Point, Connecticut. They were taken by special car to the grove, a ride of about an hour and a half through the Connecticut hills. There were athletic contests, handsome prizes being awarded the winners, and after an hour of salt water bathing the men sat down to a shore dinner. After-dinner speeches were made by General Manager P. B. Price and others. In the afternoon a baseball game was played which lasted until time to return.

Mr. A. W. Paige, president of the company, attended the outing and took part in the sports

THE WORK OF THE FORSYTH DENTAL INFIRMARY.

The Forsyth Dental Infirmary for children, recently established in Boston by Thomas Alexander Forsyth and John Hamilton Forsyth as a memorial to James Bennett Forsyth and George Henry Forsyth, has already been extensively described and also illustrated in this publication. A recent article by a Boston doctor in the "Boston Medical and Surgical Journal" calls attention to the enormous field which this institution is bound to fill. An examination of 118,000 school children in Boston showed that over 51,000 of them had defective teeth. This Infirmary will be able to take care of this entire number and even more, for it will have a maximum equipment of 106 chairs and it is estimated that 12 patients a day can be cared for in each chair. Assuming that each child receives three treatments a year, over 76,000 children can be cared for in this great charitable institution.

OFFICIALS OF REPUBLIC RUBBER CO. ENTERTAINED.

On Monday evening, July 14, some thirty-six branch managers, officials and department heads of the Republic Rubber Co., were entertained by President Thomas L. Robinson at the Country Club, Youngstown, Ohio. Among those present were: T. L. Robinson, president; L. T. Petersen, first vice-president; J. H. Kelly, second vice-president and general sales manager; A. H. Harris, superintendent; C. F. Garrison, secretary, and M. I. Arms 2nd, treasurer.

In the course of the social session which followed the dinner, there was some excellent speaking. All the branch managers reported splendid business and were enthusiastic as to prospects of "Quality Tires."

THE RUBBER CLUB OF AMERICA HAS PERMANENT OFFICE.

In accordance with the recommendation of the Executive Committee and the approval of the directors, a permanent office of the Rubber Club of America has been established at 354 Fourth avenue, New York, occupying a portion of the offices of the Silk Association of America. This new office will hereafter be the center of the activities of the Rubber Club and is in charge of Mr. E. S. Vorhis, who has been appointed Club Secretary. It is expected that with these new facilities the work of the Rubber Club will be broadened and extended and will become an instrument of great usefulness and benefit to its members and the trade at large.

INSTALLING GENERAL ELECTRIC CO. MOTORS.

The installation of new machinery in the Fisk Rubber Co.'s works at Chicopee Falls, Massachusetts, will include a 150 h. p. motor, two 400 h. p. motors and switchboard apparatus, ordered from the General Electric Co. This company is doing an enormous business in the way of installing its motors in all sorts of industrial institutions—cement companies, biscuit companies, printing concerns, soap factories—all over the country, as well as in the power plants of a great many railroads.

STATEMENT OF THE UNITED STATES TIRE CO.

The United States Tire Co., incorporated under the laws of New York, has filed with the Massachusetts secretary of state a statement of its financial condition, dated May 28, 1913. A comparison is shown below of this statement and that made by the company in 1912:

ASSETS.	May 28, 1913.	March 1, 1912.
Real estate	.....	$41,784
Real estate and investment	$330,475	....
Machinery, fixtures, etc	.....	120,183
Material, stock in process and equipment	9,395,452	2,981,686
Cash and debts receivable	4,193,728	2,535,540
Total	$13,919,655	$5,679,193
LIABILITIES:		
Capital stock	$500,000	$500,000
Accounts payable	12,925,512	5,148,785
Surplus, reserve	494,143	30,408
Total	$13,919,655	$5,679,193

OFFICIALS OF THE REPUBLIC RUBBER CO.

A new and most favorable connection has been made by William H. Scheel, of 159 Maiden lane, New York, with the Societé des Blancs de Zinc de la Mediterranée, noted producers of zinc oxide. This step is due to increased calls that Mr. Scheel has had for these goods, which are especially adapted for the use of tire manufacturers, many of whom have already substantially testified their appreciation of this particular brand of oxide.

In arranging to care for the increased business anticipated for the coming fall, the Monatiquot Rubber Works Co., of South Braintree, Massachusetts, has increased its power equipment by the installation of another boiler, and its plant by the addition of a new boiler house. This company manufactures Naturized rubber, a product so much in demand by the trade as to necessitate the day and night operation of its factory.

The Firestone Tire and Rubber Co. is offering to its dealers, free of charge, imprinted metal or muslin road signs. This enables the dealer to mark all the highways leading into his town, and the motorist in need of a tire or other sundry is thus directed right to the dealer's door—which incidentally gives the dealer a fine type of free advertising.

The Danversport Rubber Co. has recently changed its Boston offices to 79 Milk street, where it is most favorably located. Under the direction of J. C. Walton, president and treasurer, this company has made material progress.

H. L. Alperin, 45 W. Canton street, Boston, has developed an extensive business in waste rubber and is now among the important operators in that city.

The Rubber Step Manufacturing Co., Exeter, New Hampshire, which makes a line of specialties on order for the trade, has added to its output a line of molded specialties, this new department being under the management of William F. Stearns, a rubber man of wide and successful experience.

The Walpole Tire and Rubber Co., of Walpole, Massachusetts, at a recent meeting of its directors, decided to defer the quarterly payment of 1¾ per cent. on its preferred stock, and passed the usual quarterly dividend of 1 per cent. on its common stock. This action is attributed to the recent failure of the Atlantic National Bank of Providence, which has interfered temporarily with the company's plans for financing the large increase of business that has recently come to it. The company has sent out a circular to its stockholders in which the following paragraph appears:

"Your company has had an unusual increase in the amount of business tendered to it and this expansion we have found extremely hard to finance, owing to the small available working capital the company now has on hand. The issue of notes which was recently offered to the stockholders to provide an adequate working capital, which would place the company in an independent position as regards its bank loans, did not meet with the success anticipated. This is one of the reasons for our feeling that it is to the company's best interest to retain at the present time all of its cash in hand."

Telling the news is all right, provided it is correct. An instance of mistaking shadow for substance has recently occurred, in the printing by the daily press of a report to the effect that the Hood Rubber Co. had decided to discontinue the manufacture of tires and had closed out its entire stock. Tho the report did not appear in this journal, The India Rubber World is authorized to contradict it.

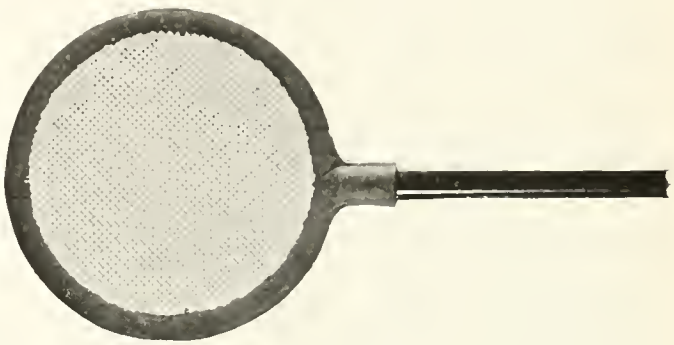
A Business Firm in a Latin-American country informs an American consulate that it desires to be put in touch with American manufacturers of raincoats. The report is No. 11083.

Mr. D. A. Cutler is now associated with the Acushnet Process Co. of New Bedford, Massachusetts, and has become an active member of that corporation.

The Standard Woven Fabric Co., formerly located at Worcester, is now established in its new factory at Framingham, Massachusetts, where, with every facility and equipment tending to promote quality and economy of production, it will be able to serve the trade on a much larger scale with not only the brake lining, woven belting and hose fabrics to which its attention has in the past been directed, but also with a complete line of woven fabrics for mechanical purposes.

A SANITARY "SWATTER."

A Sanitary Insect Destroyer is one of the latest inventions in which is embodied the use of rubber; and we illustrate herewith such an article—manufactured by the Rubber Step Manufacturing Co., of Exeter, New Hampshire—which is sure to meet with appreciation because of the effective manner in which it disposes of flies, mosquitoes and other of the insect pests of the summer months. A fly-swatter has become now almost a household necessity, and this particular style—the rubber edge of which is of sufficient weight that a severe blow can be dealt—includes among its features of special merit a flexible handle which can be detached from the regular wooden member, making it possible to wash the destroyer in hot water or antiseptic solution. The "swatter" is protected by patents issued during this year in the United States and Canada.



PNEUMATIC TIRES MADE OF HORSEHAIR.

A thousand people of all nationalities are working all the time on some substitute for the pneumatic tire now in general use. A couple of Frenchmen have hit on something different from the rest. They have taken out a patent for a resilient tire to be made of sheets or bands of compressed horsehair wound around a core; this core may be either solid or hollow metal, or it may be a rubber air chamber, or may consist of still more compressed horsehair. There may be few or many layers of horsehair, an outside cover being made of canvas; but the body of the tire is to be of horsehair, and it is from that article that its resiliency is to come.

This is certainly adding insult to injury; not only is the poor old horse driven out of his job by the motor car, but his mane and tail are to be plucked to constitute the tires. Why not go a few steps further and make the rims out of compressed horsehoofs, and the spokes out of his ribs, and upholster the car with the poor old fellow's hide?

A number of new general specifications are now being issued by the United States Navy Department, superseding those hitherto in force. The first instalment of these has come to hand and will be dealt with in the next issue.

MILLER STOCK TO BE INCREASED TO $2,000,000.

It has been decided by the stockholders of the Miller Rubber Co., Akron, Ohio, to increase the stock from $1,000,000 to $2,000,000; $500,000 to be 7 per cent. cumulative preferred stock, which is to be sold at once to raise funds to take care of the rapidly increasing business, and $500,000 to be common stock which is to be placed in the treasury for future disposition.

SUPERINTENDENTS OF THE CANADIAN CONSOLIDATED.

The picture shown below was taken at the convention of the superintendents of the Canadian Consolidated Rubber Co., Limited, which was held recently at the factory of the Granby Rubber Co., Limited, Granby, Quebec. From left to right they are as follows: D. A. Fisher, superintendent of the Canadian Rubber Co., Montreal; A. D. Weber, sales department, Canadian Consolidated Rubber Co., Montreal; John H. Pearce, Sr., general superintendent of the same company; Walter R. Legge, secretary-treasurer of the Granby Rubber Co.; P. Y. Smiley, superintendent of the Merchants Rubber Co., Berlin, Ontario;

Superintendents of the Canadian Consolidated Rubber Co., Limited.

C. K. Hutchinson, Canadian Consolidated; F. W. Kramer, superintendent of the Dominion Rubber Co., St. Jerome, Quebec; John H. Pearce, Jr., superintendent of the Granby Company; I. W. Kuehner, superintendent of the Maple Leaf Rubber Co., Port Dalhousie, Ontario; F. R. Fogerty, superintendent of the Granby Last Factory, and C. S. Johnson, of the Granby company.

These conventions are held monthly at the various mills of the Canadian Consolidated Rubber Co., Limited, and are of undoubted benefit to the superintendents of the factories.

DIVIDENDS PAID BY RUBBER COMPANIES.

The Hood Rubber Co., Watertown, Massachusetts, has declared a quarterly dividend of 1¾ per cent. on its preferred stock, payable August 1 to stock of record on July 31.

The Firestone Tire and Rubber Co., of Akron, Ohio, paid on July 15 the usual quarterly dividend of 2½ per cent. on its common and 1¾ per cent. on its preferred stock.

The Lee Tire and Rubber Co., Conshohocken, Pennsylvania, paid on July 10 its regular quarterly dividend of 1¾ per cent.

The Batavia Rubber Co., of Batavia, New York, has declared the regular quarterly dividend of 1½ per cent. on its preferred and 1 per cent. regular on its common, with ½ per cent. additional on the common.

The United States Rubber Co. paid on July 31 a quarterly dividend of 2 per cent. on its first preferred stock and a quarterly dividend of 1½ per cent. on its common stock.

TRADE NEWS NOTES.

In the competition between Newark, Columbus and Chillicothe, Ohio, as a site for the new plant of the Pharis Tire and Rubber Co., of Columbus, Ohio, the first named city has been selected as offering the greatest advantages, and it is soon to have a tire factory equipped at a cost approximating $30,000.

The Vulcan Rubber Co., of Erie, Pennsylvania, which has been incorporated for $200,000, and which has been engaged in the manufacture of rubber goods and inner tubes, is now to take up on a large scale the manufacture of tires for commercial vehicles. These tires are to follow a design made by C. A. Swinehart, the new general manager, who, with H. F. Burger, has recently purchased an interest in the company. Both Mr. Swinehart and Mr. Burger were formerly connected with the Swinehart Tire and Rubber Co., of Akron, Ohio, the former for several years, in the capacity of sales manager.

The Goodyear Manufacturing Raincoat Co., of New York City, recently incorporated with a capital stock of $100,000, expects to secure a plant—probably in New Jersey—in which to manufacture raincoats. The incorporators are F. D. Clayton and David Gross, of Englishtown, New Jersey, and William Schor, of New York City.

Reid Brothers, of Seattle, Washington, have been appointed Pacific Coast representatives of The Gordon Rubber Co., of Canton, Ohio.

Diamond and Goodrich tires are to be mutually represented in Pittsburgh, at 414 North Craig street, by The Diamond-Goodrich Pittsburgh branch, under the management of C. A. Dunham, who has for some time been manager of the agency formerly devoted exclusively to the Diamond Rubber Co.'s product.

A service plant, where tire, rim and wheel changes can be made on automobiles and trucks, is being erected for the Firestone Tire and Rubber Co. at Sixty-third street and West End avenue, New York.

The Monarch Rubber and Oil Cloth Co. has moved to the Drexel Building, Philadelphia, a better and more suitable location than that previously occupied at 41 North Seventh street.

The Motz Tire and Rubber Co., Boston, Massachusetts, has moved to 669 Boylston street from its former place of business at 4 Dundee street.

1084 Boylston street is the present Boston address of the Ajax-Grieb Rubber Co., located until recently at 15 Park square.

The Goodyear Tire and Rubber Co., of Akron, Ohio, has completed arrangements by which its product is to be distributed throughout Northwestern Russia, Messrs. Sorge & Sabeck, of Riga, having taken the agency for that city, as well as the management of the St. Petersburg agency recently opened by the Goodyear company.

A rubber manufacturing plant is to be established at Joplin, Missouri, by the Independent Rubber Co. lately incorporated in that city by J. L. and J. H. Coesir and B. H. and F. A. Wilbur. The capital stock of this new company is $10,000.

The Brookville Rubber Co., of Trenton, New Jersey—incorporated on June 12, under the laws of that State, with an authorized capital of $100,000, of which $35,000 has been paid in—has taken over the plant formerly operated by the Elwell Rubber Co., where it will manufacture, in addition to various lines of mechanical rubber goods for jobbers, a line of rubber soles and heels for the shoe trade. This latter will be the company's specialty, and will be disposed of directly to the manufacturers. The officers of the company are: Ezra Evans, president; Edward A. Fischer, secretary and treasurer, and Charles A. Joslin, general manager.

PERSONAL MENTION.

E. J. McMartin has been appointed manager of the Butte, Montana, branch of the Fisk Rubber Co., with the Minneapolis branch of which he was formerly connected.

J. G. Goudie is now in charge of the Detroit office of the Pennsylvania Rubber Co., of Jeannette, Pennsylvania, and is to cover for that company the states of Michigan and Ohio. Mr. Goudie has been for some time manager of the Diamond Rubber Co.'s Detroit branch.

Charles White has been promoted to the position of manager of the Detroit house of the Firestone Tire and Rubber Co., from a similar position in its office at Syracuse, New York.

J. S. Sleeper, who has recently become sales manager of the Colonial Printing Co., of Cleveland, Ohio, was formerly connected with the Firestone Tire and Rubber Co., as advertising manager.

W. A. Earley has been made manager of the Pittsburgh branch of the Motz Tire & Rubber Co., of Akron, Ohio.

J. J. Moriarty, at one time engaged in laboratory work in the plant of The B. F. Goodrich Co., later in the employ of the Pennsylvania Rubber Co. as assistant superintendent of its plant at Jeannette, Pennsylvania, and since that time general superintendent of the Canadian factory of the Goodyear Tire and Rubber Co., has lately been made superintendent of the factory of the Frontier Tire and Rubber Co., of Buffalo, New York.

Mr. M. B. Fetcher, formerly connected with the Maxwell Motor Co., has been engaged by the Findeisen & Kropf Manufacturing Co., makers of the Rayfield Carburetor, as manager of its branch recently moved to 1211 Woodward avenue, Detroit, Michigan.

Mr. Charles E. Wood, who for many years was connected with the New York Commercial Co., but now in the crude rubber business for himself at 26 Stone street, New York City, has taken the selling agency for The Derby Rubber Co. Mr. Wood will handle all of its several grades of reclaimed rubber in the West, as well as in New York and vicinity.

MR. W. E. BARKER'S EUROPEAN TRIP.

Mr. W. E. Barker, manager of sales of the United States Rubber Co., left for Europe on July 26, by the "Prinz Friedrich Wilhelm." During his trip he will visit Continental Europe and Great Britain, combining business with pleasure. He expects to return about the middle of September.

VACATION SCHEDULE OF UNITED STATES RUBBER CO.'S OFFICIALS.

The vacation schedule of the officials of the United States Rubber Co. is as follows:

Colonel S. P. Colt, president, is spending his vacation at Bristol, R. I., and later may take a short trip to Europe. Mr. James B. Ford, vice-president, will be yachting most of the time. Mr. Homer E. Sawyer, general manager of footwear business, after passing some time at Easthampton, expects to spend August at the Mount Washington, Bretton Woods, New Hampshire. Mr. W. E. Barker, manager of sales, has gone to Europe. Messrs. Palmer and Hichborn have sailed for Panama. Mr. Lester Leland, second vice-president, will remain for most of his vacation at Manchester-by-the-Sea. Mr. W. S. Ballou, director, is spending the time in Europe.

Mr. W. G. Parsons, treasurer, is commuting from Greenwich, Connecticut. Mr. S. Norris, secretary, expects to pass his vacation at Newport, Rhode Island, and to enjoy some automobile tours. Mr. N. Myers, counsel of the company, will take a trip to Europe, while Mr. John D. Carberry, assistant secretary, intends to do some automobile touring and to spend a short holiday in Vermont.

THE MYSTIC RUBBER CO.

The Mystic Rubber Co., with offices and factory at West Medford, Massachusetts, manufacturing high grade rubber sheeting for hospitals, dress shields and novelties, besides doing a large business in rubberizing of clothing, auto tops and ducking, reports a very satisfactory business and a steady and increasing demand for its product. The plant of this company, illustrated herewith, is located on the Mystic River,

Plant of the Mystic Rubber Co.

a short distance from Boston, and is possessed of splendid shipping facilities. This is one of the newer companies in the rubber industry, and it is well organized, its equipment is strictly up to date, and its management thoroughly efficient. It is a Massachusetts corporation, the officers of which are: Herman T. Dean, president; William B. Marshall, treasurer, and Herbert A. Derry, managing director.

FEDERAL RUBBER MFG. CO. AND BABY-CARRIAGE TIRES.

Baby-carriage tires to the amount of 8,900,000 feet—a quantity sufficient to equip about 875,000 infant vehicles—have been sold by The Federal Rubber Mfg. Co., of Milwaukee, thus far this year, a period of less than seven months; in addition to which it is stated by an officer of the company that it will produce 1,000,000 pneumatic tires.

THE STAR RUBBER COMPANY.

Having decided to sell only the jobbing trade, the Star Rubber Co., of Akron, has just reorganized its arrangements. W. W. Smith, formerly with the Firestone Tire and Rubber Co. and the Faultless Rubber Co., is the new manager of sales; the Eastern representative being Howard H. McGee, previously with the Seamless Rubber Co., the Davol Rubber Co. and the Ajax-Grieb Rubber Co. This firm makes a complete line of rubber druggists' sundries, having one of the most complete plants in that branch. George Clark has been appointed superintendent of the factory.

THE MADERO BROTHERS INCORPORATE.

Ernesto and Salvador Madero, brothers of the late President of Mexico, Francesco I. Madero, have incorporated under the laws of the State of New York, in the name of Madero Brothers, Incorporated. They intend to do a general commission, export and import business with Mexico, and will act as selling agents of the Madero guayule rubber interests there. They do not intend to take any part whatever in Mexican politics, which is not at all to be wondered at in view of the unhappy fate of their distinguished brother.

FIRE DEPARTMENT ANNUAL REPORT FOR 1912.

Among the features of the 1912 report of the New York City fire department is the statement that there is an urgent need for the replacement of fire hose. The total shortage in various sizes was 178,200 feet, the estimated cost of replacing which would be $202,370. The total purchases for 1912 represented 109,210 feet.

THE EUREKA'S NEW AGENT ON THE PACIFIC COAST.

The Eureka Fire Hose Manufacturing Co. has appointed Mr. W. S. Harley as its agent for fire department hose in the states of Montana, Oregon, Idaho and Washington, with offices in the Paulsen Building, Spokane, Washington.

NEW INCORPORATIONS.

The Askam Rubber Co., June 18, 1913; under the laws of Connecticut; authorized capital, $30,000. Incorporators: I. W. S. Hawes, William F. and Leroy Askam.

Otto Braunworth, Inc., July 23, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Albert Bracht, 751 East 229th street; Louis A. and Otto Braunworth—both of 3013 Kingsbridge Terrace, New York. Location of principal office, New York. To deal in rubber, etc.

Brookville Rubber Co., June 12, 1913; under the laws of New Jersey; authorized capital, $100,000. Incorporators: Edward A. Fischer, Ezra Evans and Charles A. Joslin—all of Trenton, New Jersey. To manufacture, purchase and sell all kinds of mechanical rubber goods.

The Canton Tire Saver Co., April 8, 1913; under the laws of Ohio; authorized capital, $25,000. Incorporators: J. A. and A. H. Calhoun and A. H. Wilson. To manufacture and sell a liquid preparation used in automobile tires to prevent and stop punctures, etc.

Carlton Raincoat Co., Inc., July 7, 1913; under the laws of New York; authorized capital, $100,000. Incorporators: John E. Mellon, 1011 East One Hundred and Seventy-eighth street, New York; Jacob H. Lampert and Otto Will, both of 1894 Lexington avenue, New York. Location of principal office, New York.

The Club Scrap Rubber and Tire Co., June 23, 1913; under the laws of New York; authorized capital, $2,500. Incorporators: Harry Dolkart, 210 Henry street; Abraham Kalbalkin, 318 East Thirteenth street, and William Adinoff, 69 East One Hundred and Eleventh street—all of New York.

The Diamond Rubber Co., April 28, 1913; under the laws of Ohio; authorized capital, $10,000. Incorporators: A. H. Marks, O. C. Barber and Guy E. Norwood. To manufacture, buy, sell and deal in and with rubber and rubber goods, etc.

Essenkay Products Co., May 28, 1913; under the laws of Illinois; authorized capital, $10,000. Incorporators: Franc D. Mayer, William L. Weber, and William R. Russell. To manufacture rubber and rubber compounds.

Eureka Tire Co., June 18, 1913; under the laws of New Jersey; authorized capital, $100,000. Incorporators: John E., Peter D. and Frank W. Thropp—all of Trenton, New Jersey. To control patents covering a special method of tire manufacture, with the intention of leasing to mills now making tires the right to use this patented method.

Goodyear Manufacturing Raincoat Co., Inc., June 25, 1913; under the laws of New York; authorized capital, $100,000. Incorporators: F. D. Clayton, David Gross—both of Englishtown, New Jersey, and William Schor, 15 East Sixteenth street, New York. Location of principal office, New York.

Hubmark Rubber Co., June 23, 1913; under the laws of Michigan; authorized capital, $25,000. Incorporators: Henry B. Hubbard, 1540 Seventy-second street, Brooklyn, New York; George H. Mayo, Brookline, Massachusetts, and William E. Barker, 366 Sanford avenue, Flushing, New York. Location of principal office, Detroit, Michigan. To purchase, sell and deal in rubber goods and footwear of all kinds, etc.

Independent Rubber Co., June 23, 1913; under the laws of Missouri; authorized capital, $10,000. Incorporators: John L. and James Coesir, and Arthur James—all of Joplin, Missouri. Location of principal office, Joplin, Missouri. To manufacture, repair, buy and sell automobile tires, tubes, etc.

Johnstown Rubber Co., June 5, 1913; under the laws of Pennsylvania; authorized capital, $25,000. Incorporators: Nelson MacReynolds, Thomas Y. Brent, and A. C. Simler—all of Johnstown, Pennsylvania. Location of principal office, Johnstown, Pennsylvania. To devulcanize and refine rubber, and to manufacture articles and merchandise.

Keaton Patents Co., Inc., June 14, 1913; under the laws of New York; authorized capital, $100,000. Incorporators: H. O. Coughlan, Joseph F. Curter, and J. R. Nevin—all of 34 Nassau street, New York. To carry on a tire business.

S. A. Levine & Co., Inc., June 25, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Samuel A. and Augusta Levine—both of Lawrence street, Spring Valley, New York, and Joseph Levine, 625 Hendrix street, Brooklyn, New York. Location of principal office, New York. To deal in raincoats and other rubberized goods.

The National Rubber Co., July 14, 1913; under the laws of Delaware; authorized capital, $2,500,000. Incorporators: F. R. Hansell, Philadelphia, Pennsylvania, George H. B. Martin, Camden, New Jersey, and G. U. Martin, Philadelphia, Pennsylvania. To manufacture and deal in automobiles, cars, wagons, boats, etc., together with their equipments.

Presto Garter Manufacturing Co., Inc., July 7, 1913; under the laws of New York; authorized capital, $3,000. Incorporators: Maurice Berkowitz, 822 Beck street, Harry Troupiansky, and Jacob Trow—both of 101 Chrystie street, New York.

The Puncturement Co., April 24, 1913; under the laws of Ohio; authorized capital, $1,000. Location of principal office, Cleveland, Ohio. To manufacture and deal in all articles to be used in connection with automobiles.

The Reliable Puncture Seal Co., May 26, 1913; under the laws of Ohio; authorized capital, $25,000. Location of principal office, Canton, Ohio. To manufacture and market motor vehicle accessories.

Ten Broeck Tire Co., June 18, 1913; under the laws of Delaware; authorized capital, $250,000. Incorporators: S. S. Adams, Jr., John B. Gray, and M. B. F. Hawkins—all of Wilmington, Delaware. To manufacture automobile tires, tubes, etc.

The Tire Place, Inc., July 2, 1913; under the laws of Delaware; authorized capital, $100,000. Incorporators: John G. Hughs, Haddonfield, New Jersey; Harry Fisher, Philadelphia, Pennsylvania, and Harry W. Davis, Wilmington, Delaware. To carry on business of manufacturing, dealing in automobile tires and fitting parts and sundries.

Trautman Corporation, July 14, 1913; under the laws of New York; authorized capital, $1,000. Incorporators: Evelyn M. Trautman, 191 Park Place, Florence A. Webb, 227 Flatbush avenue, and Charles Colsten, 903 Sixteenth street—all of Brooklyn, New York. Location of principal office, Brooklyn, New York. To carry on auto tire business.

Triumphant Tire Society, Inc., May 27, 1913; under the laws of New York; authorized capital, $500. Incorporators: Elbert R. De Tamble, Nyack, New York; Louise Bennett, 216 West 127th street, New York, and Esther A. Swanson, Kenilworth, New Jersey. Location of principal office, Manhattan. To manufacture and deal in rubber goods, tires, etc.

Vacuum Tire Corporation, July 17, 1913; under the laws of New York; authorized capital, $50,000. Incorporators: Williard J. Woodcock, 102 Gates avenue, Charles G. Ross, 66 Hancock street, Frederick L. B. Gartner, 150 Classon avenue—all of Brooklyn, New York. Location of principal office, Brooklyn, New York. To manufacture and deal in auto tires and accessories.

TRADE NEWS NOTES.

A new building 220 x 80 feet, and 4 stories high, with a floor space of nearly 74,000 square feet, is being added to the plant of the Continental Rubber Works at Erie, Pennsylvania.

The Electric Hose and Rubber Co., of Wilmington, Delaware, has arranged for the opening of a new store at Chicago

A new factory, with floor space of 10,000 square feet, is being erected at Seattle, Washington, by the Goodyear Tire and Rubber Co., of Akron, Ohio.

The Spokane Stamp Works, of Spokane, Washington, has recently purchased the entire plant and business of the Phoenix Stamp Works of that city, which had been in continuous operation in the manufacture of rubber stamps for 25 years. The Spokane Stamp Works has now the greatest capacity of any concern of its kind in that section of country.

Work has been started on a new four-story addition—intended for office and warehouse use—to the plant of the C. Roberts Rubber Co., New street, Newark, New Jersey. It is estimated that this addition will cost $27,000, and it will occupy a space of 50 x 100 feet.

A four-story concrete building, 50 x 200 feet, is being erected by The La Crosse Rubber Mills Co., of La Crosse, Wisconsin, as an addition to its present plant. This extra space will enable the company to increase its production of rubber boots and shoes very materially.

The stockholders of the Columbiana Rubber Co., of Youngstown, Ohio, recently voted an increase of the capital stock of that company, the additional capital being intended for use in the enlargement of the plant and for the purchase of new machinery. Papers have been filed by the company increasing the capital stock to $400,000, the former capitalization having been $100,000.

Brandt Bros., Indianapolis agents for Lozier and Chandler automobiles, have taken the agency for that city of Braender tires.

Plans have been prepared for a 32 x 224 feet addition to the plant of The Electric Hose and Rubber Co., at Wilmington, Delaware. This addition—which will enable the company to increase its output by about 25 per cent.—is to be of brick construction, two stories high.

The John A. Roebling's Sons Co., which includes among its manufactures large quantities of rubber insulated wire, has contracted for a new brick and steel building, 65 x 208 feet, to be added to its wire mill at Dollar Bay, Wisconsin.

A Massachusetts branch, intended to supply the Eastern manufacturers with their requirements in the way of cement, has been established by the St. Louis Rubber Cement Co., at 652 Summer street, West Lynn.

The new Philadelphia agency of the Hardman Tire and Rubber Co., of New York, is to be carried on under the management of J. A. McTaggart, with location at 1923 Sansom street.

Gutta Percha and Rubber Limited, formerly the Gutta Percha and Rubber Manufacturing Company, of Toronto, Limited, has just completed, and is now occupying another substantial addition to its factory group in the Parkdale section of the city. This is a six-story and basement building, 170 x 50 feet, with a one-story wing, giving a floor area of 60,000 square feet. The building is of reinforced concrete throughout with fire-proof doors, steel sashes, etc., and is equipped with all modern conveniences. The greater part of the newly acquired space is devoted to the increased production of Maltese Cross rubber footwear and Maltese Cross automobile tires.

A new Canadian company known as the Sterling Rubber Co., Ltd., is now manufacturing a line of drug sundries at Guelph, Canada. F. S. Friedman is the secretary and treasurer of the company.

A HANDSOME PENNSYLVANIA PANEL.

The world will never tire of handsome pictures, and many astute advertisers have taken advantage of this unescapable fact. The Pennsylvania Rubber Co., of Jeannette, Pennsylvania, has recently sent out to its customers a striking panel 15 inches wide and 40 inches long, showing the full length figure of a thoroughly modern young woman. She is evidently dressed for the opera or some other gala occasion, and she is quite dazzling in costume and millinery, with an opera cloak which the average woman would undoubtedly describe as "a dream," but to the hapless male who had to pay for it would doubtless prove a stern reality. The picture is lithographed in ten or twelve colors on heavy paper embossed so as to have the effect of canvas. It is a thoroughly artistic piece of work. The panel is entitled "Vecelia," a name derived from "V. C.," the trade mark of the Vacuum Cup Tires made by the company. "Vecelia" is a companion piece to "Jeannette," a striking panel sent out by the company a little while ago, showing the vacation girl sitting in her canoe. Both of these pictures were painted specially for the Pennsylvania Rubber Co. by the well-known artist, C. Everett Johnson.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta percha for the month of April, 1913, and for the first ten months of five fiscal years, beginning July 1:

Months.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	Total.
April, 1913	$188,529	$88,539	$655,466	$932,534
July-March	1,966,639	1,178,268	6,194,003	9,338,910
Total, 1912-13	$2,155,168	$1,266,807	$6,849,469	$10,271,444
Total, 1911-12	1,918,285	1,323,060	5,984,379	9,225,724
Total, 1910-11	1,742,683	1,894,282	5,198,295	8,835,260
Total, 1909-10	1,580,088	1,593,696	4,082,427	7,256,211
Total, 1908-09	1,225,882	1,139,271	3,165,096	5,530,249

The above heading "All Other Rubber," for the month of April, 1913, and for the first ten months of three fiscal years, beginning July 1, includes the following details relating to tires:

Months.	For Automobiles.	All Other.	Total.
April, 1913	$305,362	$48,275	$353,637
July-March	2,809,917	445,826	3,255,743
Total, 1912-13	$3,115,279	$494,101	$3,609,380
Total, 1911-12	2,063,603	467,290	2,530,893
Total, 1910-11	1,528,136	479,213	2,007,349

The India Rubber Trade in Great Britain.

(By Our Regular Correspondent.)

THE FALL IN PRICE OF RUBBER.

THIS topic continues an all-absorbing one, though it affects the peace of mind of the manufacturer less than it does that of the plantation shareholder. Now that best plantation brands have fallen appreciably under 3s. per pound, the opinions of those who predicted 3s. as the limit for this year have been falsified, and there is little disposition in the trade to cast the horoscope for even a couple of months ahead. Forgetful of the huge dividends that they have declared in recent years, plantation chairmen are complaining that everything is against rubber.

Renewed attention is directed to the potentialities of that material for pavement, which was so confidently pointed to three years ago as the future salvation of the planting industry. On this head some interesting details were given by Dr. Schidrowitz in a lecture at the recent Chemical Exhibition in London. I cannot follow him in detail here, but one of his main conclusions was that the useful life of rubber paving would have to extend to 40 or 50 years if it was to compete with wood or asphalt, when the first cost and maintenance are taken into account. The main difficulty in estimating comparative costs is that we are at present, as he points out, without any definite figures as to wear and tear of rubber roadways. Rubber pavement has, of course, been in use in London for a great number of years, but only on a small scale, under cover, and where its cost has been quite a secondary matter. I do not find that the trade is looking with any confidence to the rubber road as the main panacea for keeping up the price of raw rubber.

There is, however, a decided feeling that the use of rubber might be considerably extended in other directions, if some trouble were taken in the matter. During the last year or two, however, as a prominent manufacturer told me, the works have been too busily engaged filling orders on standard lines to pay much attention to experiment. Probably the valuable honorarium to be offered at the 1914 Exhibition for suggestions as to new applications of rubber, coupled with the decided slackness now being experienced in many branches, will act as the necessary stimulant on the manufacturers' brains.

At the same time, I may say there is no general feeling that a glut of raw rubber is impending, the opinion being expressed in authoritative quarters that the present lull in the demand will be succeeded by increased requirements, which will absorb supplies at prices certainly no lower than those at present ruling. The premium at which Brazilian fine stands over plantation crepe cannot be explained away on any basis except that of intrinsic quality. This fact is now being recognized by plantation shareholders, who had perforce to sadly admit that the reports of this or that eminent chemist to the contrary do not carry much weight in the trade. Schemes are now being mooted whereby plantation rubber may be valued and sold on a strict basis of quality, determined by analysis. This, of course, is by no means a new question, but it is doubtful whether it will receive more consideration at the hands of the trade in the near future than it has in the past. It will take a good deal to convince manufacturers that a system of scientific testing is better than, or as good as, inspection based on experience.

A more important matter, in their opinion, would be the adoption of a uniform method of coagulation, so as to bring the plantation industry more into line with the Brazilian. The efforts which are being made in certain quarters to induce large contractors, like the government departments and the railway companies, to specify plantation (all-British) rubber as an alternative to Brazilian fine, do not seem likely to meet with much success; more especially in view of recent events, which, rightly or wrongly, have caused blame to be attributed to plantation rubber having been used in place of fine Pará.

PROJECTED NEW USE FOR RUBBER.

In textile mills, the operation known as "kissing the shuttle" has in recent years come under condemnation as being unhygienic; and in England, at any rate, strong pressure has been brought upon the government authorities to make the practice illegal. Nothing definite, however, has as yet been done in this direction as the officials say they are not satisfied as to the evils said to ensue. In a recently patented contrivance to obviate the necessity of "kissing the shuttle," rubber forms an important part. If this —the Wilson-Shackleton Patent Shuttle Threader—came into extended use, a considerable amount of rubber would be required, though perhaps not sufficient to prevent overproduction.

The present position of affairs with regard to this device appears, however, to be that the mill owners are disinclined to incur the expense of its installation, until the adoption of something of the sort is made compulsory; so the immediate prospects of the patentees are not too bright.

A. O. FERGUSON & CO., LTD.

With regard to the legal action reported in my last letter, and in which Mr. A. O. Ferguson was involved, I may state that the above newly established proofing firm at Hollinwood, Manchester, will not be affected. The injunction referred specifically to the use of certain proofing formulæ, but these, of course, do not comprise all the formulæ which are available for carrying on a successful proofing business. It might be thought that there was hardly room for another business of the kind in a district which has for so long been associated with the proofing industry, but I may point out that the export trade, especially in proofed cloth, has largely developed in late years, the manufacturers not having to depend so much upon the home trade as was the case in former times. With regard to this branch generally, at the present time it cannot be said that things are particularly brisk. Last summer, of course, was exceptionally wet and a bumper trade was done. This year, however, is more favorable to the sale of tennis balls and garden hose.

PROBLEMS OF THE RUBBER INDUSTRY.

A paper under this title was read a few months ago before the Liverpool section of the Society of Chemical Industry, by Mr. H. E. Potts, who will be known as the author of a book on the chemistry of rubber manufacture. Various problems came under review, but very little was put forward as to their elucidation, which still remains a matter for the future. The problems of importance were grouped as follows: 1. Quality of natural raw rubber. 2. Synthetic rubber. 3. Vulcanization. 4. Regeneration.

With regard to raw rubber, the present conditions of sale were condemned; the establishment of a conditioning house, where representative samples of plantation rubber could be vulcanized as a guide to value of the bulk, being strongly recommended. Mr. Potts had nothing to say against synthetic rubber except its high cost of production. Under vulcanization, reference was made to the action of litharge, which has recently been shown to cause a rise of temperature, owing to chemical reaction in the mixing. The reclaiming of rubber after being finely pulverized was said to yield surprisingly good results. I doubt whether this statement would be endorsed by manufacturers and users generally. An important desideratum of the trade was some method

of accurately prognosticating the life of rubber goods directly they were made, so as to obviate dependence upon the time test. Of course, this is what we have all been waiting for the last fifty years, and it would seem as if the period of waiting will be further prolonged. Rubber, Mr. Potts said, in reply to a question, was dried at 110° C, which from a chemical point of view was a low temperature. According to the usual procedure in British rubber works, 110° C would be considered a very high temperature; about 110° F being the ordinary figure, though in certain special cases higher degrees are used. As I am referring to the Society of Chemical Industry at Liverpool, I may add that the annual meeting of the society took place there in July, when the president, Prof. Marston T. Bogert, of America, gave his address.

NEW WORKS.

Mr. E. L. Curbishley, lately connected with the Reinforced Rubber Co., Ltd., at Hull, has commenced manufacturing on his own account as the Lloyd Rubber Co. at West Didsbury, Manchester; and with the long experience of the trade he has behind him should do well. The business is at present confined to rubber heels, though it is intended shortly to put several other lines on the market. Mr. George Spencer, who was for some time associated with Mr. Curbishley at the Gorton Rubber Co.'s works, has started in the proofing business for himself, under the title of the Monarch Waterproof Co., at Victoria works, Prinblett street, Manchester, thus adding another house to this well-known quarter of the proofing trade. The works will be under the charge of Mr. F. Dale, who has had considerable experience. It is understood that rainproof as well as macintosh garments will be manufactured.

RUBBER PAVING IN LONDON.

AMONG the many prospective new uses for rubber, none is more important than its employment as a paving material. Hence special interest attaches to details lately published of results obtained at two noted London hotels and one railway station.

In this connection, two essential points call for attention—efficiency and durability. Some ten years ago rubber sheets two to three inches thick were laid in the courtyard of the Savoy Hotel, for the purpose of deadening the clatter of horses' hoofs and the noise of vehicles. These are reported as being in very fair condition, although the slabs do not in all cases fit very closely. Certain portions have been subjected to special wear, owing to the stopping and restarting of vehicles, particularly where studded tires were used. Oil dropping from motor cars has likewise affected the surface of the rubber paving, and it has been found necessary to relay some of the slabs, possibly owing to their not fitting well.

Claridge's Hotel, the resort of crowned heads and aristocratic travelers, has less exacting traffic than the Savoy, and its rubber paving, laid 13 years ago, is only about one inch thick. In no case has it been necessary to replace the paving, but the old slabs have been relaid, as they were working out of position. This was caused by their not having been securely fastened down in the first instance. At neither hotel has the pavement been slippery for horses.

Owing to the nature of the traffic, a better judgment can be formed of the possibilities of rubber as a road material from the results obtained at Euston station than from those recorded for the two hotels named.

At Euston the vehicles reach the station by one archway and leave by another, the roadway under the arches being rubber paved. The paving was originally put down in 1881, the slabs used having a thickness of two inches. Twenty-one years later the approach portion had been worn down to half an inch and the outgoing paving to an inch and a half. The former was re-laid, the slabs being fresh, while the rubber in the latter is the same that was originally put down thirty-two years ago. Its early renewal is, however, anticipated. This unequal wear has been attributed to the grit brought from outside by incoming vehicles, from which outgoing ones are relatively free.

The fact that rubber pavement has been in use for respectively 10, 13, 21 and 32 years in the cases quoted, is considered to show the durability of rubber paving. It is no longer in the experimental stage and it has been suggested that its efficacy should be tested on some busy thoroughfare; but, as it has been remarked, tests of durability take a long time, and necessitate the lapse of many years before their results can be conclusively established.

THE FUTURE OF THE RUBBER INDUSTRY.

MUCH interest has been shown in London in the recent lecture of Dr. Philip Schidrowitz at the Chemical Engineering Exhibition on the "Future of the Rubber Industry." The lecturer recalled the fact that the increased supplies attracted by the "boom" of three years ago again brought prices to a reasonable level. He considered, however, that some critical years were at hand, involving for manufacturers a period of interest and difficulty.

The problems of the future he briefly summarized as follows: "How much rubber may we expect on the market, and how will price be affected thereby? What are we going to do with all this rubber that is coming? Will it be for the benefit or to the detriment of the industry?"

Apart from the question as to whether the new Brazilian "Defence Law" would produce the anticipated results of increased yield and reduced cost, Dr. Schidrowitz expressed the opinion that the production of plantation rubber is sufficiently large to make it the dominant factor in the world's rubber markets. The future increase in that production might effect a radical change in the various branches of the industry. Assuming this year's plantation output as 50,000 tons, he estimated the quantity for 1915-16 as possibly 100,000 to 150,000 tons, and for 1920 as 200,000 to 300,000 tons. Even without any material increase from Brazil, the world's production in two or three years' time might be quite double that of the present day, while in six to seven years the supplies might have trebled or quadrupled.

The variable quality of plantation kinds has militated against their general use as compared with Brazilian hard fine, which, the lecturer remarked, is a commodity of known qualities. A scientific method of valuation he regarded as one of the most urgent requirements of the crude rubber industry.

SCIENTIFIC VALUATION.

The lecturer urged the need of some system by which manufacturers might test the value of samples offered to them. What might be expected from Amazonian rubber they know roughly, but they are puzzled by the variations in the plantation article. It is only possible for works with highly specialized technical laboratories to form a reliable opinion. A manufacturer with the ability to select a batch of rubber worth 10 to 25 per cent more than its price is in a position to pick and choose in his purchases.

The lecturer, while advocating the importance of standardization, considered that subject as less urgent than the establishment of a scientific basis of valuation.

In conclusion, he referred to the relatively small amount of £3,000, annually devoted to scientific investigation by the leading association of plantation rubber producers, although millions are at stake in the industry.

TO ENCOURAGE NEW USES OF RUBBER.

THE secretary of the Mincing Lane Tea & Rubber Share Brokers' Association, Limited, of London, has sent out a letter—which is reproduced below—to the plantation companies of the East, suggesting that they co-operate to encourage the devising of new ways in which rubber can be put to practical and profitable use.

THE MINCING LANE TEA & RUBBER SHARE BROKERS' ASSOCIATION, LTD.

6, MINCING LANE, LONDON, E. C., June 11, 1913.

To the Secretary.

Dear Sir:

The increasing output of rubber from the East, points to the advisability of those interested in rubber plantations organizing, with the object of fostering new uses for the product.

My committee would point out that an organization exists, both in India and Ceylon, for pushing the sale of tea from these countries, but so far no steps have been taken by the plantation rubber industry to find new outlets for the product.

The committee of this association, in order to give some incentive to place rubber to new uses, proposes to offer one hundred guineas at the Rubber Exhibition to be held in London next year, for the best new use for rubber.

It has been in the mind of the committee that if each individual company took a small interest in the object of pushing plantation rubber, it would probably result in a larger consumption, and it is suggested that an association be formed with a view to achieving this end.

There are some 530 rubber companies mentioned in the new book about to be published by this association, and if each company would subscribe a small amount, say 10s. for every £1,000 capital, to such a scheme, a fair sum would be available, and, with a practical committee would be in a position to consider any scheme, such as laying experimental rubber roads, etc., and if thought desirable to foster such enterprises.

As there would be no promotion expenses in forming such an association, all moneys subscribed would be available for expenditure for practical benefit to the industry.

My committee will willingly subscribe £50 to such an association, and will be pleased to hear the views of your directors on the proposition.

Should a sufficient number of approving replies be received, my committee are prepared to take further steps to formulate a practical scheme.

By Order of the Board,

A. KENDALL, Secretary.

RUBBER AT THE LONDON BUILDING EXHIBITION.

Rubber occupied a leading position at the recent Building Exhibition, held at Olympia, London. Its various uses in connection with floor covering were illustrated by the exhibit of the India Rubber Flooring Co., of London, which likewise showed mosaic tiles of rubber.

Another prominent exhibit was that of the India Rubber, Gutta Percha and Telegraph Works Co., of Silvertown, which displayed a full line of its products applicable to the building industry.

Noticeable among the articles which attracted attention were rubber stair treads, which have in England practically superseded those made of brass.

There was a full exhibit of the wall protecting appliances known in England as "Damp Courses," which were shown by 17 firms. Storm- and rain-proof roofing was likewise an item of interest.

It has been remarked that the use of rubber in the building industry is making progress, but various misconceptions have to be overcome, arising from insufficient acquaintance with the properties of the article.

NEW USE FOR BALLOON MATERIALS.

Recent European fashion journals report the introduction for wear in traveling and at the seaside of dust cloaks composed of the material used for balloons. They are of course provided with ventilation.

AN ENGLISH VIEW OF PROSPECTIVE RUBBER CONSUMPTION.

In discussing the question of future rubber consumption, the "Economist" of London remarks:

"If prices fall to 2s. a pound, it is perhaps not unreasonable to assume that consumption will continue to increase in the existing uses of rubber, and rise, perhaps, to 150,000 tons or even 200,000 in a few years, for as prices fall, not only will the consumption of rubber goods increase, but also genuine, good rubber will be substituted for the poor and composite materials which so frequently masquerade as 'rubber.'

"Unless, however, a very large demand arises for new industrial purposes which are not yet apparent, it will be impossible to dispose of the enormous quantities mentioned except at very much lower prices than have ever yet been known in the rubber market. In these circumstances clearly one of two things must happen. Either large tracts of land that have been planted must be abandoned to the jungle, or else the cost of working the estates must fall to the neighborhood of 6d. a pound—a cost which has already been realized in favorable circumstances in Ceylon."

RUBBER SOLES FOR MALTSTERS.

German malt workers have found that the soles and heels of their wooden shoes were liable to make them fall on the slippery floors of malt houses. Felt soles and heels failed to fulfil expectations. Some thirty years ago rubber shoes were introduced and were found to answer the purpose intended, but the price was prohibitive; a pair of maltster's shoes coming as high as $10. A way out of the difficulty was found by putting rubber soles and heels on the wooden shoes, which thus cost much less than all-rubber shoes. This plan has since continued in vogue. In some cases the soles are provided with a rubber sponge foundation, which obviates any pressure on the malt.

DIRECT SHIPMENTS OF RUBBER TO NEW YORK.

MR. C. A. LAMPARD of London being a recognized authority on plantation rubber from the companies' standpoint, it is of interest to note his remarks at the recent meeting of the Malayalam Company, on the subject of direct shipments:

"I believe that the future developments in regard to rubber will necessitate our shipping the produce more freely than we have done hitherto to the market where it is consumed, and that we do not penalize our product by bringing it to this market and saddling it with a load of expenses, which are really unnecessary, when we have shipping facilities for selling it direct to the markets of consumption, and where, if we did that, it would meet with a very cordial reception."

In commenting on these remarks of Mr. Lampard, the "Financier" adds:

"The foregoing should serve as a hint to those who are interested in the preservation of the London rubber market, and a warning to the shipping ring, which, by its exorbitant freight charges, threatens the life of the goose which lays the golden eggs. It was prominently stated by large American rubber consumers at the late exhibition in New York that they could obtain supplies at less cost and of a more satisfactory character by purchasing the same on the spot, and shipping direct from mid-eastern ports. It was furthermore complained that the consignment of plantation rubber to London and the subsequent handling and sorting which it underwent before reshipment sometimes resulted in such a mixup of plantation grades as no manufacturer cared to accept. Needless to say, such results are very prejudicial to plantation rubber as a whole, exaggerating as they do the lack of uniformity in the cultivated product."

Some Rubber Interests in Europe.

GERMAN PRODUCTION OF TIRES.

ACCORDING to statistics lately published, the German production of rubber goods some years ago represented $75,000,000. In 1911 the production of tires alone was estimated at about $34,000,000, including: automobile tires, $17,500,000; bicycle tires, $10,000,000, and solid tires, $4,500,000. In the manufacture of tires there were 8,310 hands engaged, with total wages exceeding $2,500,000.

RUBBER INVESTIGATION IN GERMANY.

Dr. Fritz Frank, of the Henriques Chemical Laboratory, Berlin, has received from the Jager Endowment a sum equalling $750 for the prosecution of a work regarding the composition and proportion of the albuminous substances in latex and in rubber.

FRANKFURT ASBESTOS MANUFACTURING COMPANY.

The annual report for 1912 shows that the amounts written off in accordance with the resolution of the general meeting of May 29, 1912, equaled $150,000. It is proposed to transfer the net profit for 1912 to the reserve and guarantee accounts.

GOOD DIVIDEND OF LEIPZIG COMPANY.

The Philip Penin Rubber Manufacturing Co., of Leipzig, reports favorable conditions. After liberal allowances for various reserve accounts, a dividend of 25 per cent. has been declared.

LIVERPOOL RUBBER TRADE WITH THE UNITED STATES.

Returns of crude rubber exports from Liverpool to the United States show for 1912 a reduction from those of 1911. The figures are: 1911, $10,548,240; 1912, $8,299,515. This falling off is attributed to the increased demand for plantation rubber in the States, which affected the shipments from Liverpool of African and other descriptions, for which that port is both an importing and exporting center.

HUNGARIAN COMPANY TO MAKE TIRES.

Under the auspices of the Hungarian government, the Matador Rubber and Balata Works, of Pressburg, Hungary, are enlarging their plant by the addition of a tire factory.

LIBERIAN RUBBER PRODUCTION.

As a large percentage of the rubber produced in Liberia was carried across the borders by natives and disposed of in neighboring European colonies, the total production cannot be accurately stated. The quantity exported in 1912 was, however, 93,822 pounds.

The Liberian Rubber Corporation, an English company, has a concession for gathering rubber in Liberia. A rubber plantation was started some years ago on modern lines, about 25 miles from Monrovia. Out of 300,000 trees set out in this plantation, 9,000 are now ready for tapping. A good quality of crude rubber is expected if a careful oversight is exercised of tapping and gathering. This is the only attempt at cultivating rubber trees made in Liberia.

ITALY'S RUBBER TRADE.

According to a report from Consul General James A. Smith, of Genoa, the Italian imports of crude rubber and gutta percha amounted in 1911 to $7,939,692 and in 1912 to $9,009,240. Of these amounts the United States furnished, respectively, $303,203 and $228,126.

PROGRESS OF DANISH CABLE CO.

The Nordiske Kabel og Traadfabriker (Northern Cable and Wire Factory), of Copenhagen, has paid for 1912 a dividend of 7 per cent. upon its enlarged capital equalling $600,000. Consumption of its products is said to be increasing in Denmark, and the installation of rubber, as well as spinning machinery, has been augmented. Additional premises for the manufacture of high tension cables are being at present erected.

NEW RUSSIAN ASBESTOS SYNDICATE.

ACCORDING to a communication from a correspondent of the "Gummi-Zeitung," five of the most important Russian asbestos firms have formed a syndicate. The yield of Russian asbestos has much increased in the last five years, owing to the large demand for export and the increased industrial employment of the article in Russia. The Ural production has attained unprecedented importance, having reached last year the quantity of 15,000 tons, due to some firms having doubled or tripled their output. Three quarters of the entire yield is exported, and one quarter used in Russia, the latter proportion chiefly composed of lower grades.

Russia supplies only a small portion of the American import of asbestos, the figures for 1911 having been: Canada, 56,950 tons; Germany, 123 tons; Russia, 50 tons. Russia had furnished in 1909, 45 tons and in 1910, 92 tons.

HAVRE'S TRADE IN RUBBER.

Mr. John B. Osborne, United States Consul at Havre, France, contributes a report on the commerce and industries of that port in the June 11 issue of the "Daily Consular and Trade Reports" which is a valuable document, as it goes much into detail in regard to the business of that important town. But there is one paragraph—given below—that is particularly interesting to the rubber trade, as it refers to the amount of rubber that passes through that port each year:

In recent years about one-half of the total rubber imports of France have been entered at Havre. In 1911 the value of the Havre imports of this article in the general commerce was no less than $26,762,000, surpassed only by the valuation of the cotton imports in that year. The imports of 1912 were still heavier, being 24,344,275 pounds, with a probable valuation of about $28,130,000. The imports for consumption were far greater in 1912 than in the previous year, being 9,310.9 metric tons as compared with 8,692.2 metric tons in 1911.

The principal dealers in rubber in Havre do not come into direct contact with the French manufacturers, who are located outside this consular district almost exclusively; their work is to superintend the arrivals and shipments on behalf of houses in Brazil, England, and the United States. They receive the goods and attend to forwarding them, although they are often called upon to examine and classify the merchandise. At the same time they buy large quantities at the public auctions of rubber, which take place here once a month. Most of the rubber from the French Kongo is shipped to Havre and sold in this market. The quantities sold at auction are about 1,000 tons a year, the bulk of which is exported to the United States. The rubber industry is reported to be very prosperous, and local dealers say that the large manufacturers made big profits last year.

Quotations for rubber at Havre on December 31, 1911 and 1912, respectively, were as follows, per pound:

Kinds.	Dec. 31, 1911.	Dec. 31, 1912.	Rise (+) or decline (—).
Kongo:			*Per Cent.*
Upper-Oubangui	$1.04-$1.06	$0.98-$1.08	—3.73
Kotto	1.04- 1.04	.98- 1.08	—3.73
Sangha-Oubangui	1.03- 1.06	.98- 1.00	—5.76
Fine Para	1.02- 1.03	1.09- 1.10	+6.77

ANNUAL REPORT OF HENRIQUES LABORATORY, BERLIN.

AS will be recalled, the "Chemical Laboratory for Commerce and Industry," of Dr. Robert Henriques, Berlin, has been carried on since his death by his successors, Dr. Edward Marckwald and Dr. Fritz Frank. The special section devoted to rubber was established in April, 1910, under the name of "Central Rubber Bureau for the Colonies," and has just issued its third annual report.

Upon its removal to its present more commodious quarters at 88 Lützowstrasse, the rubber section was equipped with a vulcanizing boiler and regenerating plant, as well as grinding and sifting machinery. During the year under review, washing machinery on the system of Werner & Pfleiderer has been added. The number of plantation companies belonging to the Bureau has, within that period, increased from 24 to 26.

Cordial interest has been shown in the work of the Bureau by the German Colonial Office and its representatives at different points. A lecture delivered by Dr. Marckwald, dealing with his visit to the Usambara plantations and the measures proposed for improving the quality of the rubber produced, was attended by Dr. Schnee, Governor of German East Africa, and other important officials. In this lecture the cultivation of *Hevea* in suitable locations was advocated. Frequent communications were maintained by the Bureau with the various organizations in the German colonies.

TECHNICAL WORK.

Among the features of the technical work were the investigations as to the albumen content in rubber goods and the determination of albumen in crude rubber. Another feature was the investigation of the "Mengwerl" juice, used by the natives of East Africa in the coagulation of *Manihot* latex, in conjunction with other coagulants. Various other technical points were dealt with as more urgent work permitted.

GENERAL WORK.

Besides the strictly technical questions, a number of others of a more general character were taken up. Castor oil seeds from German New Guinea were found to yield an oil of first class quality, while a variety of drugs from the German possessions were also examined. Tests made with wild lemons from West Africa showed that they yielded 5 to 7 per cent. of citric acid, which can be used in the coagulation of rubber.

East African tests of manuring and soil had to be partially interrupted, in consequence of the difficulty experienced in procuring the necessary labor. The results obtained, however, showed that the rubber tree does not require a rich, heavy soil, but that the fineness and depth of the earth have a material effect upon growth and yield.

SYNTHETIC OR ARTIFICIAL RUBBER.

The so-called "fish-rubber" was examined, and found perfectly valueless. Regarding synthetic rubber, in confirmation of previous utterances of Dr. Marckwald, the situation is said to be that the production of synthetic rubber has been successful in the laboratory, and to a small extent in the factory. For its production, however, on a large scale, very important difficulties have to be overcome. The opinion is expressed that a parity of price with that of natural rubber may be expected in the future, but up to the present no way has been shown of obtaining a parity in quality, particularly as natural rubber, besides the rubber substance proper, contains other and important elements, the introduction of which into the artificial product has not so far been successfully accomplished.

ESTABLISHMENT OF STANDARD QUALITY.

At the conference of East African plantation companies which took place in April, Dr. Marckwald referred to the difficult position of the German East African plantations, advocating united action on the part of planters and planting companies as well as the establishment of a first-class standard quality. While these proposals encountered some opposition, they met with the expressed approval of such expert authority as Professor Zimmermann. The effect upon East African rubber of unskilful preparation is illustrated by the statement that from March to December, 1912, German market quotations for first class Pará rubber fell about 7 per cent., while the reduction on *Manihot* rubber was about 27 per cent. The trials of washing under water, which have been in progress for a year at the Bureau with Werner and Pfleiderer's automatic machine, have led to favorable results.

TESTS MADE.

In the rubber section, 214 tests were made; including: *Manihot Glaziovii*, 104; *Kickxia*, 47; *Ficus, etc.*, 18; *Hevea*, 20; *gutta* percha 7; balata, 3; other kinds, 15.

The following results are deduced from these tests:

1. That it is quite possible to obtain in German Africa *Manihot* rubber of first class quality.

2. That the *Manihot* rubbers obtained from latex, without the addition of coagulating agents, are only of medium quality.

3. That through the addition of certain salts in coagulation, rubbers of special nerve are obtained.

4. That the present method of the preliminary treatment of *Manihot* rubbers in German East Africa, through washing, etc., in very many cases has not the anticipated favorable effect either qualitatively or commercially. In commenting on these results it is remarked that rubbers coagulated with acetic acid were of medium quality, while the treatment of the rubbers with the roller produced unfavorable results.

COMPARATIVE RESULTS OF VARIOUS COAGULANTS.

Different coagulants were used with four groups of samples: 1, citric acid and calcium-phosphate; 2, magnesium-sulphate and citric acid; 3, magnesium-sulphate; 4, magnesia-salt. All these rubbers were much superior to the products obtained with chloride of calcium and acetic acid. Some rubbers were produced which in strength and nerve surpassed all products hitherto obtained. Citric acid, on account of its high market price, can only be used where there is abundance of wild lemons. Such, as has already been remarked, is the case in West Africa. On the other hand, magnesium-sulphate is an extremely cheap coagulant, a trial of which is recommended.

NEW COAGULATION PROCESS.

Attention is called to a new process of coagulation patented by Dr. Collosseus, based on the double transposition of the albumen components in the latex. Even when used cold, this process is said to be satisfactory, both as to speed and quantity. It is claimed that rubbers thus produced vulcanize in half the time required by others of like origin but differently prepared. Mechanical tests are said to have shown them to be of exceptional quality, the vulcanized product having considerable nerve. Such are a few of the salient points of this interesting report. Though dealing specially with the German colonies, it contains many features of general interest on the subject of rubber cultivation.

A GERMAN VIEW OF THE BRAZILIAN SITUATION.

In commenting upon the recent happenings in Brazil, the "Gummi Zeitung" expresses doubt as to the prospects of rubber goods manufacture in that country. Should the Brazilian industry, however, gradually acquire importance, the abstention of European countries, particularly Germany, from purchases of Brazilian rubber might be anticipated. It is added that a heavy loss for Brazil would be thus implied, as the consumption within that country of its rubber production is not to be seriously considered.

AUSTRIAN TALC ASSOCIATION.

ACCORDING to the booklet issued by the Austrian Talc Association (Association of Those Interested in Talc), an effort is being made by that body to promote the sale of the article in various industries. With this object a summary has been compiled of its industrial uses, among which rubber manufacture occupies a leading position. On this subject the report says:

"Talc is used for various purposes in the rubber industry, but a further extension of its use could be attained by its employment at the points of production, for the preservation of crude rubber against oxidation, by which the value of the rubber would be increased. The Association has approached the Brazilian government on this matter. Talc is used in rubber manufacture in vulcanization, and as a filling material for various rubber products. It is of special importance in the manufacture of cables and in that of insulating rings for electrical connections. For this purpose there is required a very light quality, with a considerable resistance to electricity, absolutely free from sand and other impurities. In the testing of current, any ring which contains even a small grain of sand is at once penetrated and becomes useless. Talc is likewise used for packing intended to resist heat, steam, acids and water."

This association does not engage in the sale of talc, but is prepared at all times to answer questions about the article and its sources of supply in Austria and Hungary. Its address is Schwarzenbergplatz 4, Vienna, Austria.

United States imports of talc (ground or prepared) varied of late years as follows: 1910, 18,158,871 pounds; 1911, 12,878,292 pounds; 1912, 20,465,942 pounds. The chief sources of imports were in 1911: Italy, 6,531,256 pounds; France, 3,580,501 pounds; Canada, 1,282,772 pounds; Austria-Hungary, 1,174,976 pounds.

Austria thus stands lowest among the larger sources of the American supplies of talc, but is evidently desirous of a larger share of United States trade.

THE RUBBER TRADE IN JAPAN.

By a Resident Correspondent.

JAPANESE INTERESTS IN MALAYA.

ACCORDING to recent statistics there are in the Malay Peninsula 87 Japanese rubber plantations, with a total area of 85,069 acres, of which 16,455 are under cultivation. The total investment of Japanese capital in Malaya is estimated at about $1,000,000. About $10,000,000 would, however, be required for the exploitation of the uncultivated holdings. Of the investors, two-thirds are small, planting being with them an additional occupation. They are consequently unable to wait several years for profits, and growing discouraged at the low price of rubber, are considering whether it would not be better to sell their plantations than to invest more money in them.

JAPANESE EMIGRATION.

By the latest official figures, the population of Japan is 69,148,980 and the area of the country 268,897 square miles. Four years' returns show the average yearly increase in population as 4.3 per cent. The young men of Japan have therefore been giving attention to emigration as an outlet for this growing population, being encouraged by the press in their aspirations. Instances are recorded of some of them having taken up rubber planting in the South Sea Islands, with satisfactory results.

Upon finally venturing to go to the Malay Peninsula they at first suffered from fever, but after vanquishing this and other difficulties, became successful planters and prominent among the local Japanese population.

A PLANTER'S OPINION.

An optimistic rubber planter lately said:

"Three problems are before the Japanese rubber planter: 1, artificial rubber; 2, white ants, and 3, future lower prices of rubber. With regard to the first, it is not considered as likely to rival Pará rubber, and even if it corresponded with the latter in chemical and physical conditions, would never rank with it as a practical industrial raw material. As to the second, if proper care is exercised on the plantation, serious damage need not be anticipated from this cause. With reference to the third, it may be anticipated that reduced prices will come in the near future, but this reduction will of itself bring about many new forms of consumption. The lower the price, the more will demand increase.

"No serious damage will ensue for rubber plantations unless the price descends below two shillings per pound.

"Rubber planting in the Malay Peninsula is certainly a profitable business, and the only problem is how to plant so as to make it as much so as possible."

The above is an optimistic opinion. Others of a pessimistic character have of late been expressed, based on the most recent conditions. However, Japanese planters are much encouraged by the report that Baron Shibuzawa, the most important business man in Tokio, has bought a plantation of 1,000 acres, and it is thought that his example will encourage other investors.

THE B. F. GOODRICH CO. MOVES TOKIO BRANCH.

The B. F. Goodrich Co. recently moved its Tokio branch to No. 1 Chome Yurakucho, Kojimachi, Tokio. It has been handling tires and other rubber goods for the last twelve years, and now contemplates importing full lines of automobile and cycle tires, belting, hose, packing and surgical goods; as well as specialties for railways, electric car works, paper mills, etc.

COMPARATIVE IMPORT STATISTICS.

The following are statistics of Japanese imports of rubber goods for 1911:

	Pounds	Value
Insulating Tape—		
United States	198,108	$75,161
Great Britain	20,679	13,627
Germany	5,415	1,689
Sheets—		
United States	66,088	67,217
Germany	37,676	22,215
Great Britain	4,244	6,354
Sweden	8,080	10,812
Switzerland	1,833	1,964
Tubes and Hose—		
United States	19,569	16,975
Germany	36,179	31,007
Great Britain	8,299	10,603
Rubber Webbings for Shoes—		
Germany	.....	49,370
Great Britain	.....	21,195
Rubber Cords and Threads—		
United States	.....	3,149
Germany	.....	4,352
Great Britain	.....	14,444
Other Rubber Goods—		
United States	.....	95,996
Germany	.....	140,211
Great Britain	.....	66,060
Overshoes .....(pairs)	40,293	19,852
Rubber shoes .....(pairs)	9,627	20,579
Air pillows .....(number)	24,207	13,606

All imports of overshoes were from the United States. Air pillows were mostly from Germany.

Some Rubber Planting Notes.

HON. E. ROSLING LEAVES CEYLON.

THE departure of the Hon. E. Rosling from Ceylon was the occasion of a farewell demonstration quite unusual.

Mr. Rosling was the head of the Dimbula Planting Association from 1897 to 1899, and of the Ceylon Planters' Association from 1900 to 1901, and from 1909 to 1910. He was one of the most prominent men in the Ceylon planting community and his departure has caused much regret. Satisfaction is expressed at the prospect of his continuing in England to further the interests of Ceylon.

Before leaving Ceylon for Europe he gave expression to his views as to cost of producing rubber. He said:

"As regards the cost of production in rubber, with up-to-date cultivation, trees growing older and a liberal period allowed for the renewal of the bark, I believe that Ceylon will produce its rubber cheaper than any other country.

"I should say that it is quite within the bounds of possibility that in the future the superintendent who cannot put his rubber f. o. b. for 8d. will be looked upon as a very expensive worker."

RESULTS OF RUBBER TAPPING IN CEYLON.

At a recent meeting of the Committee of Agricultural Experiments, held at Peradeniya, Ceylon, it was decided to keep records as to how many trees could be tapped per day in each experiment.

The chairman, Mr. R. N. Lyne, quoted figures showing the large average yield of the trees at Heneratgoda on the outside of the three small plantations there, indicating the beneficial effects of light and room. He exhibited diagrams showing how plantations could be laid out reproducing the conditions of these trees.

AMERICAN TRADE EMISSARY IN CEYLON AND INDIA.

Mr. Henry D. Baker, American consul at Nassau, is spending some eight months in India and Ceylon, with a view to investigating the opportunities for extending American trade with the East. Rubber forms part of his program. His reports will in due time be published by the United States Department of Commerce and Labor. Mr. Baker was formerly American consul at Hobart, Tasmania, and spent five years in collecting information in Australia and New Zealand.

RUBBER CHEMIST FOR CEYLON.

Mr. L. E. Campbell has entered upon his duties as assistant chemist to the Ceylon Rubber Research Committee.

The new expert's work, it is understood, will lie chiefly in the study of rubber trees and their diseases; and a committee of five planters will assist him. Local opinion is that much good should result from this new appointment, for the chemistry of the rubber industry calls for every care and research.

PRESIDENCY OF CEYLON ASSOCIATION.

Mr. Loudoun Shand has been re-elected president of the Ceylon Association, London, for another year.

THE ALL-CEYLON EXHIBITION.

Last year's All-Ceylon Exhibition has realized a surplus equaling nearly $2,000, which it is proposed to hold in anticipation of the next exhibition, scheduled for 1917.

CEYLON (PARA) RUBBER COMPANY, LIMITED.

At the recent London annual meeting of the Ceylon (Pará) Rubber Co., Limited, Mr. R. B. Magor, the chairman, expressed the conviction that in the course of a few years the cost of delivery in London will not exceed 1s. per pound. By that time, he remarked, the whole of the company's area will be in full bearing. This company was registered in 1904 and by 1910 had its land nearly all planted with rubber

ENGLISH VIEW OF THE FUTURE OF RUBBER.

At the annual meeting of the Rubber Growers' Association Mr. Noel Trotter, acting chairman, said:

"So long as the world's demand for rubber progresses in the way it has done in recent years, there can be little doubt that a very large further increase in supplies will be necessary to satisfy the growing requirements. For instance, we, in London, have before our eyes the enormous growth of the omnibus traffic, since horse-drawn conveyances were superseded by rubber-tired motor-buses. It is reported that shortly the existing public carrier vans will be scrapped and replaced by motor vans extending their sphere of direct delivery, and competing with the railways. The effect on our country roads will be appalling, but it all means more rubber."

JAVA RUBBER PRODUCTION.

Exports of rubber from Java for the year 1912 were 2,233,117 pounds, against 982,000 pounds in 1911. According to the report of the British acting consul for Java, this quantity was principally composed of *Ficus* and *Hevea*, very small quantities of Ceará and *Castilloa* having been produced.

RUBBER IN SUMATRA.

According to a British consular report, the area under rubber on the east coast of Sumatra at the end of 1912 was about 208,000 acres, divided as follows: British companies, 84,000; Dutch companies, 69,500; United States companies, 27,500; Belgian and other companies, 27,000; total 208,000 acres. It is estimated that there were 44 British companies working on the east coast, with a total issued capital equaling $26,500,000. Exports of rubber from the east coast of Sumatra were, in 1910, 539 tons; 1911, 813 tons; 1912 (estimated), 1,800 tons.

The report adds that the plantation rubber produced has, on the whole, shown careful preparation, while the prices realized have been good. It is thought that when the large areas planted are in full bearing the cost of production will be comparatively low.

RUBBER EXPORTS OF PORTUGUESE EAST AFRICA.

According to the report of Consul G. A. Chamberlain, Lourenço Marquez, the rubber exports of that province for 1912 represented the following values from the various ports:

Lourenço Marquez	$9,369
Inhambane	22,785
Chinde	2,661
Quelimane	6,687
Mozambique	41,903
Beira	55,317
Total	$138,722

It has been estimated that, with the extensive installation of machinery, the output of the province would exceed 500 tons annually.

Vine bark produces 4.97 per cent. of rubber, bone dry and free from resin; root bark producing 6.97 per cent.

PROPOSED RUBBER REFORMS IN PORTUGUESE COLONIES.

A measure which is under consideration by the Portuguese legislature provides for immunity from export tax, during twenty-five years, of rubber extracted from the *Ficus elastica*. Similar immunity would extend during fifteen years to *Hevea* and *Castilloa* rubber, and during ten years to *Manihot* and other varieties. Articles needed for the cultivation and tapping of rubber trees, and for the preparation of latex, it is proposed to admit free of duty.

THE TROPICAL AGRICULTURAL COLLEGE.

THE proposal to establish a Tropical Agricultural College still continues to be discussed in London. Sir Henry McCallum, the late governor of Ceylon, wrote to the "Times" advocating the claims of the island for such an institution. He urged that the whole of Ceylon is devoted to tropical agriculture, while the student would have an opportunity of obtaining a colloquial knowledge of the essential Tamil language by intercourse with the laborers, mostly of that race.

Another point brought forward by Sir Henry in favor of Ceylon is that the Peradeniya Gardens offer a unique and ready-made site.

Nor will Sir Henry be alone in his championship of Ceylon. The Hon. E. Rosling, before his recent departure from there for England, was appointed deputy of the Board of Agriculture, by the following resolution:

"That the Hon. Mr. E. Rosling be appointed deputy of the Board of Agriculture, Ceylon, to the London Committee, to arrange a deputation to the Secretary of State to urge the claims of Ceylon as a site for the Imperial College of Tropical Agriculture."

Mr. Rosling's views on the subject were expressed as follows: "If there is to be only one college, Ceylon is the only site for it. In Ceylon we have a rainfall varying from 25 inches to 200 inches; we have variations in elevation and soil, and we could grow almost every commercial product that could be grown in the tropics. Therefore, if a college were started here men could get practical experience at their doors; at any rate a short day's journey would take them into any one of the districts. We can only hope that the Secretary of State will view it in a similar light."

While the cause of Ceylon is being urged by Sir Henry McCallum, Sir Henry Blake, Hon. E. Rosling, and Mr. Crosbie-Roles, the claims of Trinidad and the West Indies are being put forward by Dr. Francis Watts, Sir Richard Morris, Mr. Norman Lamont and other advocates of that location for the college. According to the June issue of "Tropical Life," it was intended to hold an informal discussion between the representatives of Ceylon and those of the West Indies, with the view of further meetings. The readers of THE INDIA RUBBER WORLD will recall the editorial on the subject which appeared in the April issue on page 339.

The "Malay Mail" suggests the possibility of several colleges being required, in view of the wide field to be covered, adding that it would fain see a college in the West Indies, another in Ceylon or Southern India, another in Burmah, one in the Federated Malay States, and finally, one in Queensland to serve the needs of tropical Australia and the islands of Oceania. The Malay college would have no financial relations with the colonial scheme, being run and supported by the Federated States. In the concluding words of the article: "We have heaps to learn yet about the rubber tree, and almost as much about the coco-nut palm."

VALUE OF SCIENTIFIC RESEARCH TO RUBBER PLANTERS.

At the recent London meeting of the Consolidated Malay Rubber Estates, Limited, Mr. J. L. Loudoun Shand, the chairman, in reporting the contribution of £80 ($400) to the Malaya Research Fund, said:

"Various systems of tapping adopted have been under careful observation, and the distances at which our trees should be planted, methods of cultivation and prevention of diseases are all now carried out under scientific guidance. I should like to take this opportunity of saying how great I believe has been the benefit to the cultivation and preparation of rubber, which the light of science has conferred upon us; and I believe that no expenditure could have been more fully justified. We have learned much, but there is still much to learn as to the cultivation and manufacture of rubber."

BELGIAN RUBBER INTERESTS IN MALAYA AND SUMATRA.

IN a neat and attractive booklet of 88 pages, recalling the general features of the literature distributed by the Malaya Section of the New York Rubber Exhibition, Mr. Charles Grenier, editor of "Grenier's Rubber News," has dealt with the special subject of "Belgian Rubber Interests in Malaya and Sumatra." Being intended for distribution at the Ghent Exhibition, it is to a great extent in French, the most interesting parts of the work being in that language as well as English.

The most important Belgian rubber financial corporation is the Société Financière des Caoutchoucs, or Rubber Financial Company, which has a cultivated area of nearly 40,000 acres, including the holdings of some 10 companies, with estates in Malaya and Sumatra. Of these the most important is the Federated Malay States Rubber Co., Ltd., with headquarters at 21 Rue Arenberg, Antwerp. The area owned by this last named company is about 7,600 acres, nearly two-thirds of which is planted. Up to the end of January about 376,000 trees had been tapped.. An estimate of the yield for the season 1912-13 had been made as 1,000,000 pounds.

Another important company under Belgian control is the Kuala Lumpur Rubber Co., with a cultivated area of 5,000 acres, about half of which is in bearing.

Of the Sumatra estates controlled by the Société Financière, the Sennah Rubber Co. has a total cultivated area of 3,321 acres.

Belgian capital is thus finding an outlet in the Middle East and keeping in touch with the progress of rubber cultivation in that quarter.

THE FUTURE CONSUMPTION OF RUBBER.

The Batavia Plantation Investments, Limited, recently held a meeting in London, at which Mr. G. St. Lawrence Mowbray, chairman, said:

"The rubber industry is closely bound up with the motor business; indeed, it is the use of motors that has made it possible to transport rubber plantation supplies, and eventually rubber plantation crops, to and from estates that otherwise must have remained inaccessible jungle and wilderness. I am looking forward to the time when rubber will be enormously used not only for cycles and motor-cars, but in the manufacture of aeroplanes and waterplanes. There is another purpose to which it may be applied, and that is for spring buffers to railway carriages.

"We already have rubber flooring for business offices, courtyards of hotels, and other places—a practical reality which the reduction in price would bring into widespread use. Let us imagine, for instance, the Palm Court at Selfridge's, or the promenade at Olympia, floored with rubber, or go even further and picture to ourselves the Strand or Threadneedle street paved with it. We might then realize the ideal of a noiseless London. Just consider the quantity of rubber that would be required to pave the main streets of the City of London, and then conjecture how much more would be needed for the principal thoroughfares of our great provincial cities, and those of the Continent, and the United States of America. Well, even if the world's output of rubber did rise to the 300,000 tons per annum in 1919 that a well-informed writer estimates, I think there need be very little fear of lack of demand for it, and the cheaper it becomes the more of it will be required."

RUBBER ESTATE IN BURMA REORGANIZED.

Advices from Burma report that the estate of the Shevegyin Rubber Co. has been put on a proper basis, under the direction of Mr. W. R. Shelton Agar, the Gampola (Ceylon) planter. The estate has a new factory fully equipped for the preparation of rubber, which has cost the equivalent of $30,000.

HEVEA RUBBER IN BRITISH GUIANA.

THE accompanying illustrations show decided progress in Pará rubber planting in British Guiana. They are from photographs taken some forty miles up the Mazaruni river on the Bartica estate. This estate now has about 65,000 trees, and

Tapping Hevea Trees at Bartica Estate.

when those in the nursery are in place will have 100,000. Between 500 and 600 acres will be ready for tapping in the

Hevea Trees Two Years and Ten Months Old at Bartica Estate.

latter part of 1914. The trees show just as rapid growth and as notable wound response as has been seen in the Malay States.

NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

SOME developments of considerable importance in connection with the local rubber industry are foreshadowed by the formation of a new American company called the British Guiana Consolidated Co., Limited, whose offices are at Mills building, 35 Wall street, New York. The capital of this company, I find from the prospectus, is to be 300,000 shares at $5 each 7 per cent. preference stock, and 1,000,000 shares at $5 each common stock. The 7 per cent. preference stock is preferential as to dividend and assets, and furthermore will share equally with the common stock in any and all profit distributions after 10 per cent. per annum shall have been paid upon the latter. The company is described as a consolidation of certain interests, united with a view to simplifying and economizing operations in a number of industries, prominent among these being the cultivation of the Pará rubber tree. "This tree," says the prospectus, "in its native or uncultivated state, at present yields the best quality of rubber, but a larger proportion is of inferior rubber obtained from a tree producing what is known as balata. Trial plantations established at the Government Agricultural Stations, after upwards of four years' experimental cultivation, have so far demonstrated the suitability of the climate and soil of the colony for the successful growth of the Pará rubber tree, that some of the larger estates and also corporations organized exclusively for the purpose have begun the setting out of this species of tree on a commercial scale. With these assurances of success, this company purposes to follow the clearing of the forest by the systematic planting of rubber trees."

As regards the results which can be accomplished in rubber planting, the prospectus says: "The company's logging operations will clear about two acres of land per day, or in a year 700 acres. Out of this area, it is a safe assumption that 350 acres will be suitable for planting the superior grades of rubber. Now if the work of planting rubber follows close behind the clearing of the land, the entire 350 acres available will be planted within the first year of the company's operations. At the expiration of the third year, there would be somewhat over 1,000 acres planted with rubber. It is proposed, in this planting, to follow, as closely as local conditions permit, the Ceylon practice, which may be taken as the standard for the scientific growing of this class of rubber tree. After the eighth year there will be a steady increase in production until all trees reach a size sufficient to produce an annual yield of from one to three pounds."

YIELD OF BALATA.

In spite of the rumors of shortage of rain in the interior of the Colony, of which I wrote some time ago, and which I said last month had been substantiated, it appears that the impossibility of bleeding operations being carried out is not general. While it is perfectly true that the members of the expedition of the Demerara Rubber and Produce Co. in the Rupununi District have found the bullet trees on its grants building, and have consequently been unable to bleed them, it is nevertheless correct that balata is coming to town in large quantities from the grants of other parties operating in the same district. Only a few days ago, for instance, no less than 60,000 pounds of balata arrived from the Rupununi grants of Messrs. Bugle & Co., and more large consignments are expected shortly. News regarding the progress of the Demerara Rubber and Produce Co.'s expedition to the Rupununi District is hard to obtain. The director of the company, Mr. R. Morrison, as I wrote last month, has left the Colony. The superintendent of the expedition, Mr. Aethy, who followed Mr. Morrison to town, owing to the bleeders having absconded over the boundary into Brazil, has now left again to return to the bush, but he has not engaged any men to fill the places of those who have absconded.

The exports of balata from the colony continue to show a large increase over those during the corresponding period of last year. The amount shipped between January 1 and early in July was 256,881 pounds, as compared with 35,483 pounds in the same period of 1912.

There was a busy time one day recently at the office of the Official Receiver, when a large number of the creditors of the Amsterdam Balata Co., whose affairs are being administered by the Official Receiver, put in an appearance to receive the

further dividend of 4½ per cent. which has now been declared payable. The creditors consisted entirely of the laborers who were in the service of the company when it failed, and their representatives—their wives and female relatives—attended at the office and were paid on their behalf. The payments varied from thirty-three cents to $8, and the amount disbursed in that way exceeded $500, the proceeds of the sale of the company's property.

A GLIMPSE OF THE EXISTING CONDITIONS IN THE BALATA INDUSTRY IN DUTCH GUIANA.

By a Resident Correspondent.

UPON a recent trip into the interior of the Colony I had an opportunity of witnessing the felling operations carried on by one or two balata companies on their concessions in the Sara Creek district. This interesting method of gathering the latex from the fallen trees would prove highly remunerative to the concessionaires if experienced labor could be obtained, but owing to the fact that most of the workers so engaged are men with little or no practical knowledge of the business, on one hand, and because of a dislike for the method, on the other hand, the system has proved to

Balata Bleeders on Holiday in Paramaribo, D. G.

be rather costly so far. There is no doubt, however, that if a class of laborers could be procured possessing the necessary knowledge of felling and handling the trees, the present high cost in connection with this method of balata collecting could be greatly reduced. Until expert wood-cutters can be had to do the work, it is my opinion that the industry would be better safeguarded by continuing the old systems, viz.: ladder work and spur climbers. So far, this new craze of cutting down the trees has not brought about any marked increase in the colony's output; on the contrary it has been the source of no end of disputes between masters and servants, government officials and concession holders, and last but not least, it has been the occasion of very strong press comments. What the future has in store—so far as this system is concerned—time alone will prove.

There are many hardships associated with balata collecting in Dutch Guiana, and those who invest in the business can hardly realize the amount of labor and suffering endured by those sturdy sons of Africa, who are sometimes harshly and cruelly treated, and even robbed of their hard earnings for the profit of the speculators. For instance, the contracts (sometimes) drawn up between employer and employe are all one-sided; they are made up entirely in favor of the employer, and the bleeders in most cases are so illiterate as to consent to the terms of agreement without ever reading the contents of the document, having confidence in what is told them. The unfortunate men, eager to obtain the tempting advance, sign their own death warrant; they only realize the injustice when it is too late and the advances are all spent.

Balata contracts are tangled webs in Surinam and some of them have been the cause of much unpleasantness between the British Consul and the Colonial officials, for many of the men are British subjects from the neighboring colony of British Guiana. I do not pretend to say that the balata man is all virtue; he has his shortcomings, and if not watched will very often clear off with an advance, or, if he finds himself heavily indebted to his employer (with no ghost of a chance of clearing off that debt) he will, on opportunity, put many miles between himself and the colony. Notwithstanding this fact, the men are not unreasonable, and only require proper management. The police, who hold a strong arm over the laborers, can arrest them—by the laws of the colony—on the least suspicion. They are, practically speaking, under police supervision from the day they enter into contract with a balata firm; so, as one can see, the investor is thoroughly safe-guarded. Why, then, in the face of such protection, do the companies or individuals employing these men stoop so low as to take advantage of them by drawing up unfair and deceptive contracts? I cannot see the sense in such high-handed methods; they certainly call forth disapproval from all honest people, and cause endless trouble and dissatisfaction when the bleeders are once convinced that they have been "done."

In the early nineties when the industry was booming, Mr. Henry Benjamins (then a partner of the balata firm Von Hemert) was looked upon as a father by the balata bleeders in Surinam. What he said was law, and every man obeyed him implicitly. He was kind and generous, yet firm as a rock, and above board. It is to be deplored that this gentleman has retired from the business; the industry has lost a man who can never be replaced.

It may be interesting to know that the exploitation of a balata concession can safely be left entirely to the black foremen, who will get out of the laborer all that he is capable of accomplishing. Moreover, the men are docile; few or no quarrels occur among them, and obedience is secured without force or threats. Another subject of congratulation is the honest accounting for and security of every pound of balata taken from the concessions, and its absolutely safe transportation from the bush to the consignee at Paramaribo.

Looked at in whatever light we choose, we are driven to the conclusion that there is no place in tropical America where law and order and the rights of capital are more sacredly regarded than in Dutch Guiana, which is all the more reason why the companies should not resort to measures for robbing the laborer by means of dishonest contracts.

If the balata industry is to flourish in future, a better understanding between employer and laborer must be effected. It is painful to think that by the unscrupulous actions of some of the concerns the balata industry, which promises so much, may be destroyed, if proper legislation does not step in and correct the present iniquitous state of affairs.

With proper men at the head of companies, and suitable weather conditions, Dutch Guiana could produce enormous quantities of balata. For instance, from January 1 to April 30, 1912, when the drought was at its height, even then, the colony produced 7,750 kilograms (17,050 pounds). The weather conditions are somewhat better this year, but not yet satisfactory; still the production from January 1 to April 30 has been 83,343 kilograms (183,354 pounds), an increase of 75,593 kilograms (166,304 pounds) over the same period in 1912. This alone is sufficient proof that Dutch Guiana is a balata producer of no mean order, if she is only given a fair chance. With the advent of fresh blood, backed by sufficient capital, I predict quite a brilliant future for her balata industry.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED JUNE 3, 1913.

NO. 1,063,196. Automobile tire. W. F. Haas, Hartford, Conn.
1,063,205. Noiseless sole. E. L. Leonard, Woodward, Okla.
1,063,221. Tire. H. C. Seipp, Pittsburgh, Pa.
1,063,256. Life preserver. C. M. Hannis, Hudson, Mass.
1,063,290. Tire protector. J. T. Ryan, Vallejo, Cal., assignor to American Tire Armor Co., Phoenix, Ariz.
1,063,291. Armored pneumatic tire. J. T. Ryan, Vallejo, Cal., assignor to American Tire Armor Co., Phoenix, Ariz.
1,063,301. Pencil holder. H. W. Thomas, Charleroi, Pa.
1,063,359. Spring-rim for wheels. W. A. Langjahr, Plymouth, Wis.
1,063,407. Pneumatic horse collar. F. Batcheler, Bomarton, Tex.
1,063,465. Spring wheel. O. J. Olson, Courtenay, N. D.
1,063,480. Vehicle wheel rim. J. H. Wagenhorst, Akron, Ohio.
1,063,500. Demountable vehicle rim. P. B. Bosworth, assignor to the Firestone Tire & Rubber Co.—both of Akron, Ohio.
1,063,531. Rim construction. J. A. Glenn, Albany, N. Y.
1,063,578. Tire or tread therefor. W. R. Morrison, Chicago, Ill.
1,063,594. Resilient vehicle wheel. W. M. Resse, Los Angeles, Cal.
1,063,648. Demountable rim for vehicle wheels. J. W. Broderick, Newark, N. J.
1,063,737. Milking machine. R. D. Roth, Gettysburg, Pa.
1,063,838. Tire patching tool. W. O. Shaw, St. Paul, Minn.
1,063,888. Tire. V. Lindholm, Hoquiam, Wash.
1,063,892. Vehicle wheel. T. Poss, Aurora, Ill.
1,063,922. Abdominal belt or supporter. A. B. Kendrick, East Orange, N. J., assignor to J. R. Kendrick Co., Inc. Philadelphia, Pa.

Trade Marks.

67,915. Girten-Myers Supply Co., Houston, Tex. The word *Alamo*. Rubber hose, packing and valves.
69,594. Glocker Sanitary Jar Co., Wilmington, Del. The initials *O. K.* Fruit jar rings.
70,161. "Semperit" Oesterreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna XIII, Austria. The word *Semperit*. Rubber erasers.
70,214. M. & S. Peller, New York. The word "Duckend." Suspenders.

ISSUED JUNE 10, 1913.

1,063,972. Vehicle tire. J. C. Hollings, assignor to F. S. Alden, Boston, Mass.
1,064,035. Tire making machine. T. J. Whalen, New Brunswick, N. J., assignor to Harry M. Marble, Newark, N. J.
1,064,051. Toy effigy. M. M. Buckler, Springfield, Mass.
1,064,066. Vehicle wheel rim. R. W. Funk, Weehawken, N. J., assignor to R. W. Funk, Inc., New York.
1,064,097. Cushion tire. M. J. Selzer, Akron, Ohio.
1,064,100. Tire protector. C. A. Smith, New Orleans, La.
1,064,119. Vehicle tire. W. E. Anderson, St. Louis, Mo.
1,064,128. Vehicle wheel. J. Callan, Ray, Ariz.
1,064,129. Resilient wheel. W. L. Chrysler, Eugene, Ore., assignor to Portland Automobile Wheel Co., Portland, Ore.
1,064,189. Vehicle wheel. M. Berardini, Philadelphia, Pa.
1,064,212. Attaching device for rubber heels. A. B. Heimbach, Duluth, Minn.
1,064,240. Combined aeroplane and dirigible balloon. N. W. Mohr, San Francisco, Cal.
1,064,342. Demountable rim. J. D. Kennedy, New Kensington, Pa.
1,064,381. Resilient tire. M. C. Rogers, Williams, Cal.
1,064,391. Pneumatic tire. E. Stanley, Des Moines, Iowa.
1,064,395. Pneumatic cushioning device for vehicles. C. L. Sutton, Oakland, Iowa.
1,064,438. Spring wheel. F. W. Bristow, Dorrisville, Ill.
1,064,489. Milking machine. R. Kennedy, Glasgow, Scotland.
1,064,526. Automatic relief valve for pneumatic tires. S. P. Noe, Ocean Grove, N. J.
1,064,611. Tire. W. G. Chipley, New Orleans, La., assignor to Pneumatic Rim & Tire Co., Wilmington, Del.
1,064,643. Plug for tires. D. P. Harris, New York.
1,064,661. Unperforable metallic band for tires. G. A. V. Longuemare, Ste. Adress, France.

Design.

44,164. Tire. W. R. Blowers, Toronto, Ont., Canada.

Trade Mark.

69,817. P. Bailly & Cie, Paris, France. The word *Guyot*. Shoulder braces and suspenders.

ISSUED JUNE 17, 1913.

1,064,721. Vulcanizing press. J. R. Gammeter, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
1,064,743. Life preserver. I. F. Kepler, Akron, Ohio, assignor to The B. F. Goodrich Co., New York.
1,064,766. Vehicle tire. L. S. Pfouts, Canton, Ohio.
1,064,769. Preparation for automatically sealing punctures in pneumatic tires. G. H. Price, Queenstown, Cape Colony.
1,064,862. Hose connection for lawns. J. S. Sharp, Honolulu, Hawaii.
1,064,883. Hose reel. E. Bergland, Madras, Ore.
1,064,896. Spring wheel. C. D. Freeman and R. W. Cheesbrough, Bogus, Cal.
1,064,903. Body brace with suspender attachment. T. B. Hardiman, Patoka, Ind.
1,065,038. Antileak tire compound. M. F. Fetty, assignor to C. F. Hutchings, Jr.—both of Kansas City, Mo.
1,065,084. Chain mat for wheel tires. C. E. Smith, Bridgeport, Conn., assignor to The Walker Tire Chain Co., Toledo, Ohio.
1,065,139. Tire fastening device. J. J. Kelly, Crafton, Pa.
1,065,162. Airless and punctureless automobile tire. C. E. Miller, Peru, Ind.
1,065,214. Chain mat for resilient tires. M. A. Carter, Granville, N. Y., assignor to The Walker Tire Chain Co., Toledo, Ohio.
1,065,256. Fountain tooth brush. H. Cheesman La Mar, Harrison, Ohio.
1,065,307. Vacuum sticker or attaching device. J. P. Everttts, Sayre, Pa.

Trade Marks.

68,365. The Portage Rubber Co., Barberton, Ohio. The word *Daisy*. Rubber vehicle tires.
69,485. Stone-Ordean-Wells Co., Duluth, Minn. The word *Hiawatha*. Fruit jar rings.
70,392. J. W. Buckley Rubber Co., New York. The word *Hydraulic*. Rubber tubing, hose, etc.

ISSUED JUNE 24, 1913.

1,065,758. Device for adjusting tire chains. W. E. Woodwell, Pittsburg, Pa.
1,065,787. Repair device for pneumatic tires, etc. T. C. Dobbins, Los Angeles, Cal.
1,065,836. Inner tube for pneumatic tires. Alfred and Albert Raymond, Washington, D. C.
1,065,849. Pnumatic tire. G. A. Shaw, Barberton, Ohio.
1,065,900. Suspenders. H. C. Hine, assignor to the Traut & Hine Mfg. Co.—both of New Britain, Conn.
1,065,907. Tire. F. W. Redding, Jacksonville, Mo.

Designs.

44,235. Automobile tire. J. Christy, Akron, Ohio.
44,241. Casing for pneumatic tires. F. E. Holcomb, Akron, Ohio, assignor to Consolidated Rubber Tire Co., Trenton, N. J.
44,253. Tire. F. Nolte, Akron, Ohio.

Trade Marks.

69,495. Stone-Ordean-Wells Co., Duluth, Minn. The word *Wampum*. Fruit jar rings.
70,571. Mystic Rubber Co., Medford, Mass. The initials *D. M. D.* in diamond shape. Hospital rubber sheeting.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1912.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 4, 1913.]

3,285 (1912). Tools for replacing elastic tires. T. D. Staples, 1 Coronation Cottages, Exning Road, Newmarket.
*3,311 (1912). Detachable rubber heels. F. A. Nolan, 557 Rondo street, St. Paul, Minn., U. S. A.
3,312 (1912). Substitute for vulcanized rubber. F. C. Schneider, R. Reinecke and E. Knoll, Leipzigerstrasse, Meiningen, Germany.
3,396 (1912). Air tubes for tires. E. Andrieu, 1 Place de la Gare, Roubaix, France.
3,411 (1912). Rubber connection for sandals. R. Weidt, 54 Lerchenfelderstrasse, Vienna.
*3,430 (1912). Detachable rubber heels. F. A. Nolan, 557 Rondo street, St. Paul, Minn., U. S. A.
3,455 (1912). Flexible rubber hood held by umbrella stick. S. and W. Griffiths, 4 Swan Court, and T. L. Barlow, 15 Penzance street, Hulme Hall Lane, Newton Heath—both in Manchester.
3,653 (1912). Rubber toe spreading device. F. J. Scholl, 5 Manchester avenue, London.
3,755 (1912). Puncture closing apparatus. J. Eilers and J. Hinrichs, 9 Milchstrasse, Oldenburg, Grand Duchy of Oldenburg, Germany.
3,835 (1912). Detachable rim for wheels. F. W. Brampton, Abbots Croft, Sion Hill, Kidderminster.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 11, 1913.]

3,940 (1912). Air tubes for tires. J. J. D. Cleminson, 73 Cheapside, London.

3,945 (1912). Heel protectors. S. Sokal, 14 Southampton Bldgs., London.
3,989 (1912). Rotary duplicators. G. A. W. Rushworth, Great Western street, Moss Side, Manchester.
4,062 (1912). Lubricating and inflating pumps. A. Jaekel, 24 Rue Spontini, Paris.
*4,109 (1912). Rubber ring for spring wheels. C. D. Galvin, Merchantville, N. J., U. S. A.
4,210 (1912). Feeding bottles. A Prox, 6 Hough Lane, Leyland, near Preston, Lancashire.
4,212 (1912). Molding india-rubber, etc., by dipping. W. Heaton, 54 Town Gate, Leyland, Lancashire.
*4,287 (1912). Molding tires. A. Adamson, Akron, Ohio, U. S. A.
*4,291 (1912). Puncture closing apparatus. T. C. Dubbins, 211 West 32d street, Los Angeles, Cal., U. S. A.
4,317 (1912). Tread bands. T. Caudwell, 30 Denham Road, Ecclesall Road, Sheffield.
4,332 (1912). Use of rubber in imitation leather. H. Jackson, Oakenclough Paper Mills, Garstang, Lancashire.
4,395 (1912). Rubber layers in tires. S. C. Caddy, Rook Hill House, Keynsham, near Bristol.
*4,415 (1912). Pneumatic rubber ring for spring wheels. F. Morris, 2912 Farnam street, Omaha, Neb., U. S. A.
4,567 (1912). Rubber tapping knives. P. A. Reuss, 169 West street, Sheffield.

[Abstracted in The Illustrated Official Journal, June 18, 1913.]

4,600 (1912). Pads for chair legs, etc. D. Andreessen, Walle, near Aurich, Germany.
4,628 (1912). Device for inflating tires. W. Hall, near Barker's Farm, South Lopham, and E. Warren, Hopton—both in Thetford, Norfolk.
4,725 (1912). Direct vulcanization of solid tires. A. C. Stevenson, 83 Camperdown Road, Scotstoun, Renfrewshire.
4,833 (1912). Improved appliance for tapping. J. J. Hutton, Newlands, Ridgeway, near Sheffield.
4,866 (1912). Reinforced beads for tires. C. Burnett, Belmont House, Durham.
4,944 (1912). Use of powdered aluminium in resilient compositions. C. H. Wilkinson, Chapel Hill Mill, Huddersfield, Yorkshire.
4,985 (1912). Use of intercoiled wire in tires. A. E. Wale, Coleshill, near Birmingham, and Wale's Invulnerable Tyre Syndicate, Broad Street House, London.
5,078 (1912). Improvements in abdominal belts. M. J. W. Lumley, 67 Gloucester street, Warwick Square, London.

[Abstracted in The Illustrated Official Journal, June 25, 1913.]

5,234 (1912). Intertwined ring effects in golf balls. British Murac Syndicate, and M. N. Dessau, 17 Mincing Lane, London.
5,346 (1912). Use of prepared chalk for closing punctures. F. K. Loewenthal, 40 Synagogue Road, Kimberley, South Africa.
5,350 (1912). Waterproof cement for leather. F. Rampichini, 7 Via delle Acque, Triest, Austria.
5,421 (1912). Layers of rubber in heels. H. Bruhlmann, 42 Zurcherstrasse, Winterthur, Switzerland.
5,430 (1912). Products similar to vulcanized caoutchouc. J. Y. Johnson, 47 Lincoln's Inn Fields, London.
5,535 (1912). Tire building machine. P. A. Newton, 6 Breams Bldgs., Chancery Lane, London.
5,567 (1912). Rubber facing rings in valves. R. Ames, 145 Ditchling Road, Brighton.
5,619 (1912). Thumb stall for barbers. C. Davies, 15 High street, Cowbridge, Glamorganshire.
5,667 (1912). Caoutchouc substances. J. Y. Johnson, 47 Lincoln's Inn Fields, London.
*5,678 (1912). Rubber buffers in wheels. E. M. Deal, 5713 Spruce street; J. J. Scheiter, 1957 N. 23rd street, and E. A. Schneider, 2217 N. Howard street—all in Philadelphia, Pa., and L. B. Wilson, Sykesville, Md.—all in U. S. A.
5,705 (1912). Air tight rubber tubes for attachment to boats. C. L. Menzel, Nobby, Queensland, Australia.
5,718 (1912). Improvement in solid rubber treads. J. Elias, 96 Regent Road, Salford, Manchester.
5,769 (1912). Improvement in bottle stoppers. L. M. Pink, Staple street, Borough, London.
5,802 (1912). Impregnation of packing cord. O. Jordan, 36 Goethe Strasse, Hamburg, Germany.
5,847 (1912). Waterproof coverings for cycle saddles. W. Thomson, Lockwood avenue, Poulton-le-Fylde, and W. Thomson, 3 Taylor street, Atherton—both in Lancashire.
5,901 (1912). Compound woven beltings. H. F. Wragg, 115 Holly Road, Handsworth, Birmingham.

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

261,625 (April 13, 1912). Elastic tires with protected inner portion of rubber or the like. Alfred Steinhauser, Philadelphia, U. S. A.
261,679 (June 10, 1911). Improvements in parachutes. Karl Schultze, Berliner Strasse 28, Berlin-Pankow.
261,921 (January 4, 1912). Process for manufacture of rubberized fabrics. Erik Mündel & August Kurpneek, Riga, Russia.
261,876 (May 31, 1912). Process for manufacture of erythrene and isoprene. Farbenfabriken, vorm. F. Bayer & Co., Leverkusen.
261,951 (January 4, 1912). Vulcanizing apparatus for improvement of rubber tires. Cecil F. Adamson, Akron, U. S. A.
262,093 (December 13, 1911). Process for manufacture of a mass resembling rubber. Georges Reynaud, Paris.
262,137 (September 11, 1912). Tires composed of separate perforated rubber blocks. Maurice Dechamps, Brussels.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

451,508 (December 4, 1912). V. Boutier. Non-bursting armored anti-skid tread for pneumatic tires.
451,551 (December 6). H. Graveley. Mud guard for wheels of automobiles and other vehicles.
451,576 (December 7). E. Clark & C. N. L. Winter-Irving. Improvements in manufacture of pneumatic tires and covers.
451,579 (December 7). L. Gerard & G. Hidoux. Elastic tire for vehicles.
451,598 (February 15). C. Donaudy. Improvements in cellular air chambers for pneumatic tires.
451,613 (December 9). E. Charles. Anti-skid system for heavy loads.
451,615 (December 9). M. Kaufmann. Rubber piece for toes of footwear, and process of manufacture.
451,661 (December 10). D. L. Crosbie. Elastic wheel.
451,770 (December 11). W. H. Crawford. Elastic wheel tire.
451,787 (December 11). N. Isambert. Pneumatic tire with protected air chamber.
451,845 (December 13). C. Foldessy & C. G. Ashmore. Elastic tire with certain movable parts.
451,916 (December 14). E. M. Dubus. Pneumatic tire, with air chamber protected by perforations.
452,018 (December 18). E. Chassenet. Protective foundation of rim for pneumatic tires.
452,111 (November 28). A. Serenne. Instantaneously adjusted pneumatic tire.
452,141 (December 4). A Brasseur. Non-bursting tire for automobiles, motorcycles and bicycles.
452,006 (December 17). Farbenfabriken, vorm F. Bayer & Co. Process for production of substance resembling rubber.
452,015 (December 18). R. Bobet. Hot air vulcanizer.
452,277 (December 21). A. Olier & Co. Appliance for automatic adjustment of vulcanizing presses.
452,291 (December 23). A. Rokkel. Metallic toe for footwear with interior interchangeable piece of rubber or other substance.
452,440 (December 27). A. Amelot. Vehicle tires.
452,456 (December 27). W. E. Muntz. Improvements in pneumatic tires.
452,483 (December 28). K. Klotzmann and B. Klotzmann. Mud guard for automobiles.
452,506 (December 30). C. Chaigneau and M. Breillat. Movable anti-skid cover for pneumatic tires.
452,562 (December 10). R. C. Hulbert. Improvements in regulators of electric appliances; specially for vulcanizers.
452,389 (December 26). S. Saul. Rubber heels, adapted for use with press buttons.
452,497 (December 28). W. Eggers. Improved mold for manufacture of rubber goods.
452,580 (March 9). G. Fretard. Elastic vehicle tire.
452,772 (December 31). J. M. Laforet. Improvements in wheels with twin pneumatic or other tires.

[Note.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

A GAUGE FOR MOTORCYCLE RIMS.

The dealer in motorcycles has been considerably puzzled during the last few years to know what tire should go on what rim; for there have been three standard motorcycle rims, the "Old Style," the "B B" and the "C C." But this puzzle has been solved for the dealer by a gauge which instantly tells what size of tire should be used on any particular rim. The gauge is herewith illustrated. It is necessary simply to insert this gauge into the rim to get at the correct gauge length. The proper size tire to go with that rim is noted on the section of the gauge that fits the rim. This gauge is a Goodyear invention and is supplied to those in the trade interested in motorcycle rims, on application. [The Goodyear Tire & Rubber Co., Akron, Ohio.]

The Goodyear Motorcycle Rim Gauge.

Report of the Crude Rubber Market.

IT will be recalled that about the end of April fine Pará stood in London at 3*s.* 4½*d.*, while plantation crepe was quoted at 3*s.* 2½*d.* By the end of May the prices were respectively 3*s.* 8½*d.* and 3*s.* 2¼*d.*, the Brazilian article having gained 4*d.* within the month, while plantation rubber was practically unchanged. By June 25 a still wider discrepancy was reported, owing to a fall in the Asiatic product, which stood on June 25 at 2*s.* 11*d.*, as compared with 3*s.* 8¾*d.* for fine Pará.

During the month of July fine Pará fluctuated between 3*s.* 8½*d.* and 3*s.* 10*d.* A downward tendency prevailed, however, during the latter part of the month. The highest point touched was 3*s.* 10*d.* on the 16th, the other stages reached being: 3*s.* 9½*d.* on the 17th, 3*s.* 9*d.* on the 19th, 3*s.* 8½*d.* on the 23rd., 3*s.* 8*d.* on the 25th, and 3*s.* 7*d.* on the 20th, at time of writing. Thus, after being relatively steady for the first half of the month, the market has fallen 3*d.* within the last ten days.

Plantation crepe, which stood on June 25 in London at 2*s.* 11*d.*, reached 2*s.* 8¾*d.* (its lowest point for July) on the 9th. After a slight recovery it closed on the 26th at 2*s.* 9½*d.*, while fine Pará was at 3*s.* 7*d.* In other words, the premium on fine Pará now stands at 9½*d.*, as compared with 9¾*d.* a month ago.

That supplies have increased is illustrated by the statistics of the Federated Malay States exports for the six months ending June 30, which show in the last three years: 1911, 8,349,397 pounds; 1912, 15,382,265 pounds; 1913, 23,492,129 pounds. Exports from Ceylon for the first five months of 1913 represented 9,675,521 pounds, against 4,823,253 pounds for the same period of 1912. The records of the London auctions for the first six months of 1913 show a total of 11,202 tons, as compared with 6,821 tons for the earlier half of 1912. Thus no fears are entertained of a shortness of supply.

The plantation auction of July 1 included 445 tons, and tho the relative smallness of the quantity had led to anticipations of firmer prices, there was a falling off to the extent of 1*d.* to 2*d.* per pound. This situation was attributed to the lack of confidence in the financial prospect, rather than to the statistical position of the article.

At the sales of July 15, the quantity offered was 646 tons, which, tho larger than that of the previous sale, met with a good demand at 1*d.* to 1½*d.* above the price current in the recent private market.

The Havre auction of June 26 included 47 tons, principally Congo, of which six tons were sold with a reduction of 12½ per cent. About 40 tons were declared for the sale of July 30.

For the Amsterdam sale of July 10 there had been announced 59 tons *Hevea*, which realized 13 per cent. below valuations, and 17 tons *Ficus*, which sold at 18 per cent. reduction. Satisfaction has been expressed at the offerings being sold, though at reduced prices.

At the Rotterdam sale of July 4 about 25 tons were offered, including 15 tons *Hevea* and 9 tons *Ficus*. Nearly all the lots were sold at a reduction on valuations.

The Antwerp sale of June 25 included 53 tons Congo and 21 tons plantation. Of the former, 20 tons were sold, and of the latter a similar quantity, at prices unsatisfactory to holders.

New York Quotations.

Following are the quotations at New York one year ago, one month ago, and July 30—the current date:

Para.	August 1,'12.	July 1,'13.	July 30,'13.
Islands, fine new	107@108	82@83	74@
Islands, fine, old	109@110	.....	.....
Upriver, fine, new	117@118	87@88	85@86
Upriver, fine, old	122@123	.....	92@93
Islands, coarse, new	56@ 57	34@35	30@31
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	90@ 91	54@56	51@52
Upriver, coarse, old	.....	.....	39@40
Cametá	65@ 66	42@43	37@38
Caucho (Peruvian) ball	88@ 89	53@54	51@52
Caucho (Peruvian) sheet	76@ 77	.....	.....
Plantation Ceylons.			
Fine smoked sheet	120@121	72@73	70@71
Fine pale crepe	121@122	70@72	68@69
Fine sheets and biscuits	117@118	70@71	.....
Centrals.			
Esmeralda, sausage	83@ 84	53@54	52@
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	81@ 82	53@54	52@
Panama	.....	.....	.....
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	81@ 82	53@57	52@
Mexican, slab	.....	.....	35@
Mangabeira, sheet	.....	.....	.....
Guayule	57@	.....	.....
Balata, sheet	.....	.....	70@72
Balata, block	.....	.....	51@53
African.			
Lopori, ball, prime	108@109	.....	62@
Lopori, strip, prime	.....	.....	60@
Aruwimi	103@104	.....	55@57
Upper Congo, ball red	105@106	.....	55@56
Ikelemba	.....	.....	57@58
Sierra Leone, 1st quality	95@ 96	.....	55@58
Massai, red	98@ 99	.....	62@63
Soudan Niggers	.....	.....	50@55
Cameroon, ball	.....	.....	40@49
Benguela	.....	.....	.....
Madagascar, pinky	.....	.....	55@60
Accra, flake	27@	.....	24@25
East Indian.			
Assam	.....	.....	35@70
Pontianak	6@6⅛	.....	6⅜@6⅝
Borneo—III.	.....	.....	32@30
" — II.	.....	.....	45@48
" — I.	.....	.....	55@60

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During July the demand for commercial paper has continued light, and almost entirely from out of town banks, the same as in June; rates have ruled very firm at 6@6½ per cent. for the best rubber names."

New York Prices for June (New Rubber).

	1913.	1912.	1911.
Upriver, fine	$0.87@ .92	$1.08@1.12	$0.95@1.03
Upriver, coarse	.54@ .62	.86@ .91	.81@ .85
Islands, fine	.82@ .85	1.01@1.06	.91@ .98
Islands, coarse	.33@ .39	.55@ .59	.58@ .63
Cametá	.40@ .43	.63@ .65	.67@ .71

Statistics Para India Rubber (in Tons) Including Caucho.

STATISTICS FOR THE MONTH OF JUNE.

	Pará.	Caucho.		1913. Tons.		1912. Tons.	1911. Tons.	1910. Tons.
Receipts at Pará	1,280	820	=	2,100	against	2,570	1,720	1,200
Shipments to Liverpool	460	270	=	730	"	1,280	1,160	1,050
Shipments to Continental Ports	130	180	=	310	"	590	160	190
Shipments to America	490	320	=	810	"	1,170	920	480
American Imports	940	490	=	1,430	"	1,570	1,510	350
American Deliveries	920	510	=	1,430	"	1,580	1,550	330
Liverpool Imports	663	581	=	1,244	"	737	1,328	1,088
Liverpool Deliveries	641	546	=	1,187	"	927	1,288	1,051
Continental Imports	340	210	=	550	"	400	170	210
Continental Deliveries	390	290	=	680	"	430	150	260

VISIBLE SUPPLY—1st July, 1913.

	1913. Pará.	1913. Caucho.	1912.	1911.	1910.
Stock in England, Pará, 1st hands	1,078	.....	1,000	4,110	1,603
Pará, 2nd hands	106	.....			326
Caucho	...	629	370	990	611
Stock in Pará, 1st hands	310	170	410	1,340	390
2nd hands	290	120	400	420	110
Syndicate	810	.....	2,240	2,760	.....
Stock in America	140	40	170	300	140
Stock on Continent	50	200	100	110	50
Afloat—Europe	350	140	1,350	610	780
Afloat—America	260	170	330	310	250
	3,394	1,469			
Total Visible Supply, including Caucho.	4,863		6,370	10,950	4,260

CROP STATISTICS—30th June, 1912, 30th June, 1913.

	Pará.	Caucho.	1912/13.	1911/12.	1910/11.	1909/10.
Pará Receipts.. 1912/13	32,290	9,660	41,950	39,360	37,500	39,130
Pará Receipts.. 1911/12	32,230	7,130				
Pará Shipments to Europe	17,150	6,740	23,890	20,260	19,910	21,850
Pará Shipments to America	16,230	3,290	19,520	20,570	13,570	17,040
England Landings, net			17,736	14,517	15,678	17,871
England Deliveries, net			17,293	18,217	13,347	16,806
America Landings, net			19,440	22,795	14,770	16,960
America Deliveries, net			19,430	22,525	14,610	17,620
Continental Imports, net			5,120	3,600	3,170	3,090
Continental Deliveries, net			4,965	3,610	3,110	3,070

POSITION—1st July, 1913.

Decrease in Receipts during June, 1913, against June, 1912	470
Increase in Receipts—Crop, July/June, 1912/13, against 1911/12	2,590
Increase in Deliveries—Crop, July/June, 1912/13, England and Continent, against 1911/12	431
Decrease in Deliveries—Crop, July/June, 1912/13, America, against 1911/12	3,095
Decrease in Visible Supply Pará Grades, against 1st July last year	1,507
Increase in Stock, England, June 30th, 1913, against June 30th, 1912.	443

WM. WRIGHT & CO.,
Liverpool, 3rd July, 1913. Brokers.

During the month 120 tons, including 10 tons Caucho, have been shipped from Europe to America.

Amsterdam.

Joosten & Janssen report [July 10]:

Considering the recent depressed condition of the market, today's sale may be considered satisfactory. The bulk of the offerings were sold at about the equivalent of market rates.

Rotterdam.

Havelaar & De Vries report [July 8]:

Prices at sale of 4th were below valuations. Quantity offered included 15 tons *Hevea* and 9 tons *Ficus*.

Rubber Scrap Prices.

Late New York Quotations.—Prices paid by consumers for carload lots, per pound.

	July 30, '13.
Old rubber boots and shoes—domestic	9 @ 9⅛
Old rubber boots and shoes—foreign	8⅞@ 9
Pneumatic bicycle tires	5 @ 5⅛
Automobile tires	8⅞@ 9
Solid rubber wagon and carriage tires	9 @ 9⅛
White trimmed rubber	10⅝@10¾
Heavy black rubber	4½@ 4⅝
Air brake hose	5¼
Garden hose	1 @ 1¼
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾
No. 1 white auto tires	10⅝@10⅞

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA, 1913, AND 1913.

[In Shillings and Pence Per Pound.]

January 3, 1913	4/7¼	April 18, 1913	3/4¾
January 10	4/6½	April 25	3/4½
January 17	4/6½	May 2	3/5½
January 24	4/5¼	May 9	3/8¾
January 31	4/4	May 16	3/10
February 7	4/2¾	May 23	3/9
February 14	4/3	May 31	3/8½
February 21	4/0½	June 6	3/9¼
February 28	4/0½	June 13	3/9
March 7	3/10¾	June 20	3/8¾
March 14	3/11¼	June 27	3/9½
March 20	3/11	July 4	3/9¾
March 28	3/9½	July 11	3/9½
April 4	3/6¼	July 18	3/9½
April 11	3/4½	July 25	3/8

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

June 24.—By the steamer *Clement* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	20,200	12,100	88,600	28,800=	149,700
General Rubber Co.	...	...	31,700	...=	31,700
Meyer & Brown	...	...	...	21,100=	21,100
Meyer & Brown	...	...	31,000	...=	31,000
Henderson & Korn	27,100	6,400	700	4,500=	38,700
Ed. Maurer	15,400	3,600	38,900	4,500=	62,400
Hagemeyer & Brunn	...	4,600	23,800	...=	28,400
	62,700	26,700	214,700	58,900=	363,000
MANAOS.					
Arnold & Zeiss	51,800	9,700	14,600	163,200=	239,300
Ed. Maurer	...	...	3,600	35,300=	38,900
Meyer & Brown	8,100	900	10,900	31,500=	51,400
General Rubber Co.	30,600	7,100	8,200	...=	45,900
Henderson & Korn	400	1,300	800	16,500=	19,000
Robinson & Co.	12,100	...	700	1,900=	14,700
	103,000	19,000	38,800	248,400=	409,200
Total	165,700	45,700	253,500	307,300=	772,200

July 5.—By the steamer *Stephen*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	41,800	20,100	118,500	85,000=	265,400
General Rubber Co.	2,100	...	1,700	...=	3,800
Meyer & Brown	28,700	700	113,000	183,700=	326,100
H. A. Astlett & Co.	33,000	10,300	12,200	7,400=	62,900
Ed. Maurer	5,600	400	16,500	...=	22,500
Hagemeyer & Brunn	1,800	3,600	7,300	...=	12,700
Robinson & Co.	7,700	300	5,300	...=	13,300
Henderson & Korn	60,000	7,900	32,200	63,600=	163,700
	180,700	43,300	306,700	339,700=	870,400

July 14.—By the steamer *Hubert*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	45,300	10,700	91,600	49,400=	197,000
General Rubber Co.	1,400	500	100	...=	2,000
General Rubber Co.	...	...	29,000	7,300=	36,300
Henderson & Korn	24,600	3,600	26,400	...=	54,600
Ed. Maurer	...	...	6,600	...=	6,600
H. A. Astlett & Co.	...	...	25,700	...=	25,700
G. Amsinck & Co.	7,500	700	56,800	11,200=	76,200
G. Amsinck & Co.	4,300	...	2,600	1,700=	8,600
	83,100	15,500	238,800	69,600=	407,000
MANAOS.					
Arnold & Zeiss	43,600	13,800	12,700	16,400=	86,500
Robinson & Co.	17,500	600	1,700	109,100=	128,900
Robinson & Co.	...	8,100	5,800	31,300=	45,200
Crossman & Sielcken	...	...	5,900	...=	5,900
	61,100	22,500	26,100	156,800=	266,500
Total	144,200	38,000	264,900	226,400=	673,500

July 24.—By the steamer *Christopher* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	2,700	114,000	117,800	1,100=	235,600
General Rubber Co.	15,000	2,800	17,200	45,900=	80,900
General Rubber Co.	.....	.....	19,800	21,800=	41,600
H. A. Astlett & Co.	21,100	5,400	38,900	69,400=	134,800
Henderson & Korn	28,900	3,600	63,400	.....=	95,900
Henderson & Korn	.....	.....	10,600	.....=	10,600
Henderson & Korn	1,100	3,600	21,100	.....=	25,800
	68,800	129,400	288,800	138,200=	625,200
MANAOS.					
Arnold & Zeiss	110,400	700	14,200	43,500=	168,800
General Rubber Co.	46,000	7,000	13,000	500=	66,500
General Rubber Co.	18,700	5,000	8,600	17,500=	49,800
	175,100	12,700	35,800	61,500=	285,100
	243,900	142,100	324,600	199,700=	910,300

PARA RUBBER VIA EUROPE.

		POUNDS.
JUNE 23.—By the *Carmania*=Liverpool:		
General Rubber Co. (Fine)	6,500	
Arnold & Zeiss (Fine)	45,000	
Arnold & Zeiss (Coarse)	22,500	
Arnold & Zeiss (Caucho Ball)	11,200	
Raw Products Co. (Fine)	15,500	
Raw Products Co. (Coarse)	33,500	134,200
JUNE 24.—By the *Chicago*=Havre:		
Various (Caucho Ball)		15,000
JUNE 21.—By the *Patricia*=Hamburg:		
Wallace L. Gough (Fine)	25,500	
Ed. Maurer (Fine)	28,000	53,500
JUNE 26.—By the *Kronprinzessin Cecilie*=Hamburg:		
Ed. Maurer (Fine)		33,000
JUNE 27.—By the *Mauretania*=Liverpool:		
Arnold & Zeiss (Fine)		45,000
JUNE 27.—By the *Cedric*=Liverpool:		
Raw Products Co. (Coarse)		11,000
JUNE 27.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Ed. Maurer (Fine)	7,500	
Wallace L. Gough (Fine)	2,500	10,000
JUNE 30.—By the *Mayaro*=Ciudad Bolivar:		
Gen. Export & Com. Co. (Fine)	11,000	
Gen. Export & Com. Co. (Coarse)	5,000	16,000
JULY 5.—By the *Campania*=Liverpool:		
Arnold & Zeiss (Fine)	33,500	
Arnold & Zeiss (Coarse)	4,500	
Arnold & Zeiss (Caucho)	33,500	
Robinson & Co. (Fine)	5,000	
Raw Products Co. (Coarse)	12,500	89,000
JULY 5.—By the *Pretoria*=Hamburg:		
Ed. Maurer (Fine)	9,000	
Henderson & Korn (Fine)	5,000	14,000
JULY 8.—By the *Zeeland*=Antwerp:		
Robert Badenhop (Fine)	15,500	
Henderson & Korn (Fine)	15,000	30,500
JULY 9.—By the *President Grant*=Hamburg:		
Wallace L. Gough (Fine)		3,000

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

		POUNDS.
JUNE 20.—By the *Sarnia*=Mexico:		
Meyer & Brown		1,200
JUNE 20.—By the *Colon*=Colon:		
Wessels, Kulenkampff & Co.	1,000	
G. Amsinck & Co.	500	1,500
JUNE 21.—By the *Esperanza*=Mexico:		
G. Amsinck & Co.	4,000	
E. Steiger & Co.	3,500	
J. W. Wilson & Co.	2,200	
General Export & Commission Co.	3,000	
Lawrence Johnson & Co.	4,000	
Harburger & Stack	3,000	
Wessels, Kulenkampff & Co.	1,000	
Lawrenee Import Co.	1,000	
Neuss, Hesslein & Co.	500	
Meyer Hecht	500	
American Trading Co.	500	23,200
JUNE 21.—By the *Zacapa*=Colombia:		
G. Amsinck & Co.		1,200
JUNE 23.—By the *Suriname*=Colombia:		
Eggers & Heinlein	500	
R. G. Barthold	300	800
JUNE 23.—By the *Prinz Sigismund*=Colombia:		
Caballero & Blanco	300	
De Lima, Cortissoz & Co.	300	600
JUNE 23.—By the *Vigilancia*=Tampico:		
Continental-Mexican Rubber Co.	*88,000	
H. R. Jeffords	*45,000	
Ed. Maurer	*10,000	*143,000
JUNE 25.—By *El Oriente*=Galveston:		
Various		*11,200
JUNE 24.—By the *Sixaola*=Port Limon:		
Manhattan Rubber Mfg. Co.	2,000	
H. B. Beers	2,500	4,500
JUNE 25.—By the *E. L. Boas*=Colon:		
G. Amsinck & Co.	2,000	
H. Wolff & Co.	1,000	3,000
JUNE 26.—By the *Advance*=Colon:		
G. Amsinck & Co.	12,600	
C. E. Griffin	1,800	
Dumarest Bros.	2,000	
Camacho, Roldau & Van Sickel.	1,000	17,400
JUNE 26.—By *El Siglo*=New Orleans:		
Various	5,500	
JUNE 26.—By *Kronprinzessin Cecilie*=Hamburg:		
Various	*22,500	
JUNE 27. By *El Sud*=Galveston:		
Various	*6,000	
JUNE 27.—By the *Mexico*=Mexico:		
American Trading Co.	300	
G. Amsinck & Co.	700	
H. Marquardt & Co.	9,500	
Various	3,000	13,500
JUNE 27.—By the *Sibiria*=Frontera:		
W. L. Wadleigh		3,000
JUNE 27.—By the *Almirante*=Colon:		
G. Amsinck & Co.	1,500	
R. del Castillo	1,500	3,000
JUNE 27.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Arnold & Zeiss		33,500
JUNE 30.—By the *Allemania*=Colombia:		
Caballero & Blanco	1,500	
R. del Castillo	1,500	3,000
JULY 1.—By the *Panama*=Colon:		
G. Amsinck & Co.	1,600	
C. E. Griffin	1,100	
American Trading Co.	1,400	
J. J. Julia & Co.	500	
Commercial Bank-Spanish America	400	5,000
JULY 1.—By the *Trent*=Colon:		
J. S. Sambrada & Co.	4,300	
A. S. Lascelles & Co.	500	4,800
JULY 1.—By the *Comus*=New Orleans:		
Various		1,000
JULY 2.—By the *Guantanamo*=Tampico:		
Arnold & Zeiss	*11,200	
H. R. Jeffords	*45,000	
S. Madero & Co.	*78,500	*134,700
JULY 5.—By the *Baltic*=Liverpool:		
Adolph Hirsch & Co.		7,500
JULY 5.—By the *Monterey*=Mexico:		
E. Steiger & Co.	13,500	
Maitland, Coppell & Co.	2,200	
G. Amsinck & Co.	800	
General Export & Commission Co.	500	
Harburger & Stack	1,500	
L. Johnson & Co.	3,000	
American Trading Co.	700	
Rubber Trading Co.	600	
A. S. Lascelles & Co.	500	
Various	6,500	29,800
JULY 5.—By the *Santa Marta*=Colombia:		
R. del Castillo	2,500	
P. Calvet & Co.	600	
Schulz & Ruckgaber	1,200	
H. Wolff & Co.	300	4,600
JULY 7.—By the *Verdi*=Bahia:		
Adolph Hirsch & Co.		35,000
JULY 7.—By the *Frutera*=Colon:		
A. Rosenthal & Sons	1,500	
General Export & Commission Co.	500	2,000
JULY 7.—By the *Prinz Eitel Friedrich*=Colombia:		
Mecke & Co.	6,500	
Kunhardt & Co.	1,800	
A. Held	1,000	
Pottberg, Ebeling & Co.	3,500	
Various	600	13,400
JULY 8.—By the *Allianca*=Colon:		
Lanman & Kemp	2,200	
Isaac Kubie & Co.	500	
Piza Nephews & Co.	3,000	5,700
JULY 8.—By the *Pastores*=Port Limon:		
A. A. Lindo & Co.	2,500	
Gillespie Bros. & Co.	1,000	3,500
JULY 8.—By the *Carl Schurz*=Colon:		
H. Wolff & Co.		1,000
JULY 10.—By the *Scottish Prince*=Bahia:		
A. Hirsch & Co.		22,500
JULY 11.—By the *Morro Castle*=Mexico:		
E. Steiger & Co.	17,500	
Harburger & Stack	2,500	
G. M. Schmidt	4,500	
General Export & Commission Co.	800	
Maldonado & Co.	500	
Marquardt & Co.	1,000	
American Trading Co.	700	27,500

AFRICAN.

		POUNDS.
JUNE 21.—By the *Celtic*=Liverpool:		
James T. Johnstone & Co.		7,500
JUNE 21.—By the *Patricia*=Hamburg:		
Meyer & Brown	4,500	
Wallace L. Gough	9,000	
Ed. Maurer	22,500	36,000
JUNE 23.—By the *Lapland*=Antwerp:		
Robert Badenhop		5,500
JUNE 23.—By the *Carmania*=Liverpool:		
General Rubber Co.	7,500	
Wallace L. Gough	2,500	10,000
JUNE 24.—By the *Ikbal*=Hamburg:		
Ed. Maurer		22,500
JUNE 25.—By the *Vaderland*=Antwerp:		
Robert Badenhop		8,000
JUNE 26.—By the *Kronprinzessin Cecilie*=Hamburg:		
Meyer & Brown	11,500	
Arnold & Zeiss	12,500	
Ed. Maurer	16,000	
Henderson & Korn	2,200	
Wallace L. Gough	11,200	53,400
JUNE 27.—By the *Cedric*=Liverpool:		
Arnold & Zeiss	4,500	
James T. Johnstone	11,000	15,500
JUNE 28.—By *La Savoie*=Havre:		
Meyer & Brown		11,000
JULY 1.—By the *Gothland*=Antwerp:		
Robert Badenhop		8,500
JULY 2.—By the *Potsdam*=Amsterdam:		
Meyer & Brown		11,500
JULY 5.—By the *Baltic*=Liverpool:		
James T. Johnstone & Co.	11,500	
Various	2,000	13,500
JULY 5.—By the *Philadelphia*=Southampton:		
Arnold & Zeiss		4,500
JULY 5.—By the *Zeeland*=Antwerp:		
Various	6,500	
Robert Badenhop	11,200	17,700
JULY 9.—By the *President Grant*=Hamburg:		
Ed. Maurer	72,500	
Arnold & Zeiss	30,500	
Meyer & Brown	22,500	
Wallace L. Gough	13,500	
Various	56,000	195,000

EAST INDIAN.

[*Denotes Plantation Rubber.]

		POUNDS.
JUNE 20.—By the *Majestic*=Southampton:		
Meyer & Brown	*22,000	
Arnold & Zeiss	*168,000	
Raw Products Co.	*11,000	
Rubber Trading Co.	*18,000	
Ed. Maurer	*33,500	
Various	*67,200	*319,700
JUNE 23.—By the *St. Paul*=Southampton:		
Meyer & Brown	*18,000	
Arnold & Zeiss	*36,000	
Robinson & Co.	*45,000	
Rubber Trading Co.	*4,500	
Ed. Maurer	*22,500	
Various	*44,500	*170,500
JUNE 23.—By the *Rotterdam*=Amsterdam:		
Various		*33,500
JUNE 23.—By the *Rappenfels*=Colombo:		
Ed. Maurer	*42,500	
Meyer & Brown	*10,000	*52,500
JUNE 24.—By the *Minnewaska*=London:		
Meyer & Brown	*70,000	
Charles T. Wilson	*135,000	
Adolph Hirsch & Co.	*7,500	
Wallace L. Gough	*3,500	
E. Boustead & Co.	*13,500	
J. T. Johnstone & Co.	*48,000	
General Rubber Co.	*50,000	
Lunham & Moore	*17,500	
Various	*5,500	*350,500
JUNE 25.—By the *Vaderland*=Antwerp:		
Meyer & Brown		*28,000
JUNE 26.—By the *Kronprinzessin Cecilie*=Hamburg:		
Wallace L. Gough		*4,000
JUNE 26. By the *Oceanic*=Southampton:		
Meyer & Brown	*11,200	
New York Commercial Co.	*205,000	
Arnold & Zeiss	*11,200	
Goodyear Tire & Rubber Co.	*40,000	
Henderson & Korn	*4,500	
W. Stiles	*4,500	
Ed. Maurer	*7,500	*283,900
JUNE 27.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Wallace L. Gough		*15,500
JUNE 30.—By the *Indrani*=Singapore:		
Ed. Maurer	*67,000	
Henderson & Korn	*50,000	
Malaysian Rubber Co.	*30,000	
L. Littlejohn & Co.	*12,500	
E. Boustead & Co.	*11,200	
General Rubber Co.	*11,200	
Meyer & Brown	*11,200	
Various	*10,000	*203,100

July 1.—By the *Kroonland*=Antwerp:

Meyer & Brown	*46,000	
Wallace L. Gough	*13,500	*59,500

July 1.—By the *Minnetonka*=London:

Meyer & Brown	*64,000	
James T. Johnstone	*26,000	
New York Commercial Co.	*52,000	
Charles T. Wilson	*37,500	
Henderson & Korn	*11,200	
A. W. Brunn	*4,500	
Raw Products Co.	*1,700	
Rubber Trading Co.	*3,500	
W. R. Grace & Co.	*1,500	
Ed. Maurer	*13,500	
Goodyear Tire & Rubber Co.	*115,000	
Various	*35,000	*365,400

July 2.—By the *Olympic*=Southampton:

Meyer & Brown	*30,700	
Arnold & Zeiss	*112,000	
New York Commercial Co.	*11,200	
Robinson & Co.	*13,500	
Raw Products Co.	*6,000	
Charles T. Wilson	*56,000	
Henderson & Korn	*17,500	
W. Stiles	*6,000	
Various	*67,200	*320,100

July 2.—By the *Potsdam*=Amsterdam:

Meyer & Brown	*37,500	
Rubber Trading Co.	*25,000	
Various	*8,200	*70,700

July 5.—By the *Philadelphia*=Southampton:

Meyer & Brown	*7,500	
Ed. Maurer	*13,500	
Arnold & Zeiss	*40,000	
Raw Products Co.	*3,000	
Charles T. Wilson	*56,000	
W. Stiles	*3,500	
Various	*50,000	*173,500

July 7.—By the *New Amsterdam*=Amsterdam:

Meyer & Brown	*22,600	
Manhattan Rubber Mfg. Co.	*6,000	*28,600

July 8.—By the *Zeeland*=Antwerp:

Meyer & Brown	*22,200	
Arnold & Zeiss	*13,500	
Various	*6,000	*41,700

July 8.—By the *Minneapolis*=London:

Meyer & Brown	*77,000	
General Rubber Co.	*65,000	
Wallace L. Gough	*11,200	
James T. Johnstone	*17,500	
E. Boustead & Co.	*5,000	
Henderson & Korn	*78,000	
Various	*17,500	*271,200

July 9.—By the *President Grant*=Hamburg:

Ed. Maurer		*7,500

July 10.—By the *Majestic*=Southampton:

Meyer & Brown	*12,300	
Arnold & Zeiss	*11,200	
Charles T. Wilson	*3,500	
Robinson & Co.	*6,500	
Henderson & Korn	*20,500	*54,000

BOSTON ARRIVALS.

Imports in May, 1913.

	Pounds.	Value.
Gutta-jelutong from Straits Settlements	2,164,896	$112,676
India-rubber from		
Straits Settlements	36,233	21,533
France	7,354	5,393
Germany	3,662	2,636
England	37,178	34,445

CUSTOM HOUSE STATISTICS.

Port of New York—June, 1913.

Imports:	Pounds.	Value.
India-rubber	8,713,314	$6,073,111
Balata	27,681	15,815
Guayule	624,353	299,105
Gutta-percha	65,352	21,614
Gutta-jelutong (Pontianak)	756,508	36,008
Total	10,187,208	$6,445,653
Exports:		
India-rubber	60,010	31,382
Balata	.....	.....
Guayule	.....	.....
Gutta-percha	.....	.....
Reclaimed rubber	46,198	10,440
Gutta-jelutong (Pontianak)	.....	.....
Rubber scrap, imported	2,398,802	$218,551
Rubber scrap, exported	493,929	72,589

EXPORTS OF INDIA-RUBBER FROM PARA, MANAOS AND IQUITOS FOR THE FIRST SIX MONTHS OF 1913 (IN KILOGRAMS).

	New York.					Europe.							
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.	Fine.	Medium.	Coarse.	Caucho.	Total.	Total exported.	Stock in Pará on 30th June, 1913.	Grand Total.
Zarges, Berringer & Co.—Pará / Zarges, Ohliger & Co.—Manáos	1,136,597	149,845	1,113,194	620,671	3,020,307	2,593,115	485,459	540,329	2,055,228	5,674,131	8,694,438	150,000	8,844,438
General Rubber Co. of Brazil—Pará and Manáos	625,204	97,974	464,859	470,519	1,658,556	562,889	185,901	129,832	680,235	1,558,857	3,217,413	25,000	3,242,413
R. O. Ahlers & Co.—Pará / Ahlers & Co.—Manáos	452,456	76,716	160,934	382,287	1,072,393	818,721	91,682	212,899	421,594	1,544,896	2,617,289	.....	2,617,289
J. Marques—Pará	590,246	146,426	784,802	319,041	1,840,515	321,663	19,425	66,861	135,049	542,998	2,383,513	80,000	2,463,513
Suarez Hermanos & Co., Ltd.—Pará	.....	.....	.....	.....	.....	749,175	26,890	139,860	402,226	1,318,151	1,318,151	.....	1,318,151
Ad. H. Alden, Ltd.—Pará-Manáos	459,409	124,178	189,136	100,502	873,225	172,802	21,796	41,342	56,892	292,832	1,166,057	.....	1,166,057
De Lagotellerie & Co.—Pará-Manáos	141,274	7,580	50,840	4,200	203,894	390,632	94,052	131,224	109,606	725,514	929,408	.....	929,408
Green & Co.—Pará / W. Peters & Co.—Manáos	101,290	25,474	48,609	122,367	297,740	11,787	10,235	25,315	30,643	77,980	375,720	.....	375,720
Pires Teixeira & Co.—Pará	34,170	13,430	99,000	560	147,160	109,820	2,040	1,320	.....	113,180	260,340	15,000	275,340
J. G. Araujo—Manáos	1,600	160	1,850	.....	3,610	46,372	3,973	61,349	14,168	125,862	129,472	.....	129,472
Armazens Andresen — Manáos	.....	.....	.....	.....	.....	24,160	5,600	8,600	440	38,800	38,800	.....	38,800
Sundry exporters	31,214	2,299	39,608	23,459	96,580	122,954	4,271	73,406	334,518	535,149	631,729	.....	631,729
	3,573,460	644,082	2,952,832	2,043,606	9,213,980	5,924,090	951,324	1,432,337	4,240,599	12,548,350	21,762,330	270,000	22,032,330
From Itacoatiara, direct	2,400	150	2,160	1,800	6,510	40,850	5,050	29,925	19,670	95,495	102,005	.....	102,005
From Iquitos, direct	13,998	201	2,600	3,222	20,021	268,627	9,142	94,203	577,459	949,431	969,452	.....	969,452
Stock in first hands in Pará	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	483,000	483,000
From Manáos on board S.S. *Hubert*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	132,000	132,000
Stock held by Syndicate J. Marques	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	810,000	810,000
	3,589,858	644,433	2,957,592	2,048,628	9,240,511	6,233,567	965,516	1,556,465	4,837,728	13,593,276	22,833,787	1,695,000	24,528,787

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR FIRST SIX MONTHS OF 1913 (IN KILOGRAMS).

	New York.					Europe.					Total.		
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.	Fine.	Medium.	Coarse.	Caucho.	Total.	Europe & America.	Stock. Tons.	Grand Total.
Zarges, Ohliger & Ca.	578,266	53,602	256,814	275,319	1,164,001	955,775	173,562	162,723	1,125,092	2,417,152	3,581,153	25	3,606,153
Ahlers & Co.	421,059	77,012	147,946	248,854	894,871	597,259	91,386	169,681	383,932	1,242,258	2,137,129	...	2,137,129
General Rubber Company of Brazil	235,976	41,604	164,793	202,730	645,103	283,570	126,628	87,166	457,568	954,932	1,600,035	110	1,710,035
De Lagotellerie & Co.	86,194	.....	.....	.....	86,194	390,632	94,052	131,224	109,606	725,514	811,708	...	811,708
Adelbert H. Alden, Ltd.	271,681	89,092	101,051	83,640	545,464	18,770	3,910	2,641	27,083	52,404	597,868	...	597,868
W. Peters & Co.	62,758	22,004	19,868	121,247	225,877	9,569	7,703	20,926	23,291	61,489	287,366	...	287,366
J. G. Araujo	1,600	160	4,779	.....	6,539	46,372	3,973	61,349	14,168	125,862	132,401	...	132,401
Semper & Co.	.....	.....	.....	.....	.....	35,464	1,120	12,816	30,291	79,691	79,691	...	79,691
B. Levy & Co.	.....	.....	.....	.....	.....	14,502	1,616	12,235	31,283	59,636	59,636	...	59,636
Théodore Lévy, Camille & Co.	.....	.....	.....	.....	.....	58	527	5,474	38,988	45,047	45,047	...	45,047
Sociedade Anonyma "Armazens Andresen"	.....	.....	.....	.....	.....	24,160	5,600	8,600	440	38,800	38,800	...	38,800
Mesquita & Co.	.....	.....	.....	.....	.....	4,369	1,182	6,405	9,457	21,413	21,413	...	21,413
Sundries	11	.....	27	5,245	5,283	17,332	240	3,531	19,868	40,971	46,254	...	46,254
	1,657,545	283,474	695,278	937,035	3,573,332	2,397,832	511,499	684,771	2,271,067	5,865,169	9,438,501	135	9,573,501
Iquitos, direct	13,998	201	2,600	3,222	20,021	268,627	9,142	94,203	577,459	949,431	969,452	...	969,452
Total	1,671,543	283,675	697,878	940,257	3,593,353	2,666,459	520,641	778,974	2,848,526	6,814,600	10,407,953	135	10,542,953

SUMMARY OF DIRECT EXPORTS FROM MANAOS AND IQUITOS.

Year.	Tons.	Year.	Tons.	Year.	Tons.	Year.	Tons.	Year.	Tons.	Year.	Tons.
1880	374	1886	1,574	1892	3,812	1898	7,173	1904	17,415	1910	19,548
1881	207	1887	1,688	1893	4,745	1899	7,853	1905	17,352	1911	18,689
1882	430	1888	2,141	1894	3,953	1900	8,937	1906	16,840	1912	20,188
1883	655	1889	3,255	1895	5,433	1901	16,826	1907	19,924		
1884	1,013	1890	3,693	1896	6,827	1902	15,162	1908	20,540		
1885	1,462	1891	3,991	1897	7,523	1903	18,277	1909	19,412		

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Antwerp.

RUBBER STATISTICS FOR JUNE, 1913.

	1913.	1912.	1911.	1910.	1909.
Stocks, May 31..*kilos*	1,053,993	444,437	614,010	543,863	689,238
Arrivals in June—					
Congo sorts	332,365	174,315	382,972	356,288	273,079
Other sorts	26,520	10,529	11,860	29,384	120,864
Plantation sorts	143,820	97,942	32,160	39,929	36,131
Aggregating	1,556,698	727,223	1,041,002	969,464	1,119,312
Sales in June	471,555	384,032	267,025	508,947	642,892
Stocks, June 30.....	1,085,143	343,191	773,977	460,517	476,420
Arrivals since Jan. 1—					
Congo sorts	1,651,140	1,417,416	1,642,593	1,655,626	1,716,209
Other sorts	73,041	69,166	246,953	167,522	554,564
Plantation sorts....	1,011,929	612,634	331,476	262,060	132,731
Aggregating	2,736,110	2,099,216	2,221,022	2,085,208	2,403,504
Sales since Jan. 1....	2,162,027	2,430,563	2,035,257	2,166,203	2,522,819

RUBBER ARRIVALS FROM THE CONGO.

JUNE 26.—By the steamer *Leopoldville*:

		Kilos.	
Bunge & Co	(Société Générale Africaine)	11,800	
do	(Comptoir Commercial Congolais)	9,600	
do	(Chemins de fer Grands Lacs)	750	
do	(Belgika)	1,750	
do	(Intertropical)	5,500	
do	(Comfina)	8,200	
Société Coloniale Anversoise	(Comminiéré)	1,650	
do	(Lomami)	4,950	
do	(Haut Congo)	9,750	
Credit Colonial & Commercial (Anc. L. & W. Van de Velde), (S. A.), (Cie du Kasai)		78,000	
do	(Velde)	6,000	
Charles Dethier	(American Congo Co.)	5,000	
Willaert Frères		3,000	145,950

Plantation Rubber from the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

(From January 1 to June 1, 1913. Compiled by the Ceylon Chamber of Commerce.)

	1912.	1913.
To Great Britain.....*pounds*	2,628,387	4,829,547
To United States	1,522,632	2,936,581
To Belgium	507,592	1,378,854
To Australia	63,837	258,841
To Germany	60,407	111,009
To Austria	12,563	26,075
To Canada	12,121	.....
To Japan	7,508	99,611
To Italy	5,885	33,802
To Holland	2,282	992
To Sweden	39	....
To India	....	209
Total	4,823,253	9,675,521

(Same period 1911, 2,143,238; same 1910, 1,046,715.)

The export figures of rubber for 1913 given in the above table include the imports re-exported. (These amount to 893,866 lbs.—710,500 lbs. from the Straits and 183,366 lbs. from India.—Ed. C. O.) To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date, deduct the quantity of imports from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

	Singapore. June 8	Penang. May 31	Port Swettenham. June 15	Total.
Great Britain..pounds	7,386,271	5,643,200	10,401,315	23,430,786
Continent	90,003	24,267	1,268,590	1,382,860
Japan	411,275	.....	.....	411,275
Australia	45,116	.....	.....	45,116
Ceylon	115	88,267	620,241	708,623
United States.....	2,504,964	107,733	.....	2,612,697
Total 10,437,744		5,863,467	12,290,146	28,591,357
Same period, 1912....	5,309,245	3,211,759	9,135,496	17,656,500
Same period, 1911....	2,421,941	1,764,641	5,994,795	10,181,377
Same period, 1910....	1,220,057	807,433	4,069,587	6,097,077

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THE MONROE DOCTRINE AND THE RUBBER INTERESTS.

WHEN that historic, much discussed and exceedingly interesting piece of international polity, formulated by John Quincy Adams—then Secretary of State—and promulgated by his chief, President Monroe, in 1823, and known ever since as the "Monroe Doctrine," was first given to the world, it undoubtedly was timely, salutary and effective. At that time most of the South American republics had all the weakness of early infancy. They were absolutely incapable of protecting themselves, and any little jolt from a European power would have taken them off their feet. It was of vital importance to their continued existence that the protecting arm of the United States (to be sure, this arm, itself, was none too strong in those days, but strong in comparison with our neighbors of the South) should be thrown about them. The result was not only beneficial to them but beneficial to the whole family of nations.

But that was 90 years ago. Both the conditions and the "doctrine" have changed vastly since that time. Most of the South American Republics have now celebrated the centennial of their establishment. Many of them are populous and prosperous. Some of the largest warships floating the seas belong to their navies. And while they of course do not compare in military and naval strength with the European powers, still, no one would be likely to interfere with them now, as long as they behave themselves with moderate propriety. They realize the changed conditions, themselves, very fully; and while 90 years ago and for many years thereafter they were extremely glad to feel that they had a place of refuge in the great republic of the North, it is common comment among travelers in South America that the citizens of these various republics have long entertained a feeling of resentment at the patronizing and protecting attitude still maintained by the United States.

But more important than the change of conditions and of general sentiment in South America toward this doctrine, is the change in the doctrine itself. As stated by President Monroe, it simply gave the European nations to understand that the Western Hemisphere was no longer open for the establishment of new dependencies, and that any attempt on their part to establish such dependencies on this or the southern continent would be looked upon by this government as an unfriendly act. But the Monroe Doctrine as interpreted by our statesmen during the last two or three decades—and particularly as announced by Mr. Olney in 1895, when he was Secretary of State under President Cleveland—and when he gave the British lion's tail such a merry twist—is vastly broader and more far reaching. Mr. Olney announced, in fact, that the United States was supreme on this hemisphere, and practically informed the world that it could run things from Behring Strait to Magellan Strait, and would regulate all international and internal difficulties between these two points. European nations were not only not to be permitted to establish any colonies on this hemisphere, but they were not to be permitted to seek any redress if they or their citizens were treated with injustice in their dealings with any American republic; the United States would see that justice was done in all directions.

This certainly was a tremendous undertaking, or would be if it were carried out—but, as a matter of fact, it is not. We forbid other nations from making any show of force in the protection of their interests or those of their subjects, practically guaranteeing that we will look after their interests for them and see that the peace is kept and that order is maintained. But do we do it? Is not this part of the Monroe Doctrine—the fulfilling of our obligation to see that general order is maintained—mostly a pretense? Take Mexico, for instance.

It is not necessary to dilate upon the condition of affairs in Mexico during the last three years, and particularly during the last twelve months. If there were no Monroe Doctrine, the powers, by concerted action, in order to protect their citizens and their interests in Mexico, would undoubtedly have quelled the disorder in that republic long ago. We would not permit them to make any move, on the theory that the restoration of order in that unhappy country was our particular work; but we are not doing this particular work, and our failure to do so has entailed tremendous loss, not only upon Mexicans, but upon a great number of foreigners and upon a particularly large number of Americans. The polished and scholarly gentleman who is now President of the United States, and the gifted orator with the musical voice who is his Secretary of State, confer together much and frequently—and then confer some more—while matters go from bad to worse.

Americans probably have $20,000,000 invested in rubber plantations in Mexico, and it is safe to say that the Guayule interests before the Mexican outbreak were worth $20,000,000 or $25,000,000 more—$50,000,000 would not be an excessive valuation of the American rubber holdings in Mexico. But as matters are now, and as they have been for some time past, this property is rendered, for the time being at least, quite valueless. Undoubtedly when (or perhaps we might properly say if) peace is restored in that country a considerable part of the value of this property will be recovered, but the aggregate loss both in the original investment and in the long cessation of production will be enormous.

It really would be of vast advantage to the commercial interests of this country—not to mention those of Europe—if the Monroe Doctrine could be conveyed out beyond the three mile limit and dropped noiselessly into the sea.

WHEN RUBBER SOLD FOR 25c.

A SALESMAN connected with one of the automobile companies, in explaining the high cost of rubber tires recently, charged it to the fact that increase in the demand for rubber has far outstripped the increase in its supply, and made these two statements: "The natural rubber sources are no greater today than a century ago. Some of the older rubber manufacturers are paying four or five times as much for fine rubber as when they first entered the business."

At first thought one would be inclined to doubt the accuracy, or even the approximate accuracy, of both of these assertions, but on second thought it would have to be conceded that the statements are closely in harmony with the truth. Interpreting "natural sources of rubber" as those for which nature is solely responsible, as distinguished from those started by the hand of man, it is probably not only true that the natural rubber supply is no greater than it was a century ago, but it might be stated with perfect safety that the natural sources of supply are even less than they were a century ago, for during the past century there has been a very considerable destruction of the natural rubber trees, particularly those of the Castilloa family and of the rubber vines in Africa.

The second statement, that some of the older manufacturers paid in early days only one-quarter or one-fifth of the present prices for crude rubber, will probably be received with some incredulity by many people in the trade; but this also is not very far from the mark. There are some manufacturers still living—not many, it hardly need be said, but a few—who can remember when they bought fine Pará rubber at a shilling a pound; and some of the older manufacturing companies, if they have kept their records intact, will be able, by referring back to their early days, to find many instances of fine rubber purchased at this price. To be sure the price did not remain long at this figure, because the early annals of the American rubber trade contain a complaint made by the New England manufacturers, some sixty years ago or more, that they were often compelled to pay as high as 50 cents a pound for Pará rubber—and they looked upon it as pure extortion.

On glancing back at the price of crude rubber in the early days, the inquiry naturally suggests itself: How is it that the people along the Amazon maintain that they could not by any possibility deliver fine Pará rubber at American or European ports of entry under 65 cents a pound, and that if the price should go below that they would have to cease shipments, when it was possible for them sixty years ago to deliver rubber for 35 cents and even 25 cents? Transportation facilities certainly are vastly better now than then, while the primitive style of living of the earlier days still obtains along the banks of the Amazon. Why has the cost of gathering rubber increased so greatly?

NOT ALL RUBBER GATHERING INHUMANE.

THE report of the House of Commons Committee on the Putumayo situation, mentioned in the July issue of this publication, contained the following paragraph: "The committee further expresses the belief that the Putumayo incidents are but a shocking instance of the conditions that are found over a wide area in South America."

A correspondent who has passed five years in the Amazon country as manager of a rubber gathering company, sends THE INDIA RUBBER WORLD a letter—which will be found on a later page in this issue—in which he takes very strong exception to this particular statement of the House of Commons Committee and goes on to describe in considerable detail the conditions under which rubber is gathered along the Amazon, as typified by the station with which he was connected.

Of course, no one believes for a moment that the situation in the Putumayo has any duplicate along the Amazon. Hardships there necessarily are, but the letter of our correspondent is extremely interesting as showing under what humane conditions this work can be carried on. Undoubtedly his camp as he describes it is a type of many others along the great rubber river. Naturally, the manager of such a rubber gathering station is supreme—his word is law—and the conditions of the camp are very much as he chooses to make them. The chief explanation for the horrors of the Putumayo lies in the system of practical slavery that has obtained there, under which the rubber gatherer when once in debt to the company—and that occurs practically as soon as he begins to work for the company—comes completely under its power and so remains until he has worked off his debt, which, in the majority of cases, is a matter of so much difficulty as to amount practically to an impossibility. Along the Amazon, where the rubber gatherers are free agents and no such system of peonage obtains, the barbarities of the Putumayo could not occur.

The counsel of the Brazilian embassy in this country, Mr. C. L. Chermot, corroborates our correspondent in regard to the treatment of the rubber gatherers along the Amazon. Being interviewed a few days ago on this subject, he said that the situation of Indians living in Brazil is very different from that described in the Putumayo district. He continues: "They have been constantly cared for by the government. Since 1910 there has existed in the agricultural department a bureau of protection for the Indians as well as an arrangement for localizing native labor.

"For that purpose Brazil is divided into ten regions, each in charge of an inspector and several employes, chosen with great care, all of them being subordinate to a central bureau in Rio Janeiro. Four of those regions are situated in the basin of the Amazon, from which comes the principal rubber production of Brazil, and it is well to notice that for this service Brazil, as shown by the budget of last year, spent over $666,000."

INSURANCE IN WHOLESALE LOTS.

MUCH has been said during the last decade about the ever increasing efficiency of our American business methods, but there is one particular branch of industrial activity which certainly has been open to the charge of wastefulness—and that is the system of life insurance for wage earners. As it has been carried on, its cost has been out of all proportion to the results obtained. There has been altogether too much machinery for the output. The working man and working woman have been insured for small amounts, against which there have had to be charged the commission of the agent, the doctor's fee for examination, and then the extremely expensive weekly collections, where the collector went from policy-holder to policy-holder, getting 10 cents, or even less, at a time. The extravagance and general inefficiency of this system are obvious.

But a new sort of insurance has recently been introduced to cover just this class of people, which eliminates all this waste. It is "Group Insurance"—insurance by wholesale—under which a blanket policy is written for a large number of people, without the expense of medical examination. While the insurance covers many lives, there is but one policy and but one transaction. For instance: A Chicago company employing about 3,500 men took out a policy which gave each man in its employ insurance equal to twice the amount of one year's pay. The face of the policy was for over $6,000,000, but by the avoidance of commissions and medical fees and much clerical work, there was an initial saving of $50,000 on the transaction. Insurance companies have found from experience that it is a perfectly safe risk to insure a body of working men—whose condition of health permits them to discharge their duties efficiently—without any individual examination, as in such a group of men a normal death rate can be relied upon.

A good many employers are availing themselves of

this new system of insurance, for it has a double benefit. It is obviously beneficial to the workman, for it gives him a fair amount of insurance without cost to himself, and it further enables him to increase his insurance, if he so elects, at the same rate under which the blanket policy is written—which often reduces the cost to one-fifth of the amount under the old system. This system, moreover, is beneficial to the employer, as the moderate expense to which he is put is undoubtedly more than compensated by the increased regard and loyalty of his workmen and by the greater quantity and better quality of work that they can be depended upon to do under these conditions.

A PROTEST THAT SOUNDS REASONABLE.

THE manager of a motor car manufacturing company has written to one of the automobile papers protesting against the continual harping by the advertising departments of the various automobile makers on the fact that they are equipping their cars with "over-size tires." He remarks: "This has assumed the proportions of a fad. Every motor-car advertisement writer seems to think he must use this term. It seems not to make any difference with what size of tires his car is equipped. He uses the term anyway." Then he goes on to say that there is a right-sized tire for the wheels of every car and that is the tire with which the car properly should be equipped, and any tire larger than that is just as much out of place on the car as one that is too small and too light.

This seems to be a very reasonable contention. If "over-size" means anything it means a size that is too large; and it does not seem logical that a motor car wheel should be improved by wearing excessively large shoes any more than it would be of advantage to a man with a number 7 foot to equip himself with number 12 rubbers.

SOME INTERESTING COMPARISONS.

THE prodigious growth in the manufacture of automobiles has been commented on much and often, but every few days some new figures are disclosed that compel the editorial mind to abandon its resolve not to mention this subject again. Official estimates place the value of the exports of complete automobiles for the year ending with last June at $40,000,000, including exports of tires valued at $4,000,000. The value of automobiles, including all accessories, exported in the year 1902-3—that is just ten years ago—was $1,000,000. In 1907 it had increased to 3,000 cars, with a value of about $5,000,000; but the imports during that year almost balanced the exports, being valued at $4,000,000. But in the last six years the imports of automobiles, including all parts, have almost steadily dropped in value, until for the year ending with last June they amounted only to $2,000,000. In other words, while during the last six years the imports have fallen off one-half, the exports have increased eight-fold, and the value of the tires exported last year was almost equal to the entire automobile exports of six years ago and was four times as great as the entire automobile exports of ten years ago.

The foreign field, moreover, is one that is susceptible of still greater enlargement, for the proportion of the population in foreign countries already supplied with motor cars is very much smaller than it is in this country, while the temptation to get an auto, in Europe at least—owing to the shorter distances between cities and the better road-ways—is very much greater.

WHY NOT WASHABLE SHOES?

A REPORTER on one of the New York dailies, in his busy quest for news, recently ran across a shoe dealer who lamented that there were no washable shoes on the market. In order to complete his story he went to a manufacturer of footwear with the suggestion, but was told forthwith that the idea was absolutely impracticable.

But is it?

To be sure, the ordinary footwear of today could not be washed to advantage. Immersion is not especially beneficial for leather shoes, nor is it particularly advantageous for shoes made of cloth; but would it not be possible to treat both leather and cloth shoes with some sort of rubberizing preparation which, while not preventing ventilation, would permit them to be duly immersed and properly washed without any detriment? People—at least those in the more orderly walks of life—are accustomed to having their hosiery laundered from time to time, so why not their shoes?

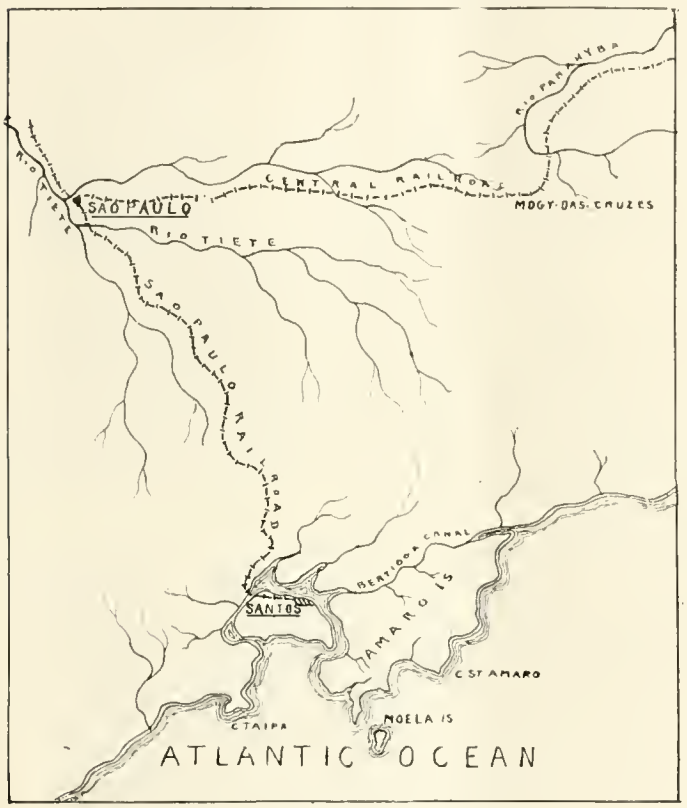
At any rate, now that September has arrived and everyone is back from the summer outing, refreshed by the delights of the mountains and the joys of the seashore, and ready to confront new problems and to engage afresh situations which have hitherto proved baffling, why is not this a good time for some energetic intellect to get to work on the subject of washable shoes?

Santos and Sao Paulo.

By the Editor of The India Rubber World.

From Rio to Santos—Railroad Thrills—The Journey by Boat—Off Moela Island—A Dangerous Passage—An Ancient Death Trap—Sanatized Santos—The Great Docks—The Coffee Mart of the World—Immigration System—Coffee Loading Machinery—Miles of Conveying Belts.

AS I was beginning a letter on South Eastern South America there came a friend in a hurry to know all about Santos. He seemed full of "the deadly unhealthfulness of the place." What literature he had been reading I do not know,



MAP OF SANTOS AND SAO PAULO.

but I promised that I would at once try to picture this important port as it appeared to me during my two visits there.

One's thought turns particularly to Santos when a visit to Rio is about to close, for it is only a short distance to the South. There are two ways of reaching it. One by railroad, by way of the city of Sao Paulo, and the other by steamer. The latter is preferable unless one is in search of thrills. If so they can be secured from the terrific speed at which the huge Baldwin locomotives snatch the trains across country, around curves, down steep inclines, and across bridges. According to popular report they run off the rails very often, but usually are lucky enough to choose a place where only the rolling stock is damaged.

By boat we go therefore, leaving Rio harbor at nightfall, and awakening the next morning with the dim outlines of Moela Island off the starboard bow. Just as we got on deck the order for half speed was given, and the big steamer swung slowly past Cape Monduba, the quartermaster heaving the lead, for entrance to Santos is difficult and often dangerous. We appreciated this when, as we were passing slowly through the buoy-marked channel, close under the bare granite slopes of Cape Roza, a sudden tropical rainstorm shut out the land and enveloped us in darkness. The engines were promptly reversed, the anchor let go, and the fog-horn started, for we were directly in the channel, inviting collision with other craft. The decks were soon crowded with startled passengers, who besieged officers and stewards with the usual foolish questions. In a few moments, however, the rain cloud lifted, showing sinister looking rocks on our port quarter and a bar with white water breaking over it not a great distance away, and it did not require much of an imagination to picture our fate had the steamer been less skilfully handled.

The port of Santos formerly had a most forbidding reputation as a fever hole and a death trap. It was customary for the officers and crew of vessels clearing for this port to demand extra pay before signing the articles, as there was the chance that none would return. In that case their ships were left to rot, for the yellow fever was swift and deadly when once it had laid hold of them. Nor could the owners get another crew to bring home a fever ship. This is all past now and the last vestiges of the abandoned ships have been removed. Modern sanitation has cleaned this once pestilential spot and made this port second in importance to Rio de Janeiro—that is in respect to the tonnage of vessels entering and clearing.

But to continue, the rain over, we steamed slowly up the nar-

PARTIAL VIEW OF CITY OF SANTOS AND HARBOR.

row river channel that leads to the inner harbor. On both sides were low, level, *banjos* (flat lands) covered with dense tropical growth. The luxuriance of the verdure attested to the richness of the soil and suggested its wonderful adaptability to banana culture. Bright vegetation, damp, earthy smells, and slowly rising morning mist-clouds are ever sure indications of tropical fertility.

Near the river's mouth is the harbor-master's station, and adjoining buildings straggle off along the bank, forming a small town. Severely plain in structure, the edifices are fearfully and colorfully painted. The sleepy inhabitants glanced at the passing steamer, and then resumed thumping an inquisitive pig, shooing a thieving hen, slapping a squalling brat or whatever their strenuous labor interrupted by our arrival.

The lofty steel towers, standing like sentinels on either side of the river, support an electric cable which transmits power from Parahyba to Santos, where it operates the street railroads and the complicated dock machinery. As we pass these towers, which look strangely familiar, we are reminded that when Brazil wants the best and most modern electrical machinery she places her order in the United States.

The long docks, crowded with steamers of every nation, next appeared, and we anchored in mid-stream awaiting our turn to be berthed at the dock. The Companhia Docas do Santos (Guinle & Co.) own and operate these docks and their great warehouses. The former extend for more than a mile and a half along the south bank of the channel, which was never very wide or deep until powerful suction dredges made it so, and incidentally filled in the low land where now the coffee warehouses stand. In docking, great rope hawsers were let down from the bow and stern of the steamer and carried in small boats by swarthy, barefooted watermen to the docks, where they were made fast in huge iron rings set in solid masonry. Then the ship was slowly warped sidewise to her allotted place. Shouts, yells and Spanish oaths (badly pronounced) in profusion were required before we were securely tied up and the gangway let down. Then—and not before—the purser hung out the mussy little blackboard that announced in a chalky smear the hour of the steamer's departure, and the sight-seers rushed frantically to catch trolley car, train or steamer, and we were ashore. What rubber is to Pará or Manáos, coffee is to Santos, and more. It is the largest coffee exporting city in the world. In the year 1906-7, 15,392,000 bags were shipped from this little city of only 50,000 inhabitants.

It is the chief seaport of the province of Sao Paulo, famous for the enterprise of its people, who are called the "Yankees of Brazil." This is by no means a misnomer, for their forbears, the fierce Mamelucos, were a mixture of Portuguese and Indian blood, a warlike race that settled, conquered, and defended the country—the true pioneers of Brazil. The climate of Santos is wholly tropical, with 90 inches of rainfall, and an average yearly temperature of 71 degs. F. The municipality of Santos includes the island of St. Vincent and the island of Santo Amaro. The city is located on the northeastern end of the former island,

OFFICES OF THE INSPECTORS OF IMMIGRATION.

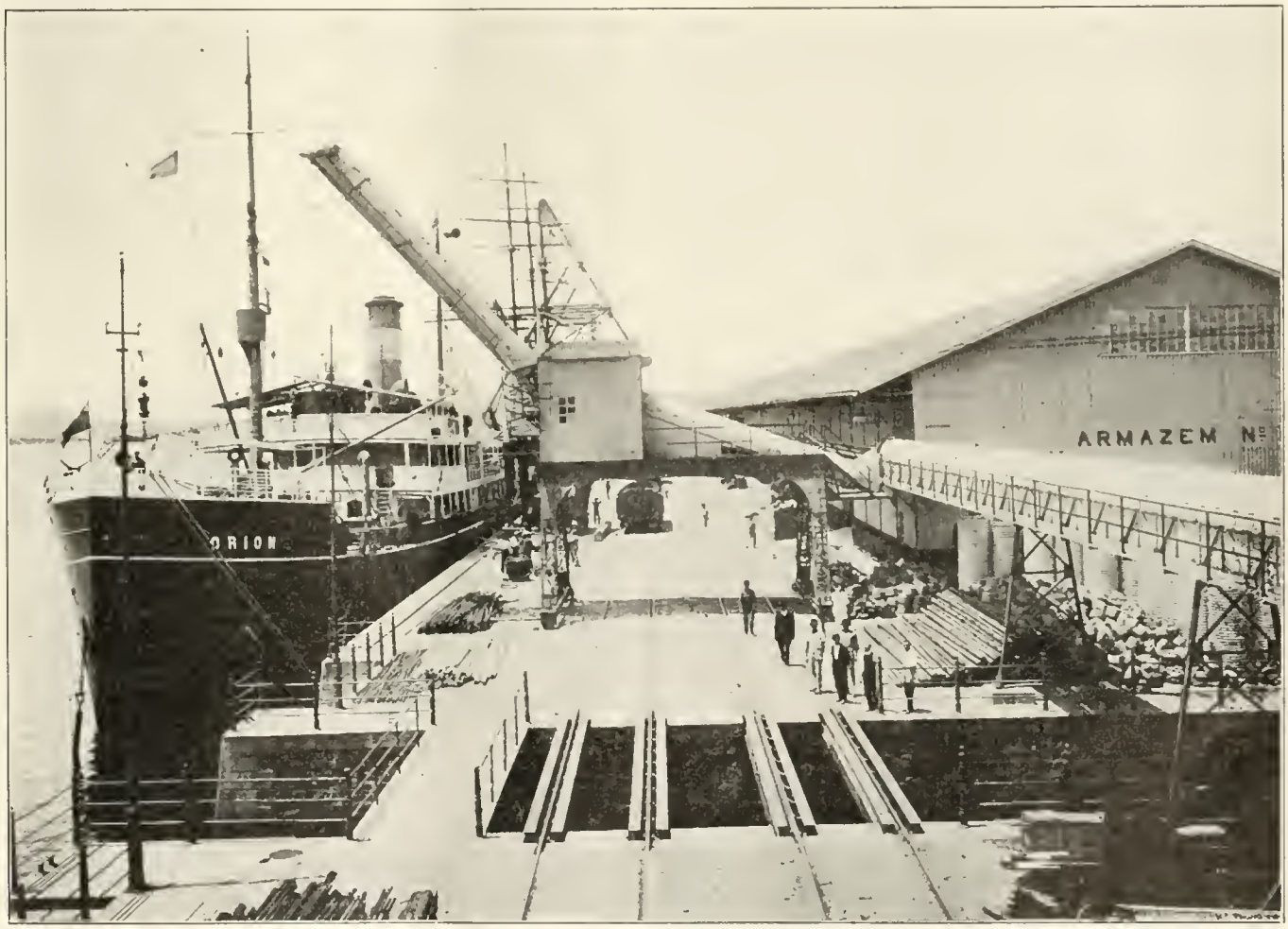
near the foot of a hill on the summit of which is the church of Our Lady of Montserrat, one of the oldest shrines in Brazil. The streets are well paved and scrupulously clean. The houses are Spanish, of the one or two-story type, built out to the sidewalk, with wide open windows, usually occupied by the feminine portion of the family. The ladies of Santos occupy these windows in order to see and be seen by the passers by, who are saluted, if friends, and stared at if strangers. On fiesta days and special occasions it looks like a panorama of box parties, and creditably upholds the reputation that Santos enjoys for beautiful women and expensive costumes.

There are many parks or public squares, with shade trees, flowers and inviting benches that urge the weary to rest. The post office and better shops are on a central square, or near by, so that the retail commerce of the city can be observed by stroll-

BIRD'S-EYE VIEW OF THE CITY OF SAO PAULO.

ing through the macadamized streets which radiate from this point.

The Praca do Commercio is not far away, and just across the street from the little hotel, famous for the black coffee served, is the building of the Commercial Association of Santos, where a polite attendant furnishes you with printed statistics, reports and all sorts of commercial information. From here it is only a short distance to the *Inspectoria de Immigracao*—or "The Inspection of Immigration"—located in a modern two-story building with large well furnished offices, where capable officials and clerks attend to this very important branch of the department of commerce. They look especially after immigrants who land in Santos with the intention of settling in the state of Sao Paulo. They also compile statistics on immigration and emigration for the port of Santos, secure and list information on all conditions of the state in order to give full and accurate reports to inquirers, and maintain a comprehensive exhibition room provided with maps, samples of products, statistical tables, etc.



DOCKS AT SANTOS.

Each steamer on arrival is visited by an immigration official who makes a formal offer of free board and lodging to all third-class passengers for Santos who pass satisfactory inspection, also free transportation and board at the Hotel of Immigrants in Sao Paulo, where the home-seeker awaits the department's instructions. Later the immigrants are "placed" in accordance with their previous experience or trade. In 1910 the monthly average of immigrants landed in Santos was 3,140 or about 104 a day.

When the docks of Santos were building, the most experienced engineers were employed to evolve a modern system that would be second to none in the world. How well they have succeeded can only be fully realized by walking along the wide ganite-paved quays teeming with activity. Fussy little engines are puffing up and down the tracks, switching empty freight cars in place or hauling loaded ones out of the way. The strident, incessant toot of the whistle is most effective in keeping the tracks clear. Powerful steel cranes operated by electricity move slowly alongside the steamer and quietly unload cargo on flat cars, or swinging with full radius drop the burden within the shelter of the warehouse. Freight from all parts of the world lies about in apparent confusion. There are great tubs of fish from Norway, bundles of tools from Germany, canned goods from Spain and Italy, boilers from Scotland and barbed wire from the United States. Sao Paulo cargo is loaded directly on the cars and hauled out every night, reaching its destination the next morning. Mixed freight and broken lots are delivered by the cranes to the doors of modern, steel-construction, absolutely fire-proof warehouses. These are built on the unit system and extend along the quays, parallel to the docks, with fenced spaces between the warehouses where heavy freight is stored. In these open bays is the inclined belt-conveying machinery used for loading sacks of coffee. Across the street from the docks millions of bags of coffee are stored in great warehouses, which extend as far as one can see, occupying the entire area back of the docks.

When ready for export it is loaded by conveying belts which are permanently in place in the bays between the dock warehouses. The installation consists of a platform which extends along the sides of the dock warehouses for about a mile. This

supports the main belt conveyor. Inclined conveyors deliver the coffee to this long endless belt, which in turn carries the sacks along until they are intercepted by one of the loading machines and automatically delivered aboard the steamer. These loading machines run on tracks and move by their own electric power up and down the dock. In them are the motors that operate the belt conveyors and indeed all of the complicated machinery of this huge loading device. It is too bad, but of the miles of belting used not one foot of it is rubber. Stitched canvas is what they use, and they are convinced that rubber belting would not stand up in that hot, humid atmosphere.

(To be continued.)

HOW MOTORCAR TANKS ARE FILLED IN COLORADO.

By a Western Correspondent.

THEY were discussing their summer vacations, back there in the smoker, and the practical results, if any, attendant on the purely pleasure jaunt.

The quiet, dapper man who had sat still and said nothing, stepped in at this point and remarked:

"I've been summering out in Colorado and the Rockies, and that sort of thing—and I've picked up one new idea that I intend to put to personal use forthwith. Almost the whole country over, except there in Colorado, the automobilist whose machine requires water contents himself with the nuisance of opening seat or tool-box, bringing from it a collapsible bucket, 'hiking' to some farm-house, begging right to use the nearest cistern, and paying for the privilege with cigars, if not in cash itself. Not so in Colorado.

"There the owners of machines—big and little—purchase from the nearest hardware shop a cheap foot-pump, the sort you hold in place by putting your feet on the bars protruding from each side. Then, they buy a good length of hose, coiling this up either at the side (say inside the extra tire), or attaching it underneath the car. There is hardly an automobile jaunt anywhere in this great and glorious republic, of sufficient length to use up one's supply of water, that doesn't take one over some creek, brook, pond or the like. And at such time our western autoists simply throw one end of their hose overboard, the other staying fixed to the tank. A moment or two with the foot-pump and they have pumped up as much water as they will need till the next stop at least. It's a wonderfully handy arrangement, especially on tours away from the beaten paths; and if I were a rubber dealer I would lay in a big supply of hose, and then I would see that every motorist in my neighborhood knew about this new scheme; and as fast as one tried it he'd tell the next.

FILLING TANK WITH GARDEN HOSE.

RUBBER HOSE AS AN AUTO SIPHON.

And it's my guess that every man of them who bought the hose would come back afterwards and thank me for the idea."

A MEXICAN RUBBER COMPANY INVESTS IN A MALAY PLANTATION.

It is a new departure for American rubber companies interested in Mexican plantations to divert any part of their energies to rubber planting in the Far East—but this is what has been done by the Mexican Crude Rubber Co., of Detroit. In the report submitted by the general manager at the recent annual meeting, these two interesting paragraphs may be found: "It is with a feeling of optimism that your manager turns to the subject of the company's new enterprise, its operations in the Federated Malay States. This was undertaken after very careful though by your board of directors following the report of the investigations made by two of the company's most trusted employees. The Mexican Crude Rubber Co. has acquired by purchase three plantations, all of which are cleared and planted, from which the company will commence to market rubber during the year 1914. These plantations are situated in the State of Selangor, which is the best proven rubber district in the Far East. They are known as the Waterfall Estate, comprising 189 acres; the Kuala Garing Estate of 590 acres, and the Bukit Rawang Estate of 456 acres, or a total of 1,235 acres, which was all planted at the time of purchase."

The company has also leased from the Government a wild tract of 1,500 acres adjoining these plantations, which it is now clearing and which it intends to plant to rubber.

GUAYULE RUBBER FACTORY CLOSING DOWN.

The directors of the Guayule Rubber Co., Ltd., London, announce that owing to the disturbed state of Mexico, and particularly in the regions whence the company draws its supplies of raw material, it has been found necessary to practically close down the factory. This has been done temporarily and the staff reduced as far as it is possible to do so. Cable advices to the home office state that for the present it is impossible to guarantee any specific quantity of production. Further sales of rubber are, therefore, not being made, in anticipation of lack of probable output.

AMERICAN RUBBER GOODS FOR FRANCE.

A business man in a French consular district expresses through the United States consul the desire to obtain an agency for American rubber goods. Replies should be addressed to the Bureau of Foreign and Domestic Commerce, Washington, D. C., under No. 11523.

Navy Specifications.

By E. S. Land, Naval Constructor, U. S. N.

A PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912.

IN purchasing material of all kinds it is necessary, particularly where competitive bids are invited, to prepare certain data to enable the manufacturers to submit an intelligent bid. Such data are usually termed specifications. To prepare satisfactory specifications is an art in itself—one that is the subject of keen discussion, wide divergence of opinion and considerable abuse.

In order to cover the ground properly, great care and infinite pains as to details are required, yet the limits must be broad enough to admit of the widest competition available. Considerable care must be exercised not to incorporate clauses which would exclude certain manufacturers or prejudice them against competing; yet at the same time it is essential to incorporate certain clauses which indicate in sufficient detail the quality of the material or the design of the apparatus being purchased.

To avoid the incorporation of proprietary clauses, and clauses calling for patented articles, needs a nicety of judgment difficult to find.

One is apt to hear the statement that "specifications are all rot," that they increase the cost unnecessarily, that they are made only to be "skinned," that one should buy an article because one knows by experience that it is satisfactory for the purpose intended, without going to the infinitesimal and useless detail of specifications. It is freely acknowledged that there is some truth in each of the statements, but that they are basically erroneous as far as Government business is concerned is stoutly maintained.

A private concern can, and a great many of them do, purchase material without specifications of any kind, but they are at liberty to choose the manufacturer who furnishes such material, and if the material furnished proves defective they are at liberty to cease dealing with said manufacturer; not so the Government, which is required by law to purchase material of the lowest bidder offering satisfactory material; and in case the material proves defective there is a certain amount of redress in attempting to eliminate the manufacturer of inferior material when future bids are being considered. Theoretically the Government is on the same plane in this respect as the private concern; practically this is far from being true. It is exceedingly difficult to eliminate unsatisfactory dealers from competition for Government business; only after the most flagrant abuse of the Government's confidence is it practicable to eliminate such dealers, and even if once eliminated the elimination only obtains for a short period of time.

Government business is more or less successfully hedged in by politics, and by the great American spread eagle spirit sometimes embodied in the expression "the Government owes me a living"; and more often by the underlying statement, "Well, I'm a taxpayer and support the Government; therefore I've such and such rights." When you run across such statements as these there is no answer.

If it were possible to deal only with reputable, reliable concerns most of the difficulties would be solved, but it is a recognized fact that one is up against all gradations of dealers, from the man whose material is *par excellence* to the man who wishes to furnish you with something "just as good"; from the man whose trade name is a guarantee of quality to the jobber who intends to give you the very poorest material he thinks there is any chance of having accepted; from the man whose establishment represents years of business skill, sagacity and experience, to the man who "carries his office in his hat."

In dealing with all kinds of people it is absolutely essential to safeguard the interests of the Government by covering material desired with detailed specifications carefully prepared and as adequate as practicable.

To prepare these specifications it is frequently necessary to consult a number of manufacturers whose life-long experience enables them to adequately cover the ground; it is manifestly impossible for any person to have an intimate knowledge of the manufacture of all material used by the Department.

Department officials have always received the greatest consideration and assistance from manufacturers in the preparation of suitable specifications for naval purposes. With this information and with a knowledge of naval requirements, the problem then becomes a matter of digesting the information available and producing therefrom a broad statement of the material desired for the specific purpose, together with sufficient details to enable the manufacturer to obtain a reasonable understanding of what is desired.

It frequently happens that the limits at first evolved are too narrow for adequate competition; revision is then necessary, as it is the Department's desire to approach commercial standards as closely as possible.

ESSENTIAL FEATURES.

1. The title should state in general terms the type of the article and purpose for which it is intended, viz.: "Specifications for cast iron porcelain lined lavatories for ships' use." "Specifications for metal uniform case locks." "Specifications for ship's electric ranges."

2. If a revised specification, the title should state the specifications which it supersedes, viz.: Superseding specifications 3-C-1," issued August 8, 1901.

3. The first paragraph of specifications should state in general terms the type, character and number of parts.

4. The second paragraph should give general dimensions and capacities.

5. The following paragraph should give detailed description of parts. If an article is composed of several complete units which when combined make a complete whole, the separate units should be sub-headed and each described in detail. For examples see "Specifications 57S2, Combination Sterilizing Outfits for Operating Rooms; sub-heads: Water Sterilizers, Bowl and Utensil Sterilizer, Instrument Sterilizer, Dressing Sterilizer, Valves and Fittings," etc.; also "Specifications 26-C-1, Chairs for the United States Navy."

6. Requirements for tests, if any are necessary.

7. Tolerances allowed, and terms for acceptance if material does not meet the specifications in certain respects.

8. Instructions as to packing or shipment, where applicable.

9. A statement to the effect that questions as to interpretation of the specifications should be referred to the Yard, station, or place where the inspecting officer for the material in question is located.

10. Paragraph stating where specifications can be obtained.

11. References—In this connection abbreviate, i. e.:

"Con. Off. New York, 2119 UX Apr. 15, 1911," signifies Construction Officer, Navy Yard, New York, letter number 2119 UX, dated April 15, 1911.

12. When illustrations are considered necessary the tracings for reproduction should be made on sheets 5 inches x 8 inches, so that they may be reproduced that size without reducing. If the article to be shown is too complicated or on account of the arrangements to be shown could not be drawn clearly on the above size sheet, it should be drawn so that it can be reduced to that size for printing and yet have all lines and figures readily readable. Tabulations, titles and other information which can be

embodied in the text of the specifications should be omitted from such tracings. The ink should be black and the lines drawn slightly heavier than ordinary in order that a clear reproduction may result. If impracticable to show all of the illustrations desired on one sheet 5 inches x 8 inches, other parts required should be arranged so as to appear on one or more other sheets of the same size. The drawing itself should not go beyond the limits of ½ inch from the edge of the 5 inch x 8 inch sheet.

New Navy Department Specifications.

THE Navy Department is now issuing a number of revised specifications to supersede those hitherto in force. The principal features of those issued up to the present time, so far as they relate to rubber, are shown below:

RUBBER EAR CUSHIONS FOR FIRE CONTROL INSTALLATIONS.

(Specification No. 17C3a, July 5, 1913.)

MATERIAL: To be properly vulcanized and to be made from a compound containing not less than 45 per cent. of washed and dried fine Pará rubber, not more than 3.5 per cent. of sulphur, with the remainder suitable mineral fillers.

TESTS: Permanent elongation not exceeding 20 per cent., tensile strength at least 2,200 pounds per square inch.

GAUGE GLASS GROMMETS.

(Specification No. 33G1a, July 15, 1913.)

MATERIAL: Rubber compound—to be properly vulcanized and to be made from a compound containing not less than 35 per cent. of washed and dried fine Pará rubber, not more than 2.5 per cent. of sulphur, with the remainder suitable mineral fillers.

TESTS: Permanent elongation not exceeding 25 per cent., tensile strength at least 1,500 pounds per square inch.

SHEET PACKING, CLOTH OR WIRE INSERTION.

(Specification No. 33P4a, July 15, 1913.)

MATERIAL: Rubber parts—rubber layers to be properly vulcanized and to be made from a compound containing not less than 25 per cent. of washed and dried fine Pará rubber, not more than 2 per cent. of sulphur, with the remainder suitable mineral fillers.

TESTS: To bend double in any direction without cracking; to stand four hours' exposure to boiling water without injury to layers, and after four hours' exposure to steam at 150 pounds pressure to show considerable flexibility.

RUBBER HOSE FOR USE IN ENGINEERS' DEPARTMENT.

(Specification No. 34H6a, July 15, 1913.)

MATERIAL: Cotton canvas layers of duck (three plies), free from unsightly defects.

Rubber parts: Tube, cover and washers to be properly vulcanized and to be made from a compound containing not less than 35 per cent. of washed and dried fine Pará rubber, not more than 3 per cent. of sulphur, with the remainder suitable mineral fillers.

TESTS: Tests on the hose as a whole to be as indicated in general specifications for rubber material.

GUARANTEE: Manufacturers to guarantee hose to be made according to best principles of construction and free from defects of material and workmanship; if defects shown within 2 years the rubber parts to be replaced with new hose.

1¼-INCH RUBBER HOSE.

(Specification No. 34H9a, July 15, 1913.)

MATERIAL: Cotton canvas layers (three plies) free from unsightly defects.

RUBBER PARTS: Tube, cover and washers to be properly vulcanized and made from a compound containing not less than 35 per cent. of washed and dried fine Pará rubber—not more than 3 per cent. of sulphur, with the remainder suitable mineral fillers.

TESTS: Tests on the hose as a whole to be as indicated in general specifications for rubber material.

Tests of Rubber Compound: Adhesion of friction coat of rubber between plies to stand a weight of 15 pounds without plies separating at greater rate than 1 inch per minute.

Tube and Cover: Tensile strength at least 1,500 pounds per square inch in tube and not less than 1,300 pounds per square inch in cover.

RUBBER PUMP VALVES.

(Specification No. 45V3a, July 15, 1913.)

MATERIAL: Hard valves. To be properly vulcanized and to be made from a compound containing not less than 30 per cent. of washed and dried fine Pará rubber, nor more than 10 per cent. of sulphur. Remainder mineral fillers.

Medium valves. To be properly vulcanized and made from a compound containing not less than 35 per cent. of fine Para, nor more than 5 per cent. of sulphur. Remainder mineral fillers.

Soft valves. To be properly vulcanized and made from a compound containing not less than 35 per cent. of fine Pará rubber, nor more than 2.5 per cent. of sulphur. Remainder mineral fillers.

TESTS: Test on valves as a whole. Valves taken at random to stand a dry heat of 270° F. for one hour, and 400° F. in saturated steam for three hours, without disintegrating or blistering.

SHEET RUBBER TILING.

(Specification No. 59T1a, July 15, 1913.)

CONSTRUCTION: To be built up in two layers, ⅛ inch thick with backing of 10-ounce cotton duck.

MATERIAL: Top layer to resist ordinary wear. Bottom layer of black India rubber, acting as cushion for top layer. Backing of 10-ounce duck free from unsightly defects.

TESTS: Top layer, special test for elasticity. Bottom layer, special test for stretch. Cotton canvas backing, special test for being firmly secured to back of tiling.

RUBBER LIFE BELTS.

(Specification No. 12B1a, March 31, 1913.)

MATERIAL: The fabric to be of the best quality rubber and cotton drill, the rubber having not less than 60 per cent. pure Pará rubber.

TEST: Air pressure test of 5 pounds to the square inch for 8 hours. To support 20 to 22 pounds dead weight in water.

GUARANTEE: Three years.

RUBBER MATTING.

(Specification No. 28M2a, July 15, 1913.)

MATERIAL: The rubber face made from a properly vulcanized rubber compound free from fiber, to show on analysis not more than 60 per cent. mineral matter, not more than 6 per cent. organic acetone extract, nor more than 6 per cent. sulphur. The composition shall be free from objectionable odors.

RUBBER FIRE HOSE.

(Specification No. 34H3a, July 30, 1913.)

MATERIAL: The tube, cover and washer shall be properly vulcanized and have not less than 45 per cent. of washed and dried fine Pará rubber, not more than 3.5 per cent. of sulphur, with the remainder suitable mineral fillers.

TESTS: The hose shall be tested as indicated in general specifications for rubber material, 33 R. 3 (latest issue).

STEAM HOSE.

(Specification No. 34115a, July 30, 1913.)

MATERIAL: The tube, cover and washers to be properly vulcanized, and made from a compound containing not less than 35 per cent. of washed and dried fine Pará rubber, not more than 3 per cent. of total sulphur, and not more than ½ of 1 per cent. of free sulphur, with the remainder suitable mineral fillers.

TESTS: The hose shall be tested as indicated in general specifications for rubber material, 33 R. 3 (latest issue).

AIR HOSE FOR USE WITH PNEUMATIC TOOLS.

(Specification No. 34118, January 2, 1913.)

RUBBER PARTS: The tube, cover and washers to be made of a properly vulcanized rubber compound. The friction shall consist of a properly vulcanized rubber compound best adapted for the required service.

PURE GUM RUBBER TUBING.

(Specification No. 33T1a, July 25, 1913.)

MATERIAL: The tubing shall be properly vulcanized and made from a compound containing not less than 35 per cent. of washed and dried fine Pará rubber, not more than 2.5 per cent. of sulphur, with the remainder suitable mineral fillers.

TESTS: When test piece is stretched 2 to 8 inches, permanent elongation not to exceed 25 per cent. Tensile strength shall be at least 1,000 pounds per square inch.

HARD RUBBER.

(Specification No. 33R2a, July 25, 1913.)

CONSTRUCTION: The hard rubber shall be furnished in slab, rod or tube form and shall conform to the dimensions specified in original proposal. If required in sheet form, it shall be of uniform thickness, smooth finish, perfectly flat and polished on both faces.

MATERIAL: The hard rubber shall be made from a properly vulcanized compound best adapted for the required service.

TESTS: When broken, to show a shiny black fracture. To be sufficiently tough to be worked with machine tools, and to take a jet-black polish. To show a high insulation and dielectric strength. To stand exposure to live steam at 212° F. for 2 hours.

RISKS OF POISONING IN RUBBER INDUSTRY.

WITH the increased variety of chemicals employed in the rubber industry, there is a corresponding increase in the risks of poisoning arising from their use. This subject is treated in a lucid and comprehensive manner in the "Gummi-Kalender" for 1912, by Dr. Rambousek.

CARBON DISULPHIDE.

Chronic disulphide of carbon poisoning has formed the object of researches by various experts. According to the results obtained, the minimum proportion of sulphide producing noxious effects is one milligram (0.015432 grain) of disulphide to one liter (61 cubic inches) of air. A protracted stay in such an atmosphere, to which rubber workers are in some cases exposed, is sufficient to cause chronic poisoning. This limit is often exceeded in vulcanizing workrooms, particularly in the absence of special protective measures. It is remarked, however, that the limit of safety is not likely to be exceeded in modern plants, if the ventilation is even moderately satisfactory. In some cases the air in older Berlin factories has been found to contain 3 to 6 times the minimum quantity of carbon disulphide where poisonous effects commence.

Laudenheimer, while recording the comparatively favorable results of precautionary measures at the principal Leipzig factories, adds that the percentage of mental and nervous affections among rubber workers, caused by carbon disulphide, is higher than in other branches of industry under like working conditions. In the years 1896 to 1898 there were in the Leipzig rubber plants averages of 1.95 per cent. of nervous and 0.22 per cent. of mental affections, while in the textile branch the proportions were respectively only 0.92 per cent. and 0.03 per cent.

Recent statistics of Berlin rubber factories showed that with a total working staff of 2,228 there had been in one year 1,041 cases of illness and 20 deaths. Of the former, the percentage of nervous disorders was 2.83 per cent., and of poisoning 1.40 per cent. Compared with the Leipzig averages for the years 1896 to 1898, it would seem that the proportion of nervous diseases had increased in the rubber industry.

BENZINE AND BENZOLE.

Benzine poisoning seems to be of minor importance in the rubber industry, and of much less moment than that resulting from carbon disulphide. Benzole poisoning has been described by Santesson as having occurred in a factory at Upsala (Sweden), where nine young women, employed in making pneumatic tires, became seriously ill, four of them dying.

In another case quoted, rubber dissolved in benzole was applied in the usual way by a spreading machine. Of the three workers occupied on this machine, one became unconscious and succumbed to the poison. In a rubber extracting plant, a worker tending a benzole distilling apparatus was overcome by the fumes of the benzole. Two other workers, who tried to save him, were affected in a similar way, only one of the three escaping with his life. Dr. Rambousek criticizes the manner in which two substances so different as benzine and benzole have been confounded by certain technical writers.

ANILINE.

At a plant engaged in the extraction of crude rubber from rosin by means of aniline, out of seventeen workers eleven fell ill within two months.

HARD RUBBER WASTE.

Crzellitzer has recorded a case of poisoning through the grinding of hard rubber waste, which affected the workers engaged in the process.

VULCANIZING FLUIDS.

Attention is called to the noxious effects on the skin, of the liquids used in vulcanizing. This result is attributed in the first place to the benzine and carbon disulphide present in the solutions.

Such are a few of the principal sources of poisoning in rubber manufacturing, quoted by Dr. Rambousek, who has, moreover, given copious references to various authorities on the subjects treated.

TO GET RUBBER FROM THE SAGEBRUSH.

Congressman Baker, of California, recently introduced a resolution in the House, asking for an appropriation of $5,000, to be used in analyzing and testing the sagebrush and greasewood which grow so extensively in California, Nevada and other parts of the far West. In fact they grow far too extensively for the comfort of the farmers, who have found these growths a tremendous pest. Some experiments tried a while ago, however, by chemists, brought out the fact that sagebrush has quite a large content of rubber, alcohol and acetic acid, and it is hoped that some system of treatment may be discovered that will render it possible to extract these constituents, and especially rubber, in profitable quantities.

INCREASED AMERICAN TRADE WITH TASMANIA IN RUBBER GOODS.

Statistics from Consul George M. Hanson, of Hobart, show imports of American rubber goods into that colony as $5,508 in 1911 and $9,408 in 1912.

The Struggle Between Brazil and the Far East.

WHILE the "Awakening of Brazil" has been generally recognized as one of the most interesting factors in the economic history of the day, it has given rise to criticism in Europe. In particular, the question is discussed by M. Jules Tilmant, in the "Bulletin de l'Association des Planteurs de Caoutchouc," and being published in the organ of that representative body, his remarks, while specially intended for European capitalists, invite general attention and consideration.

One of the chief points urged is that what might have been possible in Brazil had systematic plantations been established ten years ago, is now difficult, if not impossible of execution. In other words, had Brazil gone in for rubber planting at the same time as the Far East, she would now have been in a better position to meet Asiatic competition. Taking matters, however, as they are, M. Tilmant asks whether it is still possible to make up for lost time, and whether the measures proposed are of such a nature as to offer a prospect of the desired results being accomplished.

INCREASED PRODUCTION.

In view of the position occupied by plantation rubber as a result of larger production, the increase of Brazilian output has naturally engaged primary attention. This end would apparently be attainable through planting on an extensive scale and through the adoption of modern methods of tapping. But, as M. Tilmant remarks in speaking of the former subject:

"This augmented output might have been anticipated had planting been undertaken at an earlier date and had the necessary labor been available in Brazil. But, apart from the difficulties and tentative methods inherent to every new industry, and the obstacles presented by the unhealthy climate to the introduction of foreign labor—some five years must elapse before the first results can be looked for. By that time, what will be the price of the article? Admitting simply that the actual progress of the Far Eastern plantations will be continued upon the same scale, a new and serious fall in rubber must be foreseen."

ADOPTION OF EASTERN TAPPING METHODS.

With reference to the adoption of Eastern tapping methods, M. Tilmant expresses the opinion that the advantages of modern processes will only exercise any real effect when the system as carried out in the Far East has been fully introduced. This would consist in the establishment of regular plantations, forming blocks containing several thousands of *Hevea* trees, which, by the concentration of their working, would allow of intensive and regular tapping by a relatively small number of native laborers.

Concentrated exploitation being an indispensable factor of remunerative working, M. Tilmant asks whether this method could at present be applied in Brazil to the extraction of wild rubber. He does not regard such a course as probable, the *Hevea* trees being generally in small groups. If the Malayan system were applied, the *seringueiros* would have to remain all the season at the same place, tapping at the most forty or fifty trees every two or three days. In order that their work may be remunerative, they should tap at least 100 to 200 trees a day, which is impracticable, seeing that the *Hevea* trees are scattered in small groups, sometimes at great distances.

SUITABLE LOCATIONS FOR PLANTATIONS.

While expressing doubt as to the general policy of Brazilian plantations, M. Tilmant calls attention to the fact that there are regions not far from Pará where plantations might be established. It would, however, be necessary to choose relatively elevated locations, above the level of inundations and with good facilities of transportation to the point of export. Among the general heads calling for investigation would be that of obtaining labor at a rate which would not be prohibitive. As the climate in the immediate vicinity of Pará is far from being as unhealthy as in the forests of the Upper Amazon, it is considered likely that workers could be obtained on suitable terms for the former region. It is added that the above subjects deserve thorough investigation on the spot.

EXPERIMENTAL STATIONS.

It is recommended to follow in Brazil the policy at first adopted in Ceylon, of being guided by the results shown by the experimental stations, before planting on a larger scale. Trials should be conducted for several years and the results compared with those of the Far East. In the establishment of these experimental stations it is suggested that an examination be made of the chemical composition of the soil, as well as of the drainage. The latter point is indispensable for the successful cultivation of *Hevea*, in view of the height attained by the waters of the Amazon during the rainy season. Another subject of investigation should be the supply of water available in the dry season.

FISCAL MEASURES.

Attention is called to the fact that the graduated reduction of export duty, which would diminish that charge by one-half within five years, would still leave it at 10 per cent., as compared with 2 per cent. in the Far East. Disapproval is expressed of the granting of premiums for planting rubber, as being detrimental to the finances of Brazil.

RAILWAYS.

While the advantages of the proposed new railways are conceded, M. Tilmant asks whether with the unhealthy climate of the districts to be traversed, the necessary labor would be available.

WASHING AND REFINING RUBBER.

Referring to the proposed establishment of washing plants, M. Tilmant remarks that the rubber intended for washing is entirely coagulated and partially dried, expressing doubt as to whether in its new form it would stand a journey without being thereby affected. Washing takes place in the East within at latest twenty-four hours after collection, when the latex has scarcely coagulated. Another point referred to is that the presence of a relatively large quantity of water allows of Pará rubber being kept for years, while plantation rubber, being dry, does not keep so well.

Crude rubber now enters most industrial nations free of duty. M. Tilmant, however, calls attention to the possibility of washed rubber being regarded as a partially manufactured article, and therefore not entitled to such free admission.

PROPOSED RUBBER GOODS FACTORY AT PARA.

M. Tilmant regards as practicable only to a limited extent the idea of establishing a rubber goods factory at Pará. Such a factory, making a variety of articles, would require other grades besides Pará rubber, unless it confined itself to a limited range of products for domestic consumption. This business alone would be insufficient for such a factory.

The export business in rubber goods of Brazilian manufacture is considered problematical in view of the duties imposed by consuming nations.

THE AKERS REPORT.

In criticizing the Akers report, M. Tilmant refers to a prospective rubber cost of 1*s.* 8*d.* (40 cents). This cost is apparently reached by estimating the possible saving as 16*d.* (32 cents) out of the present estimated cost delivered in Europe of 3*s.* (72 cents). He disputes the propriety of including export duties and commissions among the reductions, but if they figure among the elements of cost, any decrease in these items should be

taken into consideration. In the June issue of THE INDIA RUBBER WORLD, page 473, the f. o. b. cost in Brazil was shown as 32½ pence (65 cents), to which the addition of 7 cents for freight to Europe makes the European delivered cost of 72 cents as shown above.

The estimated reduction of 10*d.* (32 cents) out of 3*s.* (72 cents) includes 8*d.* (16 cents) under the head of "augmented production." This figure is specially disputed. M. Tilmant, basing his statement on the facts quoted, expresses the opinion that the introduction into Amazonia of the tapping system of the Far East is scarcely practicable, no increased yield being therefore in prospect from that cause. The cost of production in the Far East, in M. Tilmant's opinion, will constantly diminish, but not that of Amazonia.

As to Chinese immigration, it is pointed out that with a mortality of 30 per cent. among acclimatized workers, the conditions for newly-arrived laborers would be still worse. He further remarks:

"It would seem that Mr. Akers has not sufficiently studied the deadly climate of Amazonia. The question of climate forms the crux of the Brazilian plan, there being a natural obstacle to be overcome."

In conclusion, M. Tilmant adds:

"There is another cause which prevents us from believing in the success of the Brazilian projects. It is that there exist as a fact in Brazil immense reserves of *Hevea* forests, sufficient to furnish the world with rubber. It seems at least Utopian under these conditions to proceed with new plantations. It is just the want of labor which renders impossible the exploitation of these reserves.

"It is under these unfavorable conditions that Brazil is asking the co-operation of foreign capital in the execution of its "Plan of Defence."

As showing the other side of the case, M. Tilmant's remarks afford an opportunity of seeing how the Brazilian proposals are looked at in Europe and particularly in Belgium. A matter of such importance should be discussed from all points, with a view to the best solution of the existing difficulties.

STANDARDIZATION OF LATEX.

In discussing the lack of uniformity in plantation rubber, Mr. Robert T. Byrne, chairman of the Leyland and Birmingham Rubber Co., Ltd., and also chairman of a planting company, lately said planters would never get the proper value, from a market point of view, for their rubber until they had some recognized system of standardizing their latex, so that when the manufacturer bought standard No. 1 quality rubber he did not mind whether it came from Ceylon, or from the Straits, or from Malaya, or from Borneo, or from anywhere else. The rubber should be all the same to him, and he should be able to deal with it in the same way. The existing state of things was, to his mind, nothing short of chaos from the manufacturer's point of view.

AN ENGLISH OPINION ON STANDARDIZATION.

In discussing the above question the "Financier" remarks: "If plantation latex were treated in the same way as the Brazilian collector treats the milk, the product would be fine hard Pará. It is entirely a matter of preparation. Under existing methods it is contended that two essentially different products are obtained in Brazil and in the Orient. But it does not follow that because plantation rubber differs from Brazilian it is necessarily inferior. The manufacturer has apparently not yet come to a definite conclusion himself on this point. The trouble arises out of the fact that no two plantations adopt precisely the same formula and process in treating their latex. It would seem to be a simple matter for a recognized body, such as the Rubber Growers' Association, to frame a standard formula for general adoption in rubber factories throughout the plantation region."

MR. C. A. LAMPARD ON THE SITUATION.

As chairman of the recent London meeting of the Rubber Plantations Investment Trust, Mr. C. A. Lampard stated, regarding the cost of production in Sumatra, that, while the United Serdang Co.'s properties are not nearly in full bearing, the estimate for next year's f. o. b. cost is 11 *d.*, while he expects the facts would in due time justify the anticipations formed of a still further reduction. He thought 2*s.* 6*d.* per pound would be a safe figure at which to estimate the cost of producing Amazonian and African rubber.

He further pointed out that the American consumption of crude rubber in 1912 was 50,210 tons, against 34,404 tons in 1911, showing an increase of about 45 per cent. The net American imports this year from January to April had dropped, as compared with last year, from 20,453 to 18,113 tons, or about 11 per cent. This result he considered due to the Akron strike and the floods.

While Brazilian rubber was being held in March and April, plantation companies decided to sell and by getting their rubber into use in the factories prevent any accumulation. As a result, stocks of plantation are now 100 tons less than in February last.

American manufacturers, he added, now that the Antwerp and Brazilian people want to sell in America, say: "No, we have altered our compounds now to suit the use of plantation rubber. Unless you are going to give us very strong inducements, not temporary, but extending over a lengthened period, we are not going to switch back to wild rubber." The prospective decrease in the production of the wild article with the increasing consumption would place plantation rubber in the very strongest position.

In conclusion, Mr. Lampard urged two points: First, that under proper management, plantation rubber can be produced more cheaply in the middle East than in any other part of the world; and second, that the middle East can produce and manufacture rubber in every respect and for all purposes equal to that previously produced elsewhere. Out of an estimated consumption for 1913 of 120,000 tons, the plantation industry expects to produce 45,000 tons.

WHY ENGLISH MANUFACTURERS USE BRAZILIAN RUBBER.

The "London and China Express" lately wrote:

"At present the manufacturers are content to use the Brazilian article because they have not to alter their mixing formulæ, which they are loth to do until they are certain of the qualities of the rubber used. Formerly they were not certain as to the supply; now they require a recognized standard of quality they can work to.

"The reason plantation rubber is not the equal of the wild rubber from a manufacturer's point of view lies in the different methods of curing these rubbers. It is the fact, too, that nearly every plantation company has its own ideas of preparing its rubber, whereas if all plantation rubber were prepared in a standard manner rubber manufacturers would be able much more readily to adopt their methods to plantation rubber than is at present the case."

It is stated that the Rubber Growers' Association expects, after a series of exhaustive experiments, that it will be possible to convince manufacturers that plantation rubber is equal to fine hard Pará.

TO MAKE ENGLISH TIRES IN BRAZIL.

A new company, known as the Dunlop Pneumatic Tyre Co. (South American, Ltd.), has been formed with the purpose of erecting and operating a factory in Brazil for the manufacture of tires. This company, which is capitalized at $25,000, divided into 5,000 shares, is a subsidiary of the English company of the same name.

PLANTATION RUBBER AND DIRECT PURCHASES.

TWO communications in the "Tropical Agriculturist" deal with the questions of the intrinsic qualities of plantation rubber and with the manner in which it reaches the American consumer.

In the first of these, Mr. A. D. Thornton, managing director of the Canadian Consolidated Rubber Co., relates how his first experience in 1905 led to his finding out how to use plantation rubber, in which he is a great believer, being convinced that within a few years wild rubber will prove a very poor second.

In the meantime, he remarks, both planter and consumer have much to study, particularly as to uniformity. A five-ton lot he had lately received from London contained eight very distinct grades, while with several parcels bought direct from Colombo he had no such trouble. He is aiming to find some means of being able to tell what he is buying when offered a parcel by cable.

In the opinion of a New York authority, who does not wish his name mentioned, a margin of about 5 per cent. between plantation and fine Pará is not sufficient, but with a uniform difference of, say, 15 per cent., a greater amount of plantation rubber would be used. He likewise urges the need of uniformity in quality, which he thinks will probably be attained with the increased production anticipated.

Contrasting the advantages of direct purchases as compared with operations via London, he points out that while at that point heavy commissions are paid, inasmuch as rubber has to be warehoused, sampled and repacked, numerous charges of this kind are not incurred at New York. The only expenses on direct shipments would be freight, insurance, selling commission of 1 per cent. and a small charge for weighing and custom house entry. On arrival the rubber would be delivered ex dock, with no more charges attached.

It is added that America uses today the largest percentage of the output of the Middle East, and should not be required to purchase through London.

WHY PLANTATION RUBBER IS CHEAPER THAN BRAZILIAN.

In replying to a shareholder, at the recent meeting of Perak Rubber Plantations, Ltd., the chairman, Mr. Keith Arbuthnot, said that the reason why plantation rubber was selling below Brazilian rubber must be clear to everybody; that the plantation industry had a large crop coming in from day to day, which was put up at auction and sold without reserve, whereas the Brazilian crop was practically all controlled by one hand. Efforts were being made to regulate and improve the selling of the crops from the East. At present there were very many sellers and only about six buyers, but they would very likely be able to reverse that order of things.

HONDURAS RUBBER.

A Honduras report speaks of an offer made to the government by Dr. Fausto Davila, of Honduras. He has asked the sole right during fifty years of gathering rubber, obtained from the *Castilloa, Siphonia Elastica, Hevea Brasiliensis, Manihot Glaziovii* and other varieties which are found in the provinces of Colon, Olancho and Yoro. He likewise asks for permission to gather rubber upon government land. An export tax of 10 per cent. on the value of rubber shipped would revert to the government.

DEPRECIATION OF PLANTING MACHINERY.

At the meeting of the Merlimau Rubber Estates, the chairman reported that while the sum allowed for depreciation of machinery represented for last year 2½d. per pound, the anticipated increase of production would probably reduce that charge for this year to the equivalent of 1d. per pound.

REDUCED BRAZILIAN EXPORT AND IMPORT DUTIES.

BY a Brazilian Presidential Ordinance of June 2, the Minister of Agriculture was authorized to make an agreement with the State of Pará for the exemption of cultivated rubber from export tax during twenty-five years, and the reduction of the export duty levied on wild rubber in that state. An agreement made the same day provided for the reduction of the duty by 2 per cent. on January 1, 1914, and a successive annual diminution of like extent during five years. In this way the present rate of 20 per cent. would be cut in two within the time named.

The Brazilian government has, morever, expressed its willingness to recommend to the Federal Congress, the reduction by at least 20 per cent. of the duties on necessaries imported by the rubber producing territories. These include: condensed milk, kerosene, cordage, fishing lines, fire-arms for hunting, cartridges and ammunition, clothing, provisions and medicines.

AFTER THAT THIRTY-MILLION-DOLLAR TRADE IN SOUTH AMERICA.

THE April issue of THE INDIA RUBBER WORLD contained a full and detailed account of the rubber manufacturing plant which the Goodyear Tire and Rubber Co. of Akron, Ohio—through a subsidiary company known as the Goodyear Tire and Rubber Co., of South America—contemplates building in Rio Janeiro. Mr. J. C. MacFadyean, the vice-president and general manager of this South American company, who has been in this country for the last few months, sailed on August 9 by way of Europe for Brazil, and, being interviewed just before sailing, gave some interesting additional information regarding the company's expectations in that new field.

He estimates that South America consumes $30,000,000 worth of manufactured rubber goods in a year, one-third of this amount being consumed in Brazil. He states that Rio Janeiro alone has 4,800 automobiles and uses up $3,000,000 worth of tires annually. As there is at present no rubber factory anywhere in South America, his company hopes to get this entire rubber business, all of which practically now goes to European manufacturers. He mentioned two tremendous advantages which his company will enjoy, viz., its immunity from the 20 per cent. export tax on crude rubber, and from the 50 per cent. import tax levied on the manufactured article. The cost of the Goodyear plant in Rio Janeiro is placed at $1,300,000, and Mr. MacFadyean estimates that the company will start in about a year's time, with 600 workmen, none of whom will be North Americans except the superintendents and heads of departments.

Mr. MacFadyean thinks there is a great field for Americans on the Southern continent. "American manufacturers," he says, "make a great mistake by not going down there to investigate. In my opinion, and I have traveled over most of the known world, there is no place that offers so many opportunities as South America, and opportunities of so many sorts. England and Germany now control those markets, and it is just because American manufacturers have never gone after them in the right way. We are trying to get American manufacturers to go down there. Land is to be had almost anywhere—and you can get better land down there for 50 cents an acre than you can buy in many Western States at much higher figures, and there are thousands of acres of it.

"It is a mistake to contend that Rio is an expensive place to live. It doesn't touch New York. You can get a suite of rooms and three square meals there or in Buenos Aires for what you might pay simply for the rent of a suite here.

"It is getting time for American manufacturers and exporters to wake up to what is going on down there. If they don't go after that trade energetically soon, there won't be any chance."

Sources of Error in Determining the Acetone Extract in Rubber Compounds.

By Professor W. Jones.

SOME years ago the total acetone extract obtained from a rubber compound, less the free sulphur, was considered as belonging to the rubber in the compound, and as a result we often had an abnormal increase in the percentage of extract above that contained in the rubber used. Whether this was fair to the manufacturer or not, seemed not to be considered. However, as the examination of rubber compound progressed, and paraffine began to be used in the compound, it became quite clear that this method must be modified, that not only the free sulphur should be deducted, but all paraffine and mineral oil as well. This is now the general practice and gives a much more accurate composition of the compound. In making these determinations we find it quite necessary to watch certain sources of error, some of which are still overlooked by many very careful chemists.

To start these determinations, of course the rubber has to be cut fine, not necessarily to pass a certain sized sieve, but should be cut thin, so as not to make the time of extraction unduly prolonged.

The extracting apparatus should be one in which the extraction is made at near the boiling point of the acetone, and where the acetone passes through the rubber at this heat. All joints should be ground glass. We generally use one gram of the dried compound in making the extract.

In placing this in the extractor, we may use either of two methods. First, we may use a Gooch crucible to hold the rubber, or we may use a paper thimble or filter paper. This at first sight might seem to be immaterial, but we do not think so.

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The second point to be observed is the acetone itself. We rarely, if ever, buy acetone that does not give a residue upon evaporation, and it is therefore the practice to redistil it. This, however, must be done within a short time of its use, as it is found that acetone does not keep.

Acetone after careful redistilling, so that it leaves no residue, will, after keeping a short time, develop a yellow tint and again give a residue. This is more pronounced if it has been kept in a clear glass bottle in strong daylight. If it is kept in a dark bottle, there is very little change. We think it better in all cases to test the acetone immediately before using. After taking these precautions we will get a correct percentage of total extract.

This extract will contain free sulphur, paraffine, mineral oil, and organic extract, due to the rubber, and which is saponifiable. In separating the extract into these items, we are again liable to error.

The first thing we do is to saponify with alcoholic potash. This is done in the usual manner, by evaporating over steam.

Upon adding water, and extracting with ether, we obtain an ether solution of the paraffine and mineral oil, while the organic extract remains in the water solution as soap, together with the free sulphur, which is probably taken up as sulphide of potash.

If now we evaporate the ether solution, we will get the combined paraffine and mineral oil; then by deducting this weight, plus the free sulphur, from the total extract, we obtain the organic.

We have found in many cases when the reverse of this has been done; instead of weighing the mineral fats, the soap solution has been acidified and extracted with ether, evaporating this to get the organic, then by taking this organic plus the sulphur, from the total extract, to give the mineral.

We learn that parties using this method have generally found the mineral or paraffine much less than what was used, and they could not account for it. The reason for this is, that they got the organic figure too high, so making the mineral oils too low. This is readily accounted for by the use of alcoholic potash, which has become only slightly yellow upon keeping, when there is found in it what appears to be aldehyde resin, which being saponified, is weighed with the organic from the rubber, making this figure too high.

The free sulphur we determine from the soap solution, after extracting the paraffine, in the following way: To the solution we add a small excess of nitric acid and a few drops of bromin. We then evaporate this down to one or two cubic centimeters, add carbonate of soda in large excess, transfer to a platinum dish and fuse, to get rid of organic matter; dissolve in water and hydrochloric acid, and precipitate the sulphur in the usual way with barium chloride. We thus get all determinations from one extraction.

Recapitulation:

The errors to be guarded against in these determinations are:

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4th: In weighing the organic extract instead of the mineral. The condition of the alcoholic potash is liable to cause errors. In all these cases the liability is to make the organic extract too high.

We have found that in following these methods, we at times get an extract which might appear to be abnormally low; that is, we find the organic extract to be less than that contained in the rubber used, while the general idea has been that we should in all cases get more; the increase being accounted for by the vulcanization, which is credited with increasing the organic extract in the compound.

This has led us to a long series of tests, to determine why in some cases we get less and in others we get more extract than was contained in the rubber used. We find that if the compound is properly made there is no increase in the organic extract, while as it is usually made, and with the same ingredients, there is a considerable increase. This increase does not take place during vulcanization, as is thought, but during the mixing on the rolls, so that the maximum of extract will be found after mixing and before vulcanization.

PLANTATION RUBBER AND DIRECT PURCHASES.

TWO communications in the "Tropical Agriculturist" deal with the questions of the intrinsic qualities of plantation rubber and with the manner in which it reaches the American consumer.

In the first of these, Mr. A. D. Thornton, managing director of the Canadian Consolidated Rubber Co., relates how his first experience in 1905 led to his finding out how to use plantation rubber, in which he is a great believer, being convinced that within a few years wild rubber will prove a very poor second.

In the meantime, he remarks, both planter and consumer have much to study, particularly as to uniformity. A five-ton lot he had lately received from London contained eight very distinct grades, while with several parcels bought direct from Colombo he had no such trouble. He is aiming to find some means of being able to tell what he is buying when offered a parcel by cable.

In the opinion of a New York authority, who does not wish his name mentioned, a margin of about 5 per cent. between plantation and fine Pará is not sufficient, but with a uniform difference of, say, 15 per cent., a greater amount of plantation rubber would be used. He likewise urges the need of uniformity in quality, which he thinks will probably be attained with the increased production anticipated.

Contrasting the advantages of direct purchases as compared with operations via London, he points out that while at that point heavy commissions are paid, inasmuch as rubber has to be warehoused, sampled and repacked, numerous charges of this kind are not incurred at New York. The only expenses on direct shipments would be freight, insurance, selling commission of 1 per cent. and a small charge for weighing and custom house entry. On arrival the rubber would be delivered ex dock, with no more charges attached.

It is added that America uses today the largest percentage of the output of the Middle East, and should not be required to purchase through London.

WHY PLANTATION RUBBER IS CHEAPER THAN BRAZILIAN.

In replying to a shareholder, at the recent meeting of Perak Rubber Plantations, Ltd., the chairman, Mr. Keith Arbuthnot, said that the reason why plantation rubber was selling below Brazilian rubber must be clear to everybody; that the plantation industry had a large crop coming in from day to day, which was put up at auction and sold without reserve, whereas the Brazilian crop was practically all controlled by one hand. Efforts were being made to regulate and improve the selling of the crops from the East. At present there were very many sellers and only about six buyers, but they would very likely be able to reverse that order of things.

HONDURAS RUBBER.

A Honduras report speaks of an offer made to the government by Dr. Fausto Davila, of Honduras. He has asked the sole right during fifty years of gathering rubber, obtained from the *Castilloa, Siphonia Elastica, Hevea Brasiliensis, Manihot Glaziovii* and other varieties which are found in the provinces of Colon, Olancho and Yoro. He likewise asks for permission to gather rubber upon government land. An export tax of 10 per cent. on the value of rubber shipped would revert to the government.

DEPRECIATION OF PLANTING MACHINERY.

At the meeting of the Merlimau Rubber Estates, the chairman reported that while the sum allowed for depreciation of machinery represented for last year 2½d. per pound, the anticipated increase of production would probably reduce that charge for this year to the equivalent of 1d. per pound.

REDUCED BRAZILIAN EXPORT AND IMPORT DUTIES.

BY a Brazilian Presidential Ordinance of June 2, the Minister of Agriculture was authorized to make an agreement with the State of Pará for the exemption of cultivated rubber from export tax during twenty-five years, and the reduction of the export duty levied on wild rubber in that state. An agreement made the same day provided for the reduction of the duty by 2 per cent. on January 1, 1914, and a successive annual diminution of like extent during five years. In this way the present rate of 20 per cent. would be cut in two within the time named.

The Brazilian government has, moreover, expressed its willingness to recommend to the Federal Congress, the reduction by at least 20 per cent. of the duties on necessaries imported by the rubber producing territories. These include: condensed milk, kerosene, cordage, fishing lines, fire-arms for hunting, cartridges and ammunition, clothing, provisions and medicines.

AFTER THAT THIRTY-MILLION-DOLLAR TRADE IN SOUTH AMERICA.

THE April issue of THE INDIA RUBBER WORLD contained a full and detailed account of the rubber manufacturing plant which the Goodyear Tire and Rubber Co. of Akron, Ohio—through a subsidiary company known as the Goodyear Tire and Rubber Co., of South America—contemplates building in Rio Janeiro. Mr. J. C. MacFadyean, the vice-president and general manager of this South American company, who has been in this country for the last few months, sailed on August 9 by way of Europe for Brazil, and, being interviewed just before sailing, gave some interesting additional information regarding the company's expectations in that new field.

He estimates that South America consumes $30,000,000 worth of manufactured rubber goods in a year, one-third of this amount being consumed in Brazil. He states that Rio Janeiro alone has 4,800 automobiles and uses up $3,000,000 worth of tires annually. As there is at present no rubber factory anywhere in South America, his company hopes to get this entire rubber business, all of which practically now goes to European manufacturers. He mentioned two tremendous advantages which his company will enjoy, viz., its immunity from the 20 per cent. export tax on crude rubber, and from the 50 per cent. import tax levied on the manufactured article. The cost of the Goodyear plant in Rio Janeiro is placed at $1,300,000, and Mr. MacFadyean estimates that the company will start in about a year's time, with 600 workmen, none of whom will be North Americans except the superintendents and heads of departments.

Mr. MacFadyean thinks there is a great field for Americans on the Southern continent. "American manufacturers," he says, "make a great mistake by not going down there to investigate. In my opinion, and I have traveled over most of the known world, there is no place that offers so many opportunities as South America, and opportunities of so many sorts. England and Germany now control those markets, and it is just because American manufacturers have never gone after them in the right way. We are trying to get American manufacturers to go down there. Land is to be had almost anywhere—and you can get better land down there for 50 cents an acre than you can buy in many Western States at much higher figures, and there are thousands of acres of it.

"It is a mistake to contend that Rio is an expensive place to live. It doesn't touch New York. You can get a suite of rooms and three square meals there or in Buenos Aires for what you might pay simply for the rent of a suite here.

"It is getting time for American manufacturers and exporters to wake up to what is going on down there. If they don't go after that trade energetically soon, there won't be any chance."

Sources of Error in Determining the Acetone Extract in Rubber Compounds.

By Professor W. Jones.

SOME years ago the total acetone extract obtained from a rubber compound, less the free sulphur, was considered as belonging to the rubber in the compound, and as a result we often had an abnormal increase in the percentage of extract above that contained in the rubber used. Whether this was fair to the manufacturer or not, seemed not to be considered. However, as the examination of rubber compound progressed, and paraffine began to be used in the compound, it became quite clear that this method must be modified, that not only the free sulphur should be deducted, but all paraffine and mineral oil as well. This is now the general practice and gives a much more accurate composition of the compound. In making these determinations we find it quite necessary to watch certain sources of error, some of which are still overlooked by many very careful chemists.

To start these determinations, of course the rubber has to be cut fine, not necessarily to pass a certain sized sieve, but should be cut thin, so as not to make the time of extraction unduly prolonged.

The extracting apparatus should be one in which the extraction is made at near the boiling point of the acetone, and where the acetone passes through the rubber at this heat. All joints should be ground glass. We generally use one gram of the dried compound in making the extract.

In placing this in the extractor, we may use either of two methods. First, we may use a Gooch crucible to hold the rubber, or we may use a paper thimble or filter paper. This at first sight might seem to be immaterial, but we do not think so.

If we use a Gooch crucible, we will find that in case the compound contains lampblack, some of this black is carried into the extract. This being black can be plainly seen. We find, too, that a small amount of mineral filling is also carried into the extract. This being white does not show, and is quite likely to be overlooked.

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If we use the crucible, it is quite necessary to look for mineral in the extract, and deduct its weight from the total, before proceeding further.

The second point to be observed is the acetone itself. We rarely, if ever, buy acetone that does not give a residue upon evaporation, and it is therefore the practice to redistil it. This, however, must be done within a short time of its use, as it is found that acetone does not keep.

Acetone after careful redistilling, so that it leaves no residue, will, after keeping a short time, develop a yellow tint and again give a residue. This is more pronounced if it has been kept in a clear glass bottle in strong daylight. If it is kept in a dark bottle, there is very little change. We think it better in all cases to test the acetone immediately before using. After taking these precautions we will get a correct percentage of total extract.

This extract will contain free sulphur, paraffine, mineral oil, and organic extract, due to the rubber, and which is saponifiable. In separating the extract into these items, we are again liable to error.

The first thing we do is to saponify with alcoholic potash. This is done in the usual manner, by evaporating over steam.

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We learn that parties using this method have generally found the mineral or paraffine much less than what was used, and they could not account for it. The reason for this is, that they got the organic figure too high, so making the mineral oils too low. This is readily accounted for by the use of alcoholic potash, which has become only slightly yellow upon keeping, when there is found in it what appears to be aldehyde resin, which being saponified, is weighed with the organic from the rubber, making this figure too high.

The free sulphur we determine from the soap solution, after extracting the paraffine, in the following way: To the solution we add a small excess of nitric acid and a few drops of bromin. We then evaporate this down to one or two cubic centimeters, add carbonate of soda in large excess, transfer to a platinum dish and fuse, to get rid of organic matter; dissolve in water and hydrochloric acid, and precipitate the sulphur in the usual way with barium chloride. We thus get all determinations from one extraction.

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This has led us to a long series of tests, to determine why in some cases we get less and in others we get more extract than was contained in the rubber used. We find that if the compound is properly made there is no increase in the organic extract, while as it is usually made, and with the same ingredients, there is a considerable increase. This increase does not take place during vulcanization, as is thought, but during the mixing on the rolls, so that the maximum of extract will be found after mixing and before vulcanization.

We also find that during the vulcanization there is a gradual decrease in the extract, up to about two and a half hours' vulcanization, after which it remains nearly stationary.

When we have taken a rubber with a certain extract, and made a careful mixture, we find there is no increase after mixing and that during vulcanization we have a decrease, so that the final product has less than the original rubber.

Again when we have put the same ingredients into a compound in the ordinary way, we have had a considerable increase after mixing, and the usual decrease during vulcanization. In some cases this decrease may counterbalance the increase, so that the final product will show the same amount as the rubber, while in other cases the increase has been too much to be offset by the decrease, leaving the final product with a higher extract than the rubber.

This decrease we think is due to some of the organic extract being volatile at the heat of vulcanization, so that if there is no increase due to improper mixing, we should find the final product to contain a lower percentage of extract than the rubber used.

TWO NEW KINDS OF RUBBER FOR MEXICO.

IN a late number of the Bulletin of the Mexican Director General of Agriculture, reference is made to a recent study by Professor Ule of two varieties of rubber:

1. *"Manihot Dichotoma"*—Maniçoba—of the valley of Piauhy.
2. *"Manihot Piauhyensis"*—Piauhy and Pernambuco, Brazil.

Commenting on this study, Professor David Thomatis expresses the opinion that these varieties are particularly suited to the tropical districts of Mexico. Their native habitat, in the Piauhy Sierra, is in rocky and stony soil, in argillaceous, sandy and granitic sections, precisely similar to those of the Isthmus of Tehuantepec. The Piauhy Sierra is exposed to much wind, and the varieties mentioned are stated to be low in height.

GROWTH.

There is but little difference between the two varieties, the "Dichotoma," however, being the taller, reaching 40 feet, while the "Piauhy" never exceeds half of that height. It is thus better able to stand the wind, preferring sandy soils and resisting extreme dryness.

On the other hand, the "Dichotoma" prefers argillaceous and calcareous soils. With these new varieties, it is remarked, it will be possible to utilize locations with stiff argillaceous earth and with loose, dry and sandy soil. The saying that nature abhors a vacuum may be paraphrased as implying that she likewise abhors useless soil. It is for man to study how to utilize waste tracts, and in Professor Thomatis' opinion, the varieties of rubber named, which are new to Mexico, will achieve that object.

Both of them shed their leaves during the dry season, when there is more wind, which, however, does not affect them much. They grow rapidly, attaining within the first four months about seven feet, with a trunk circumference of 6 inches, commencing to produce good latex in the third year.

CULTIVATION.

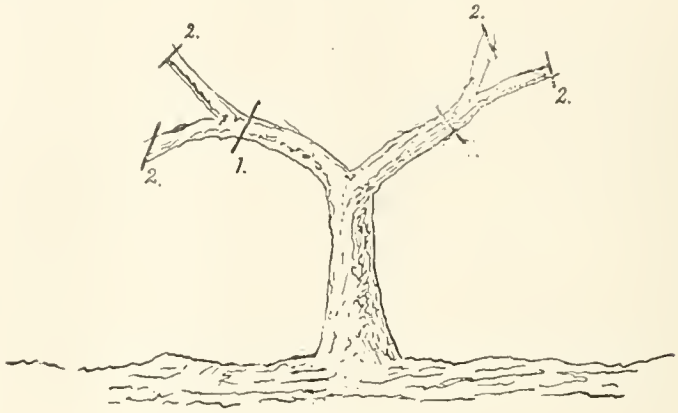
The simplest and most economical arrangement is to plant the trees about 8 feet apart, there being about 600 to the acre. This figure is about four times that usual for Ceará, Pará and *Castilloa*.

In the first year, the plant assumes the shape of a single trunk, which forms in the second year two branches, each of which develops two secondary branches in the third year.

PRUNING.

At this stage, the four branches should be pruned, being left 12 inches in length. Pruning should take place shortly before the rainy season, during which many shoots or buds are put forth. In Brazil, instead of pruning these shoots they are allowed to grow, probably because in the forest conditions they do not grow close together, but at wider intervals.

Upon a systematic plantation, these shoots should be entirely cut every year, thus obliging the secondary branches to give



PROPOSED SYSTEM OF PRUNING.

birth to a new array of shoots. Through this annual pruning the ground gets more light and sun. The annexed figure illustrates the above remarks as to pruning.

TAPPING.

All other varieties of rubber trees are tapped during the dry season. The latex is being formed all the year but becomes finally concentrated when the leaves are falling.

Dichotoma and *Piauhyensis*, on the other hand, require some moisture to develop their latex, and are therefore generally tapped during the rainy season. This fact is attributed to their being cultivated in a dry and well-ventilated soil. In the Upper Congo varieties resembling *Dichotoma* are tapped in both the dry and wet seasons. Dr. Thomatis recommends tapping during the dry season, accustoming the tree to develop and produce its latex at that period, when it would be of better quality and less resinous than at other times. He repeats that with these new varieties tapping can be commenced the third year, while six years is the age to be allowed for *Castilloa*, and about ten for other trees. Each tree in these new categories can produce annually more than 2 pounds of latex, which will give 50 per cent. of excellent block rubber. This, it is added, is twice the yield of any other rubber tree.

ADVANTAGES OF NEW VARIETIES.

To use the author's own words: "All these advantages represent large amounts saved in labor and materials for extensive plantations, and I would venture to say that in this way, if all the above points are taken into consideration, 50 per cent. of the expenses of tapping would be saved. It will easily be seen, that by cultivating these new varieties, the yield per tree only requires three years to be doubled. There are four times more trees to the acre and the expenses of incisions are reduced by one-half.

"In the same way as I recommended Mexican planters to cultivate our own *Castilloa* in preference to Ceará and Pará, so do I today forcibly recommend the cultivation of these two new varieties. I have shown all the advantages as to soil, cultivation, tapping and yield. With these two new varieties there will be produced high yields of rubber in many large districts of Mexico where it has been impossible to cultivate other varieties to advantage. The subject appeals to the inhabitants and property owners of the districts along the Isthmus of Tehuantepec and the Pacific coast from Salina Cruz to Tonala."

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

THE annual dull season for the rubber business is now on, and while some of the companies state that none of their help will be laid off, it is reported that in some other plants two eight-hour shifts are being run instead of the usual three, and that working forces will be cut down as trade slows off.

* * *

The seventeen factories engaged in the rubber industry in Akron are said to have employed in 1912 about 22,600 workers, at a maximum wage for men of 60 cents per hour—minimum, for beginners, 17 cents per hour—and for women a maximum of 30 cents with 10 cents for beginners. The capitalization of these seventeen companies is $112,949,000, and of the six largest the total output for 1912 amounted in value to $94,445,000, with an aggregate pay roll for these six companies of $12,022,780.

* * *

A fire which was discovered Sunday night, August 17, in the warehouse of The Loewenthal Rubber Co., destroyed from $25,000 to $30,000 of the company's property before it could be subdued. This company deals in scrap rubber, and the warehouse was well filled at the time. The fact that the windows fell in immediately firemen started to play the hose on the building and that flames in large volume at once burst therefrom, leads to the belief that the fire must have been smouldering for some time, rubber being very slow to catch fire. The office of the company was not damaged, and its business has not been seriously interfered with. A new building will be erected at once to replace this old one-story structure.

* * *

The balata belting and tire departments of The Goodyear Tire & Rubber Co. continue to run day and night. Sales for this year are reported to be 40 per cent. greater than those of last year. This company is working on plans for remodeling the old plant of The Great Western Cereal Co., which will probably be accomplished before the rush of next year's business. H. S. Quine, who has resigned his position as advertising manager of the company to become secretary to the president, F. A. Seiberling, has been succeeded by L. L. King.

THE PLANT OF THE B. F. GOODRICH CO.

Here is the latest photograph of the mammoth plant of The B. F. Goodrich Co., at Akron, Ohio. This is the largest aggregation of factories, belonging to a single rubber company, in the world. It comprises 65 acres of floor space and employs 15,000 operatives. The growth of this company has been the most interesting phenomenon in the entire rubber industry. It was only 43 years ago, in 1870, that the late B. F. Goodrich moved his little rubber factory from the banks of the Hudson to the small but ambitious town of Akron. He bought an unused factory property for $1,800, and he succeeded in borrowing on his note, from Akron business men, $13,000, which was the company's entire capital. It started—with 25 employes—under the name of the Akron Rubber Works, but ten years later the name was changed to The B. F. Goodrich Co., and its capitalization increased to $100,000. A year and a half ago, when it absorbed the Diamond Rubber Co., the Goodrich capitalization was $20,000,000, which, after the absorption, was increased to $90,000,000. It would, of course, be foolhardy to predict what great developments may take place in the rubber industry of this country in the future, but it certainly seems fairly safe to hazard the opinion that never again will a company grow from so humble and feeble a beginning to such great magnitude.

PLANT OF THE B. F. GOODRICH CO., AKRON, OHIO.

* * *

The B. F. Goodrich Co. is to have Goodrich Road Markers on two official transcontinental routes, one of which is by way of the Santa Fe Trail and the other to San Francisco via Denver, Salt Lake and Reno. This company expects soon to have completed the building under erection at Woodward and Hancock avenues, Detroit, Michigan, the anticipated cost of which is $100,000.

* * *

A fire, the cause of which is attributed to spontaneous combustion, and which engaged the entire fire-fighting force of Akron, was discovered at an early hour on the morning of August 11 at the plant of the Goodyear Tire and Rubber Co. It was subdued after a nine-hour struggle by the fire department, having damaged the plant to the extent of $30,000.

* * *

The annual picnic of the Miller Rubber Co.'s employes was held at Cedar Point, Saturday, August 16. The picnickers left Akron on a special train, from which they were transferred at Cleveland to the steamer "Eastland" for Cedar Point. Special

prizes were offered for unique stunts, both on board the boat and on land, and all report a most enjoyable time.

* * *

The Buckeye Rubber Co. (the Kelly-Springfield tire factory) is extending the building of its vulcanizing department and adding three large, new vulcanizing machines, running full force day and night and employing all the men they can secure.

* * *

The Taplin-Rice-Clerkin Co., which manufactures rubber machinery and furnaces, has increased its capital stock from $250,000 to $350,000.

* * *

A. C. Partridge, assistant sales manager of The Firestone Tire & Rubber Co., has started on a six weeks' trip, during which he will visit western Canada, the Pacific Coast and the main towns west of the Mississippi. Mr. Partridge is keeping close tab on the company's business, developing new avenues of trade and promoting enthusiasm among the employees.

* * *

W. W. Smith, formerly with the Faultless Rubber Co., has accepted a position as sales manager of the Star Rubber Co.

* * *

Emil Gammeter, general manager of the Gammeter-Brodbeck Sales Agency, has returned from Europe where he was pushing the sale of shells for holding fabric and aluminum flake.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

WHEN one speaks of the trade in Boston, it may bring out the pessimistic question—"Is there any trade in Boston?"—for there are those in the rubber business who are just at this time taking a somewhat dreary view of the state of trade. The fact is that things are none too lively, but then, people who know anything about it know that August is the dullest month in the year in more than one line. However, taking into consideration all the facts, business is not so bad, after all, and the outlook for a start-up by the time this letter gets into print is most encouraging.

Trade in hose, especially garden hose, has been excellent all through the spring and summer, but it has let up just now—which is natural. Dealers are sold out, and they must order later, to be prepared for next spring's demand. Belting and packing are going steadily, though moderately. Druggists' goods have a normal and satisfactory call. The boot and shoe business is hardly up to average, which is largely explained by the fact that many dealers, having carried over fair-sized stocks from last season and in the absence of any inducement to order early, have delayed re-stocking; and many thousand cases are likely to be called for later in the season which under other circumstances would have been ordered prior to June 30. The clothing situation is somewhat uncertain, as the tariff is considered likely to interfere with the season's sales, but traveling men are now on the road, and early reports of orders are extremely gratifying. The tire business has been good all the season, and continues so. There has come to be a steady demand for tires which each year begins earlier and extends later, and which is larger and larger each recurring period.

It is somewhat interesting to note the influence of the weather on the fruit-jar ring trade. This was excellent up to July or August, but when the unseasonable weather set in the demand ceased as suddenly as if there never was such a thing as a preserve jar. Surely there are branches of the rubber manufacturing trade which are as uncertain as the weather on which they depend.

* * *

The Patterson Rubber Co.'s new plant at Lowell is now in operation, with a moderate force of workmen, turning out tires which are well spoken of by the trade. The plant is thoroughly modern, new from the ground up, and furnished with the very latest in the way of machinery. It is near the Merrimac River, in open ground, is supplied with an abundance of light and air, and has a spur track which facilitates the receipt and shipment of material and goods. Mr. Patterson is a thorough rubber man, who knows the business in all its details, and he has surrounded himself with a force of assistants, experts and workmen, whose *esprit-de-corps* promises well for the product of the factory.

* * *

The automobile is changing the vacation habit to a marked degree. In former years many men in the trade would take the month of July, or August, or perhaps both, and hie to the summer resorts at the mountains or the seaside. Today it's decidedly different. In place of "stiving" one's family in a three-room suite at a fashionable hotel for a month, and spending his time in the billiard room or on the piazza, the business man concludes that his own spacious home and his own bed and bath are far more comfortable and convenient, while there are resorts near enough to be reached by his own automobile; so he piles his family into his car and starts off for a week-end at the mountains or the sea-shore, and is back again at his home in Boston's suburbs by Monday or Tuesday. Perhaps the family stays at the hotel for a week or two, but not so the business man. The automobile has worked a wondrous change in just this way—and, incidentally, the rubber business gets its share of the benefit.

* * *

The Boston office of the Monatiquot Rubber Works Co., which for some years has been on Atlantic avenue, will be removed to Weld Building, 176 Federal street, October 1, where comfortable and appropriately arranged offices have been secured. Meanwhile, the receiving and shipping department, which occupied the rear of the Atlantic avenue building, with entrance on Congress street, is being fitted and furnished for occupancy by a shoe jobbing house, and the Monatiquot Rubber Works Co. has arranged for all its shipments to be made to and from its South Braintree establishment.

* * *

The Seamless Rubber Co. has discontinued its store at 103 Massachusetts avenue, where it exploited its specialty of tires and inner-tubes, but continues its Boston office at 18 Elm street, where it has hitherto carried only lines of druggists' goods. The Seamless tire will also be carried hereafter at this location.

* * *

The Apsley Rubber Co., of Hudson, has maintained a Boston office at Summer and High streets for several years. Last season the company opened a jobbing house at 520 Atlantic avenue, which is run under the name of the Arco Rubber Co., and here is carried a stock of the clothing and footwear manufactured by the Apsley company. Last month it was decided to unite the two establishments, and so the Apsley Rubber Co.'s Boston office and sample room has been moved to the above named location, where a fine private office is provided for Treasurer Laighton, and suitable accommodations for Messrs. Norbury and Lockwood. This office is in the shoe district, and the move is therefore considered an excellent one.

* * *

The Boston agency for Diamond tires has been transferred from 867 Boylston street to the salesrooms and offices of the B. F. Goodrich Co., which company now manufactures this brand of automobile tires.

* * *

G. Edwin Alden, for many years prominent in the rubber business, has taken an office in the Rice & Hutchins Building, 10 High street, and will deal in crude rubber, also acting as agent in New England for the Standard Asphalt and Rubber Co. of New

York, whose mineral rubber, M. R. X., is so well-known in the rubber manufacturing industries. Mr. Alden has been connected with the rubber trade during his whole business life, either as a manufacturer or as a dealer, and has a host of friends in the trade who wish him renewed success and prosperity in his new enterprise.

* * *

A. H. Elder, secretary of the Boston Belting Co., who has been spending his vacation at Chatham, "down on the Cape," is now back, ready for another season's hustling business. B. F. Elson, assistant manager of the same company, is at present writing at Cape Porpoise, Maine, where fishing and boating are among the vacation attractions.

Another sojourner at Cape Porpoise was William B. Laighton, treasurer of the Apsley Rubber Co., of Hudson. Mr. Laighton is modest and will not communicate to your correspondent any information as to his prowess as a fisherman.

* * *

Charles A. Coe, of the United States Rubber Co., is spending the summer at Annisquam, taking his vacation in installments, coming up to the city on market days, and on other days spending much of the time on his motor-boat, one of the fastest of its class in the harbor.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

LABOR trouble at the various rubber factories throughout the country, followed locally by a strike of teamsters which has continued for several weeks and tied up freight traffic, has resulted in dealers in rubber goods entering the fall trade with very limited stocks, and in consequence business is quiet despite the fact that jobbers are well supplied with orders, being without any way of filling them. The rubber tire houses have no complaint to make, business in this line continuing to surpass that of last year. Perhaps the branch to feel the present labor trouble the most is that of rubber clothing. Jobbers in these goods have hundreds of orders on hand to be filled, but, having only limited stocks, and being hindered in the receipt and shipment of goods, the trade is almost demoralized.

* * *

Ira J. Cooper, head of the firm of I. J. Cooper & Co., who has fixed his metier as tiremaster by distributing in this section one third of the output produced by the Racine Tire Co., spent several days at the company's plant in Racine, Wisconsin, and reports that the plant is swamped with orders, to fill which it is working double shifts.

* * *

An amended bill of complaint has been filed in the United States District Court here in the patent infringement suit of Cecil F. Adamson, of East Palestine, Ohio, against J. Everett Inman and George Inman, doing business as the Victor Inner Tire and Rubber Co., of Dayton, Ohio. The patent involved in this litigation covers improvements in tire vulcanizing repair apparatus. The complainant asks for an injunction and an accounting of damages and profits.

* * *

William E. Schaefer, of the Schaefer Rubber Co., accompanied by his wife, is making a two months' tour of the West. Most of their time will be spent visiting the principal points in Colorado.

* * *

Prosperity of an extraordinary sort is attending the activities of the Motor Supply and Tire Co., at 919 Race street. This concern has undergone a thorough reorganization under the direction of F. W. Stukenberg, manager, and now is part of the chain series whose other links are at Cleveland and Columbus. The business of the local branch has assumed immense proportions, extending to eight of the nearby states.

* * *

B. M. Lovell, manager of the local branch of the B. F. Goodrich Co., has arranged an elaborate display in the huge show windows of the company's branch house at 1110 Race street. The display consists of a reproduction of the mammoth plant of the company in full operation. It is one of the most interesting exhibits seen here and is attracting considerable attention.

* * *

The managers and tire salesmen connected with branch houses in this city have organized a club known as the Queen City Tire Club. The purpose of the organization is to give the members a chance to get acquainted with their competitors, and to promote social intercourse and good fellowship. W. C. Price has been elected president, and Harry C. Falkell, connected with the Goodyear branch, is secretary and treasurer.

* * *

Rudolph Greiss, president of the Western Surgical Supply Co., and who is well known in rubber circles in the state, recently treated his friends to a surprise by announcing that he was secretely married more than a month ago to Mrs. Zesta Wilcox, of Kenton, Ohio.

* * *

The annual convention of the National Retail Druggists' Association, which will be held here the week of August 25, will have, in connection, an exposition in which leading manufacturers of pharmaceutical goods, chemists and surgical instrument dealers will have a big display. The entire ninth floor of the Hotel Sinton has been engaged for the exposition. A number of the rubber factories throughout the country manufacturing druggists' sundries have arranged for space.

* * *

"Vulcorine" is the name of another product just placed on the market by the Vulcorine Company. This is guaranteed to heal a puncture in a pneumatic tire as large as a thirty-penny spike. The main office and laboratory of the company are located in Atlanta, Georgia, but Cincinnati has been selected in which to promote the sale of the new product. H. A. Lonshore, manager—and the inventor—describes his new product as a liquid fiber compound for use in all pneumatic tires. It stops punctures, rim cuts, slow leaks and pinches, does not injure the tires, and is a preservative of rubber. Mr. Lonshore, while here, located a branch at 141 East Fourth street, and also looked over several available manufacturing sites, as the company contemplates moving to this city.

* * *

Following the plans so successfully operated by the Automobile Club of America in New York, and motor organizations at Philadelphia and Louisville, the Cincinnati Automobile Club is about to make an advanced move—that of conducting a motor supply accessory and tire depot in the exclusive behalf of its members. Secretary L. S. Colter visited New York and Philadelphia recently to gather ideas, and after his return the club authorized him to work out the plan in detail and have it in operation by fall. A salesroom is to be obtained and a complete stock of tires and other automobile requisites is to be installed, to be sold at a profit just sufficient to defray expenses of operation.

* * *

The Miller Rubber Co. has entered the local tire field by establishing an agency with the Miami Vulcanizing and Rubber Co. This concern for years represented the Firestone Tire and Rubber Co., but since the establishment of a direct factory branch of the Firestone company at Ninth and Sycamore streets,

the Miami company has been looking around to secure the agency for another good tire concern, as it has one of the best established trades in this city.

* * *

W. G. Brown & Co., distributors of crude rubber, have removed their offices from 701 Provident Bank Building to room 2802 Union Central Life Insurance Building.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

A FEELING of optimism again predominates in the rubber trade of Chicago, which for some little time has been extremely dull. An improvement in the mechanical rubber goods line is especially noticeable; and rubber belt manufacturers report some excellent orders from western Canada, where many grain elevators are being built in which to store the abundant wheat crop now being harvested in that country. Local tire men state that the summer's business in automobile tires has not only exceeded that of any previous summer, but has also exceeded their expectations, and that hereafter they will devote greater attention to this branch of the industry. While the weather has not been favorable to the sale of rubber clothing, the popularity of the rubber coat has not been diminished, and the outlook for fall in this line is encouraging.

* * *

Much interest is expressed in the contemplated opening by the Electric Hose Co. of a Chicago branch, but details of the company's plans have not thus far been disclosed.

* * *

Local hose and belt manufacturers, whose contracts for cotton used in these products have now expired, are viewing with some apprehension the making of new contracts, because of the effect the dry weather may have had on the cotton crop.

* * *

A building 121 x 125 feet is soon to be erected in this city by the Mechanical Rubber Co., at West Division street and Claremont avenue. It is intended for store and garage purposes and will probably cost in the neighborhood of $50,000.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

AN involuntary petition in bankruptcy against the Consumers' Rubber Co. was filed with William P. Cross, Clerk of the United States District Court at Providence, on July 31, signed by the following creditors: R. L. Curtis, receiver of the Atlantic National Bank, Providence; Brown Bros., of Providence, and John J. Kenyon Manufacturing Co., of Pawtucket. Receiver Curtis claimed that there was due the Atlantic National Bank on money loaned and on promissory notes the sum of $42,685.54, while Brown Bros. declared they held a bill for $4.30 and John J. Kenyon Mfg. Co.'s bill was for $57.

At a meeting of the preferred stockholders of the company, held a few days previous to the institution of bankruptcy proceedings, a report as to the business and financial conditions of the concern was presented by a committee consisting of James W. Freeman, Robert S. Emerson and Percy W. Gardner, previously appointed to make a thorough investigation in the interests of the stockholders.

A statement contained in this report would seem to indicate that the committee was of the opinion that the firm's plant was shut down and the business discontinued to comply with the wishes of Receiver R. L. Curtis, of the Atlantic National Bank. So far as the records and correspondence appear, other creditors or stockholders were not consulted in this action. This conclusion is arrived at after the committee in its report goes into the details of the Consumers' company's business before and after it was taken in hand by the Walpole Rubber Co.

The committee makes fifteen different statements in its report, the first of which is as follows: "From May 1, 1912, to January 1, 1913, the books of the Consumers' Rubber Co., show that they made a profit of $30,067.15. Between January 1, 1913 and July 14, 1913, the books of the company show that they lost $82,774.36."

The report then goes on to show that a substantial loss was made in the wire department, amounting to $10,486.72. The wire mill was equipped so that all sizes of wire from No. 20 to 800,000 circular mill cable could be manufactured, but during the past year changes were made in that department so that only No. 19 wire could be manufactured.

The report shows "other substantial losses," and gives a table in which these are shown. According to this table the largest of these "losses" were: $40,863.44, which was met with in the sale of arctics and gum shoes to S. B. Thing & Co., of Boston; $4,152.56 to E. G. Stearns & Co., credit to equal prices to S. B. Thing & Co.; $3,824.38, tennis shoes sold to S. B. Thing & Co.; $1,378.16, arctics and tennis shoes sold to S. Rosenberg. Another loss was an "extra allowance to get cash" from A. J. Bates & Co., amounting to $700.

The report states "the outstanding accounts payable are approximately $33,020.71 and the outstanding notes payable are $83,079.61. These include notes to the amount of $15,000 which represent money borrowed by the Consumers' Rubber Co. from the Traders' National Bank of Lowell, Massachusetts, and the Atlantic National Bank of Providence, in November, 1912, for the purpose of paying off a $15,000 mortgage."

The report shows a mass of figures, among which are the following: Amounts receivable, according to the company's books, $30,292.30; inventory of raw materials, manufactured goods and merchandise in process of manufacture, as of July 12, 1913, $60,877.12.

The committee then makes some very interesting statements. "The real estate and machinery," says the report, "stands on the books of the company at $164,242.03. It would be difficult to sell the same for $25,000. Trade-marks, good will and patents stands on the books at $360,462.27. Your committee believes that this item of assets has no value."

The report then says that the books of the Consumers' Rubber Co. show that the concern is indebted to the Walpole Co. in the amount of $9,575.75 but in the opinion of the committee this indebtedness should be reduced by $4,700. The committee states that the records of the Superior Court show that the Walpole Co. received $150,000 worth of common stock of the new Consumers' Rubber Co. and that a consideration of this was that the Walpole company should pay a sufficient amount of money to cover the claims of the creditors of the Consumers' Rubber Co., incorporated in 1905. The amount paid was $4,700 and it was paid to Robert S. Emerson, receiver. "But," says the committee, "the Walpole Rubber Co. has charged this item to the Consumers' Rubber Co.'s account, thereby reimbursing themselves."

The committee declared that the mill was closed, goods sold at a sacrifice and other important matters done without consultation with the stockholders. Then comes the reference to Receiver Curtis and finally the recommendation that the concern be liquidated in bankruptcy.

The referee in bankruptcy appointed Robert S. Emerson, an attorney, as temporary receiver and John P. Williams of Providence, James S. Franklin of Bristol and C. W. Littlefield of Warwick as appraisers. Notice was also given that J. H. Lane & Co. of Providence had filed an attachment of $2,500 against the Consumers' Rubber Co. at Bristol.

The factory of the company, which has been closed down for the past five weeks in consequence of having gone into the hands of a receiver, resumed operations on August 20, in charge of the receiver, R. S. Emerson. There are orders for the product of the plant in plenty, and the full complement of upwards of 500 hands will be employed. The plant is being operated by Terence McCarthy of Bristol, the man who instituted the industry several years ago and who now is arranging to work up the raw rubber and other ingredients of the shoe business. Messrs. McCarthy and Emerson expect to operate the mill in full, and permanently, hereafter.

* * *

Col. Samuel P. Colt arrived at his home in Bristol on August 13, after an extended automobile trip with a party of friends, the itinerary including a tour through the White Mountains, Berkshires and eastern New York.

* * *

The big refrigerating plant under construction for the Revere Rubber Co. at its home on Valley street, Providence, is nearing completion. It should be ready for use soon after Labor Day and is expected to prove an important acquisition to the company's equipment.

Electricians have been employed for some time in establishing an extensive auxiliary fire alarm system in the company's new buildings.

H. W. Waite, who is the general manager of the plant, has been on his vacation during the month of August, spending much of the time on his boat, off Cape Cod.

* * *

The Davol Rubber Co. has completed the new factory building which has been added to its plant on Point street, Providence, and has begun the installation of machinery. The ground floor has already been equipped and the rest of the building will be fitted up as rapidly as possible. The new structure is of the highest type of up-to-date mill construction and is designed to give a maximum of light to all parts of each room. It is 281 feet in length, 50 feet in width and three stories high.

The annual outing and field day of the Mikado club, composed of employes of this company, was held at Emery Park on August 3, nearly a hundred participating in the event. They enjoyed a luncheon of shore delicacies early in the day, following which athletic sports were indulged in, a feature being a six inning game of base ball between teams representing the married and single men. The married men won by a score of 8 to 6. Later in the day a Rhode Island clam bake was partaken of.

* * *

Plans have been completed for another new building to be erected at Bristol for the National India Rubber Co. It is to be a one-story brick structure, with cement foundation and saw-tooth roof, and will cover 38,000 square feet. It will be of steel beam construction, with floors of concrete. Large metal ventilators are to be used. Lighting will be by electricity and heating by steam.

The wire department at the factory was shut down on July 31 for a couple of days, to take the annual account of stock. Business in the rubber shoe department is somewhat dull at present, and on August 2 the gum shoe ticket was reduced to fifty cases a day. It was announced that the tennis ticket would remain the same, at 500 cases per day.

* * *

Installation of a steam engine plant has been completed at the factory of the International Rubber Co. at West Barrington, the equipment in regard to boilers, pumps, etc., being in every way complete and strictly up-to-date as to construction.

* * *

The "moonlight sail to Newport and return," so pleasantly anticipated by employes of the Revere Rubber Co. and their friends, was enjoyed in realization by but a portion of the number, either on account of insufficient accommodations or through confusion which occurred at the boat landing, 400 of the 2,400 who had assembled with tickets to take the trip having been left on the pier. Those who were successful in getting on board the boat were served with refreshments and enjoyed all the usual features attendant upon excursions of this kind.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

THE LEICESTER RUBBER CO., of this city, composed of William M. Maher, Joseph F. Maher and Antonio dePianio, has sold its plant on Perrine avenue to David H. Brand and Joseph Gordon. Messrs. Maher and dePianio disposed of the local plant because of the rapid growth of their business, which necessitated larger quarters. They have purchased a large factory building at Catasaqua, Pennsylvania, and will continue the manufacture of rubber specialties, such as rubber soles, fruit jar rings, mats, rubber heels, etc.

* * *

David H. Brand and Joseph Gordon, who have acquired the Perrine avenue plant, will conduct business under the firm name of the American Rubber Co. and will manufacture specialties, making a feature of rubber soles and heels.

* * *

The Essex Rubber Co. has had plans prepared for a brick and steel building addition to its plant in North Trenton. This will be 60 by 200 feet and one story in height. Work of construction is to be rushed with all possible speed, as the increasing business of the concern demands more working space for its operatives.

* * *

Charles Edward Murray, son of General C. Edward Murray, treasurer of the Empire Rubber Co., and the Crescent Belting and Packing Co., is to wed Miss Louise Morrison, of Pittsburgh this fall. The bride-elect is a daughter of Robert Morrison, one of the millionaire iron men of the Smoky City. Cornell Murray, eldest son of General Murray, is to marry this fall, Miss Mildred Apgar, daughter of former Prosecutor W. Holt Apgar, of this city.

Miss Marguerite Broughton, daughter of John S. Broughton, vice-president of the United & Globe Rubber Co., was married in August to John Zane Batten, of Montclair.

* * *

The local rubber plants are almost without exception running day and night, at full capacity, such concerns as the Empire, Hamilton, Mercer, Thermoid, Home, and Essex Rubber companies, and the Woven Hose Co., and Ajax-Grieb Tire and Rubber Co. being rushed with orders.

The Woven Hose Co. expects to have the building which was destroyed by fire July 4 replaced with a brick and steel structure by November next.

* * *

Serious charges have been brought against a rubber scrap dealer of Trenton. The complaint—made by the Ajax-Grieb company, against Harry Freedman of the Trenton Scrap Rubber Co.—charges him with having bribed an employe of the former company to add extra bundles of scrap on his orders in excess of those supposed to be supplied him, these offences covering a period which extends back to February last. Mr. Freedman's interests are being looked after by former prosecutor, W. Holt Apgar, while the state is represented by Prosecutor Devlin.

* * *

The Rubber Workers' Union, formed in Trenton last March, is now said to be one of the largest in the city, having steadily increased in membership. Meetings are held weekly, on Monday evenings, in the Ribsam building.

* * *

A novel use for a discarded fire engine was that devised re-

cently by John E. Thropp, president of John E. Thropp's Sons Co. and a director of the Eureka Tire Co. This engine was used to pump water from the Delaware river into ditches which had been dug through his potato patch, the potato crop being endangered by drought. The plan is said to have been entirely successful.

* * *

Rumors that have been afloat regarding the contemplated removal of the India Rubber Co.'s plant from New Brunswick, New Jersey, to New York City, have been denied by Mr. W. L. Melvin of that company, who explains that these have arisen probably from the fact that its laboratory is to be transferred to the city, where a new building has been erected for its accommodation. The factory will continue to be operated at New Brunswick, as heretofore, with a force of about 300 operatives. This laboratory removal will transfer from New Brunswick to New York some of the bright young men of the former city, 30 of whom are expected to continue their work in the new quarters, where also any of the young women now employed by the company in this department will be transferred should they desire.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

WHILE the rubber trade in this city is somewhat slack, as usual at this season, manufacturers are well satisfied with the prospects of an early trade revival.

* * *

The local industry has just lost one of its most popular members, by the death of C. H. Chase, manager of the Bowers Rubber Works. Mr. Chase was sixty years of age, had been with the Bowers company for seven years, and was highly esteemed by all who knew him. His death, which was due to heart failure, terminated an illness of only a few days.

* * *

The injuries sustained by R. D. Barr, manager of the Firestone Tire & Rubber Co.'s Los Angeles branch, in the automobile accident at Encinitas recently, resulted in his death, physicians being unable to check the progress of blood-poisoning which was caused by the fracture of his leg. Mr. Barr was well known not only in Southern California, where he has met with excellent business success, but in New York as well, having been previously connected with the Firestone company at that point.

* * *

A. J. Straney, who some time ago left the employ of the Diamond Rubber Co. to take a position with another concern, has returned to the employ of the Diamond company.

W. D. Albright, who has been in charge of the company's branch at Sacramento, has been transferred to the Portland, Oregon, house operated by this company, in a similar capacity.

* * *

The factory of the Goodyear Tire & Rubber Co. is being operated at full capacity and reports a very satisfactory business.

J. E. Argus, newly-appointed agent of this company for the Pacific Coast, has recently returned from a visit to the factory, and assumed his new duties, for which he is especially qualified, having been for sixteen years connected with the Diamond Rubber Co., for some time past in charge of its Pacific Coast Mechanical department.

* * *

Mr. Bennett, president of the Los Angeles Rubber Co., visited this city late in August and bought out the stock of rubber goods on hand at the store of Eccles & Smith Co.

W. L. Eaton, with the San Francisco office of the New York Belting & Packing Co., has gone to the Hawaiian Islands on a trip in the interests of the firm.

* * *

W. J. Gorham, president of the Gorham Revere Rubber Co., is now in Seattle, Washington, looking after the interests of the firm in that territory. He writes that conditions in the Northwest are very favorable.

* * *

The Pneumatic Hose Co., of Chicago, has given up its branch store on Howard street, and Mr. Anderson, the manager, has returned to Chicago.

* * *

The Acme Rubber Co., incorporated with the object of putting on the market a new substitute for rubber, has closed down, temporarily at least, owing to internal dissensions. This firm had installed some special machinery and appeared to be successful. The substitute is a mineral compound, prepared in a certain patented manner which produces an article to all outward appearance much like genuine rubber.

* * *

The Perfection Autotube Co., of Colorado, located at Denver, has dissolved partnership.

* * *

The Diamond Rubber Co.'s branch at Oakland, California, will be managed hereafter by Mr. W. A. Knapp, who has been for a long time connected with Diamond tire interests.

* * *

The Goodyear Tire & Rubber Co. is erecting a factory building at Seattle, Washington. The latest Goodyear plant is to be of modern construction, two stories high, with basement, and will give a total floor area of about 10,000 square feet. It is located at Eleventh avenue and East Pike street.

* * *

The Savage Tire Co., of San Diego, California, is one of the most prosperous and progressive concerns on the coast. It is also thoroughly loyal to San Diego, its entire plant, building materials, machinery, etc., having been purchased from home firms, and all its factory operatives being obtained from the home supply. The company is said to carry a stock of rubber valued at $100,000 and to be making every day 400 tires and 400 inner tubes.

* * *

Recent California incorporations in industries employing or associated with rubber are:

The Oakland Tire Company, at Oakland, California.

The National Cushion Inner Tire Co., at Los Angeles, California.

The Vinson Indestructible Pneumatic Tire Co., at Los Angeles, California.

The King Rubberoid Co. at Los Angeles, California.

LARGE PRIZE FOR A GOOD AUTO-TRUCK TIRE.

If there are any American inventors who are hoping to submit automobile truck tires to the Austrian War Department for the $10,000 prize that the Austrian Minister of War has offered for the best tire of this sort, they must use some expedition in entering their designs, for the competition—which is open to people of every nationality—closes on October 1 next. The prize is offered for a tire which will combine the greatest cheapness with durability. Those who contest are required to furnish models in either natural or in reduced size, together with proper drawings and descriptions.

Interesting Letters From Our Readers.

WHAT LONDON RUBBER SCHOOLS ARE DOING.

AN editorial which appeared in the June issue of THE INDIA RUBBER WORLD, entitled "The Best Rubber School," has attracted the attention of some of those interested in technical rubber instruction in English schools, as is shown by the letter reproduced below, from Frederick Kaye, A. R. C. Sc., Lecturer on the Chemistry of Rubber in the Northern Polytechnic Institute, Holloway, London:

Research & Analytical Laboratory,
2, St. Dunstan's Hill
LONDON, E. C., June 23, 1913.

The Editor INDIA RUBBER WORLD,
New York.

Dear Sir:

In your June number you make some comments upon the inauguration of the School of Rubber at the Northern Polytechnic Institute, Holloway, London. Perhaps you will be interested to know that the courses on rubber chemistry, rubber manufacture, and analysis, etc., are fulfilling a very useful role in England. There has never been any idea of taking the place of the real practical school of the factory of which you speak so well.

It should be remembered, however, that London is the centre of a world-wide financial and commercial activity associated with the production, importation, sale and distribution of crude rubber, as well as having many important rubber factories within its borders. The directorates of the innumerable rubber producing companies are constantly needing young men to go abroad as plantation assistants on many of the Eastern plantations. Hitherto most of these young men have gone out without any scientific knowledge of rubber and its production.

The students who have enrolled themselves at the School of Rubber have found the opportunities it affords of great service to them. Amongst the students taking the day course are sons of rubber manufacturers, who are intended to take a place in their father's factory or laboratory; young foremen of rubber works wishing to widen their knowledge on the scientific side; young men preparing for plantation appointments, as well as assistant chemists home from the East, using the opportunity to keep pace with the scientific advancements in Europe and to take up some parts of practice and theory which experience has shown they need.

The evening students, who are by far the most numerous, are all men actively engaged in some branch of the rubber industries. They are foremen of works, travellers for rubber brokers, chemists, or rubber manufacturers, samplers at the wharves, clerks in rubber offices, etc. These all find that the scientific study of methods of manufacture, and of the materials which they are dealing with daily, is of great help commercially.

Your esteemed journal is, in a sense, a school of rubber, while our school is a personal, immediate, practical one.

Yours faithfully,

FREDERICK KAYE,
Lecturer on the Chemistry of Rubber, Northern Polytechnic Institute, Holloway, London.

ANOTHER VIEW OF THE PUTUMAYO MATTER.

July 10, 1913.

To the Editor of THE INDIA RUBBER WORLD:

Dear Sir: In your July issue, the following paragraph occurs under "House of Commons Committee on Putumayo Horrors:"

"The committee further expresses the belief that the Putumayo incidents are but a shocking instance of the conditions that are found over a wide area in South America."

As a manager of a large rubber property in the Amazon basin for over five years, permit me to make a few observations on this so-called inquiry into alleged atrocities.

First of all, I may state that no person in the Amazon Valley, intimately connected with the conditions surrounding the exploitation of wild rubber, believes the statements in the Casement Report, the basis of which is testimony given by Indians, half breeds, Barbadian negroes and some whites who had ulterior motives in formulating such allegations.

Any sane person must see at a glance that as the report states the Arana Estate had to give advances to the rubber pickers in order to get supplies of rubber, it would be worse than folly to injure or destroy the debtors of the company, after they had the advances mentioned, to say nothing of it being bad business.

In all my experience I have only heard of one company that abused the Indians in the Amazon Valley; and curiously enough, it was an English company, with the usual titled person for a chairman. This company used to make raids on the outlying portions of its neighbors' property, surprise the Indian rubber pickers, seize them, take them to the English property and there place them in the stocks, for safety for a time, then place them away in a Barraca to pick rubber for their company. This illegal seizure was made under the pretence that the said Indians were indebted to the English company.

It is true that abuses creep into every administration of a property where it is situated far away from headquarters, difficult of access; and those abuses are aggravated when the company has to depend on an ignorant half-breed batch of superintendents.

While one hears a great deal from the English press of the alleged Putumayo atrocities, they say nothing about the advantages a rubber picker enjoys who works under the Amazon conditions, and how much better off he is than the Eastern plantation coolie, or even better off than the best paid English mechanic.

Take my own case. On assuming the management of the property I found some minor abuses against the Indians, by the half-breed overseers, but the greatest abuses were against the company itself. I fired everybody, broke up the contract system, and dealt with the rubber pickers as individuals, and placed over them reliable overseers; in addition to making other alterations.

The result of this system was that each rubber picker was dealt with as an individual; and they came to the property of their own volition, walking over the worst trails in the world, for several days, in order to reach it.

On arrival at headquarters on the property, the picker, without any agreement beyond his word of honor, was given rations, a shot-gun and rubber picking tools; and from 150 to 300 trees to pick (this latter varying according to the ability and activity of the picker); and then he disappeared into the forest to carry on his work. The only superintendence he had was to see that the trees were properly picked without destroying them, and that he did not get sick; and if he did to bring him into the headquarters, treat him and cure him free of charge. Every week, the picker delivered the rubber he had picked to headquarters, sometimes making the deliveries every two weeks or longer according to distances he must travel.

On delivery the rubber is weighed on a Fairbanks scale (the weigher being a fellow rubber picker). The amount received is credited to the picker, and an entry made in a small book, given to him for this purpose. He then goes to the store, taking his book along, and after he makes his purchases he is debited with same in his book. The account is balanced at once, and if he has a balance in his favor he can draw it out in cash at once, or leave it until the end of the picking season, which they usually do. After making his deliveries of rubber and purchases of merchandise, and the entries being made in his book, they are copied in the journal and ledger, and the book handed back to the picker, who takes it to the forest with him again, until he comes out with the next delivery of rubber.

In addition to the above, and as a part of the system, a good druggist and medical outfit are kept on hand, and all is free to everyone on the property. No alcohol or cocaine is allowed or permitted to be used by the pickers or others; and the management sees that the pickers are well fed.

The result of this treatment, physically, industrially and financially, is that the pickers who arrived on the Hacienda in a half-starved condition, sometimes sick and always "broke," have their productive capacity increased from 50 per cent. to 100 per cent. They are kept in good health and spirits, have ambition to work and acquire something; and there has never been a rubber picker who has left the property, at the end of the season, without a substantial balance of cash in his pocket, varying from $100 to $500, United States currency. Any picker who cares to work fifteen days out of the month can earn from two to five dollars

United States currency a day. The pickers are well provided for, armed and free to run away at any moment, but never do. From the above it will be apparent to the least informed that the rubber picker is infinitely better off and better paid than the English mechanic, while there is no comparison between his free and independent life and that of his contract coolie brother on the Eastern plantations.

I have followed this English inquiry of the alleged Putumayo atrocities from beginning to end, have read the book published by the Aborigine Protection Society, on the subject; and to my mind all the evidence adduced condemns those who gave it against Arana, more than it convicts Arana on any serious charge other than neglect.

For instance in the evidence given by Mr. Hardenburg, he admitted that after he had heard of the alleged atrocities governing the collection of rubber in the Putumayo, he was willing to buy or acquire a half interest in the adjoining rubber property to Arana. If he knew that rubber could only be secured by such outrages, why did he want to share in the business? Again, an officer, who had been, or hoped to be, appointed to go to Peru, to investigate the said alleged atrocities on the Arana Estate, came to Senor Arana, and asked him to give him £1000. This request was made in writing and the original and a copy of the letter were produced at the inquiry. As he had performed no service for Arana up to that time, we can assume that he had his own idea as to what was the best way to make money out of the Arana charges.

Again when we remember that these charges were sprung on the public at the beginning of the rubber boom; and that the English papers took up the cry and yelled "Red Rubber! Slave Rubber of the Amazon! Don't invest your money in slavery! Come to the East, under English rule, where we have a well organized system of contract labor," and so on, it tempts the Amazon exploiters of wild rubber to ask whether they were simply willing or unconscious tools of the promoters of rubber properties, who used the cry in their efforts to reach the pockets of the investors and boost the Coolie colonies of the East.

F. J. D.

HAMILTON INCREASES RUBBER GOODS TRADE WITH UNITED STATES.

Exports of rubber goods to the United States from Hamilton, Ontario, were: 1911, $1,559; $1912, $8,028.

AMERICAN CAPITAL PREFERRED IN LIBERIA.

The acquisition by an English company of a concession for gathering rubber in Liberia was reported in the August issue of the INDIA RUBBER WORLD, page 591.

Further particulars received show that an effort was made during the last legislative session to pass a measure prohibiting the shipment of contract laborers, the failure of which is attributed to the fact that the receipts from this source constitute part of the Liberian revenues. The practice of shipping laborers from Liberia has aroused complaints from the commercial and agricultural interests of the country.

It is said that American capital would be considered preferable to English for cultivating the resources of Liberia. There is little or no capital in that country available for the purpose.

THREE YEARS' RUBBER STATISTICS.

BY the figures given below three years' progress of imports and exports is shown, the returns being brought down to the close of the last fiscal year, June 30, 1913. The total imports of unmanufactured rubber in 1913 represented about $101,000,000, against $105,000,000 in 1912, and $93,000,000 in 1911. These amounts include for 1913, crude rubber to the extent of 113,000,000 pounds, value $90,000,000; as compared with 110,000,000 pounds, value $93,000,000, in 1912. Conditions do not seem to have materially altered in rubber between the two last years, while balata shows a falling off, and Guayule imports have been reduced by about 50 per cent., as compared with 1911, the figures now being less than half of that for 1911.

A large increase is shown in the imports of scrap, which are for 1913 nearly double those for 1912.

While the exports of domestic manufactures for 1911 and 1912 remained practically the same, the figure increased for 1913 by about 12 per cent., the gain having been practically in automobile tires. Re-exports of foreign goods show a slight falling off for 1913, as compared with 1912:

THREE YEARS' RUBBER IMPORTS. (FISCAL YEARS TO JUNE 30.)

	1911.		1912.		1913.	
Unmanufactured.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
India-rubber	72,046,200	$76,244,603	110,210,173	$93,013,255	113,384,359	$90,170,316
Balata	878,305	624,702	1,517,066	984,012	11,318,598	766,772
Guayule gum	19,749,522	10,443,157	14,238,625	6,463,787	10,218,191	4,345,088
Gutta jelutong	51,420,872	2,872,633	48,795,268	2,255,050	45,345,338	2,174,441
Gutta-percha	1,648,921	390,548	1,204,406	225,797	480,853	167,313
India-rubber scrap or refuse	26,948,000	2,334,870	26,293,192	2,095,605	43,385,456	3,709,228
Total unmanufactured imports		$92,910,513		$105,037,506		$101,333,158
Manufactured		$936,408		$915,834		$1,294,536
Foreign re-exports				$5,070,042		$4,689,000

THREE YEARS' RUBBER GOODS EXPORTS. (FISCAL YEARS TO JUNE 30.)

	1911.		1912.		1913.	
	Pounds.	Value.	Pounds.	Value.	Pounds	Value.
Scrap and old	7,049,729	$723,664	7,356,984	$780,188	7,269,465	$880,442
Reclaimed	4,994,527	781,650	5,397,806	875,501	5,413,247	932,904
Belting, hose and packing		2,163,416		2,315,424		2,605,551
Boots and shoes	3,984,332 pairs	2,219,430	2,545,076 pairs	1,502,890	109,528 pairs 2,231,467 pairs	274,330 1,163,953
Tires for automobiles		2,085,107		2,657,809		3,943,220
Other tires		592,470		546,833		611,458
All other rubber goods		3,886,825		4,144,273		3,913,036
		$12,452,562		$12,822,918		$14,324,894

News of the American Rubber Trade.

WHY THE MILLER RUBBER CO. INCREASES ITS CAPITAL.

THE August issue of this publication called attention to the fact that the stockholders of the Miller Rubber Co., of Akron, Ohio, had voted to increase the capital stock from $1,000,000 to $2,000,000, $500,000 of the increase to be in 7 per cent. cumulative preferred stock, the rest being common stock. The reason of this increase in capitalization is found in the large increase recently made in the factory buildings and facilities. The addition to its plant has doubled the factory's producing capacity. This increase was necessitated by the growth of the company's business, which during the first seven months of the present fiscal year advanced 55 per cent. over the same period for last year. The company will now be able to make 1,000 pneumatic automobile tires per day, and has doubled its capacity in molded surgical and sundries departments.

MR. DUNLOP AT THE GOODRICH FACTORY.

Among the recollections of the recent joint convention of the American Society of Automobile Engineers and the English Institute of Automobile Engineers, none is more vivid than that of the visit to Akron of a party of members from the two bodies. This visit had been carefully planned, its details having been arranged by the advance guard of the Goodrich Reception Committee, who visited Detroit for the purpose of formally extending the invitation.

Upon arriving at the factory the visitors (about 80) were divided into groups of twelve and enjoyed a thorough inspection of its many interesting features, thanks to the excellent arrangements made by W. O. Rutherford, assistant general sales manager.

One of the noticeable and appropriate features of the day was the presence among the visitors of Mr. J. B. Dunlop, the veteran inventor of the pneumatic tire. From his ideal to its realization at the Goodrich factory with its 9,000 tires a day is a "far cry." His interest in this great factory with its vast production of tires can readily be imagined.

An excellent page of photographs illustrating the visit is a feature of the July number of "The Goodrich," an interesting publication issued by the Goodrich company, and will serve as an interesting souvenir of this memorable occasion.

DIVIDENDS PAID BY RUBBER COMPANIES.

The directors of the Boston Woven Hose and Rubber Co., of Boston, have declared a quarterly dividend of $3 per share on the common stock of the company, payable September 13 to stock of record September 5, 1913.

The Plymouth Rubber Co. of Canton, Massachusetts, has declared a quarterly dividend of $1.75 per share on its preferred stock, payable September 1 to stock of record August 25, 1913.

The B. F. Goodrich Co. has declared a quarterly dividend of 1¾ per cent. on its preferred stock, payable on October 1 to stock of record September 20.

KATZENBACH & BULLOCK COMPANY ELECTS OFFICERS.

At a meeting of the board of directors of the Katzenbach & Bullock Co., Inc., held in the main office of the company in Trenton, New Jersey, August 13, the following officers were elected to fill the vacancy caused by the death of Welling S. Katzenbach: Edward L. Bullock, of New York, president; Frederick F. Katzenbach, of Trenton, vice-president and treasurer, and Robert F. McGrory, of Trenton, secretary.

The United States Tire Co. is now occupying its new building at 2109 Commerce street, Dallas, Texas.

BUSINESS GOOD WITH THE HOOD CO.

If there is any such thing as business depression in the country, it does not seem to have reached the factory of the Hood Rubber Co., Watertown, Massachusetts. The company's business for the first six months of the current year showed a gain over the corresponding six months of 1912 of more than 15 per cent.—and the business of 1912 exceeded that of any former year. The company closed down its factory early in August for the usual ten days' vacation.

FIRESTONE TIRES ON MANY WINNING CARS.

The Firestone Tire and Rubber Co. certainly has no reason to complain at the record established by the company's tires in the various automobile races that have taken place this summer. In the 500-mile International Sweepstakes at Indianapolis, May 30, first and second places were won by cars equipped with Firestones. Firestone-equipped cars took first, second and third places in the Panama-Pacific road race on July 4. Firestones were also on the winning cars in the three Montamara Festo races of July 5 and 7; and at the Santa Monica race at Los Angeles, on August 9, the first and second winners were equipped with these tires, the time made being over 73 miles an hour.

THE ADAMSON CO. GETS AN INJUNCTION.

The Adamson Mfg. Co. of East Palestine, Ohio, was recently granted an injunction to restrain the Marshall Iron Works from making or selling a portable tire vulcanizing device infringing on U. S. Patent No. 1,057,911.

TRADE NEWS NOTES.

The addition now under way at the Elm street plant of the Rubber Regenerating Co. at Naugatuck, Connecticut, will enable the company, when completed, to double its present output.

A strike of the raincoat workers at the factory of the Wilson Manufacturing Co. at 134 Main street, Yonkers, has led to the arrest of several strikers. Similar difficulties have been going on in New York for several weeks, the workers contending, through their union, for a forty-eight hour week at 75 cents an hour. The Wilson brothers, who only recently removed from New York to Yonkers, declare that they will not make any agreement through the union.

The rubber plant of the W. G. Hendrie Rubber Co. at Torrence, California, has been completed at a cost to the company of $180,000, and was formally opened on August 16.

The use of motor vans has been adopted by the post office department at Rio Janeiro, where six cars of this class, imported from Germany, are now in use; and it is the intention of the government, should the operation of these trial cars be found economical, to install them generally throughout Brazil.

A company is being organized at Columbus, Ohio, for the manufacture of a new motor truck tire. One of the new features about this tire—which is covered by patent—is that the tread is fitted with a steel shoe to receive the wear. The patentees are C. E. Herman and S. C. Munson, 55 West Blake avenue, Columbus.

Work on the S. & M. Rubber Co.'s plant at Coshocton, Ohio, is now under way, and most of the necessary equipment therefor has been purchased, so that no delay may be experienced in installation after the building operations have suitably advanced.

The Chester Tire & Rubber Co., incorporated under the laws of Delaware, with a capital stock of $250,000, has located at Pittsburgh, Pennsylvania, where it will engage in the manufacture of automobile tires.

NEW INCORPORATIONS.

Amazon Rubber Co., July 22, 1913; under the laws of Missouri; authorized capital, $100,000. Incorporators: W. H. Schewe, Carl G. Schwarz and E. F. Schewe—all of St. Louis, Missouri. To rubberize cloth, manufacture garments, rubber goods and auto supplies of all kinds.

Army Tire Co., August 8, 1913; under the laws of Delaware; authorized capital, $1,000,000. Incorporators: George W. Griffin, Frank P. Kissel and Lorenzo J. Roel—all of 25 Broad street, New York. To manufacture and deal in automobiles, etc.

Atlantic Raincoat Co., Inc., August 15, 1913; under the laws of New York; authorized capital, $1,000. Incorporators: Abraham Karpel, 351 Elton street, Brooklyn, New York; Abraham and Jennie Miller—both of 111 Sheffield avenue, Brooklyn, New York. Location of principal office, Brooklyn, New York. To manufacture raincoats, etc.

Auto Pedal Pad Co., August 11, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Henry Reich and Edgar M. Lichter—both of 316 West Forty-fourth street, and G. Thomas Young, 706 Amsterdam avenue—all of New York. Location of principal office, New York. To manufacture pedal pads and other auto accessories.

Auto Sand Grip Co., May 24, 1913; under the laws of Michigan; authorized capital, $40,000. Incorporators: Phillip G. Sanderson, J. F. and J. B. Williams—all of Detroit, Michigan. Location of principal office, Detroit, Michigan.

Boston Prest-O-Ceal Co., August 6, 1913; under the laws of Massachusetts; authorized capital, $25,000. Incorporators: William G. Todd, Merrill F. Hubbard and Sumner M. Teele—all of 35 Congress street, Boston, Massachusetts. To deal in automobiles and motors with their appliances and accessories.

Chemical Rubber Co., of Western Pennsylvania, August 5, 1913; under the laws of Pennsylvania; authorized capital, $20,000. Incorporators: William F. Boxmyer, W. F. Vegeler—both of Garrick, Pennsylvania, and Robert A. Fulton, Cheswick, Pennsylvania. Location of principal office, Pittsburgh, Pennsylvania. To manufacture, buy and sell articles used in the construction and operation of motor vehicles and manufacturing, buying and selling and leasing a chemical product known as chemical rubber, etc.

Chester Rubber Tire and Tube Co., August 9, 1913; under the laws of Delaware; authorized capital, $250,000. Incorporators: Morgan Howells, Ephraim Lyon and C. E. Jarvis—all of Pittsburgh, Pennsylvania. To manufacture and deal in rubber tires for vehicles, rubber tubes, rubber hose and rubber specialties.

Chicago Tire Goods Co., Agust 7, 1913; under the laws of Illinois; authorized capital, $10,000. Location of principal office, Chicago, Illinois.

James J. Fero, Inc., July 31, 1913; under the laws of New York; authorized capital, $20,000. Incorporators: James J. Fero, 172 Manhattan street, New York; George D. Brown, 108 West Eighty-fourth street, and William S. Foos, Hudson Heights, New Jersey. Location of principal office, New York. To carry on tire business.

El Paso Rubber Vulcanizing and Auto Supply Co., July 22, 1913; under the laws of Texas; authorized capital, $10,000. Incorporators: C. W. and William Mace, and C. Fowser. To buy and sell merchandise and especially automobile supplies, etc.

The Forrest Rubber Co., July 30, 1913; under the laws of Ohio; authorized capital, $10,000. Incorporators H. H. Forrest, E. C. Purdy and A. D. Evans. Location of principal office, Canton, Ohio. To manufacture and deal in all kinds of rubber goods, etc.

Granite City Rubber Co., June 30, 1913; under the laws of Massachusetts; authorized capital, $25,000. Incorporators: Wallace A. Prince, George E. Reinhalter—both of Quincy, Massachusetts, and Irving W. Pollard, Cambridge, Massachusetts. To manufacture and sell rubberized goods and fabrics and the carrying on of a general rubber manufacturing business.

The Greensburg Tire & Rubber Co., July 17, 1913; under the laws of Pennsylvania; authorized capital, $100,000. Incorporators: George S. Rombaugh, W. Dunbar and John B. Hayden—all of Greensburg, Pennsylvania. Location of principal office, Greensburg, Pennsylvania. To manufacture and sell automobile tires and tubes and other rubber goods.

Hercules Rubber Co., Inc., August 22, 1913; under the laws of New York; authorized capital, $50,000. Incorporators: George H. Duennard, Mlendale, Pennsylvania; Gilbert C. Shepard, 311 West 118th street, and Mabel McSween, 119 West 64th street—both of New York. Location of principal office, New York. To manufacture rubber goods.

Peerless Non-Puncture Co., Inc., August 7, 1913; under the laws of New York; authorized capital, $600. Incorporators: Maurice Uran, 1652 Lexington avenue; Harry Citret, 980 Tiffany street, and Frank Eber, 152 West 114th street—all of new York. Location of principal office, New York. To manufacture preparations for rendering tires puncture-proof.

The Pittsburgh Tire Protector Co., July 17, 1913; under the laws of Pennsylvania; authorized capital, $5,000. Incorporators: John A. Martin, Patrick Cousins and Thomas Skarry—all of Pittsburgh, Pennsylvania.

S. & K. Tire Co., Inc., August 18, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: James J. Coomber, 358 West Fifteenth street, New York, Herman Senner and Bernard J. Kaplan—both of 115 West Thirtieth street, New York. Location of principal office, New York. To manufacture rubber tires, etc.

Schick Wheel & Tire Co., July 7, 1913; under the laws of West Virginia; authorized capital, $150,000. Incorporators: Adolph Schick, J. E. Morgan and D. H. Taylor—all of Wheeling, West Virginia. Location of principal office, Wheeling, West Virginia. To manufacture, buy and sell rubber tires and automobile wheels, etc.

The Valuable Raincoat Co., Inc., July 30, 1913; under the laws of New York; authorized capital, $2,000. Incorporators: Louis Odessky, 650 East Twelfth street, New York; Louis Miller, 450 Powell street, Brooklyn, New York, and Abraham Reiman, 112 Second street, New York. Location of principal office, New York. To manufacture rubberized clothing, etc.

A PROFESSOR'S WIFE MAKING RUBBER SHOES.

Among the women operatives making rubber shoes at the Goodyear company's plant in Middletown, Connecticut, is the wife of a Wesleyan professor. She goes to work at 7 o'clock in the morning and continues diligently at her task until 5 o'clock in the afternoon, with the usual hour for dinner; and her compensation—as she is a green hand—is something in the neighborhood of $5 or $6 a week. She is the wife of Charles A. Tuttle, Professor of Economics in Wesleyan, and she is engaging in this arduous mill work as a preparation for a book which she plans to write on conditions of wage earners in New England factories.

CLOSING DOWN FOR SUMMER REPAIRS.

A number of the factories belonging to the United States Rubber Co. were closed down during the greater part of August, for the usual summer vacation and for the making of repairs. The Candee factory at New Haven, the Boston Rubber Shoe Co. at Edgewater, Massachusetts, and the factory of the American Rubber Co. at Cambridge, closed on July 24, re-opening on August 24.

Some of the independent companies also closed their plants temporarily. The Converse Rubber Shoe Co., Malden, Massachusetts, shut down for two weeks early in August.

A NEW PRESIDENT OF THE INTERSTATE RUBBER

Mr. William McAdam, who has been connected for the last nine years with the Duck Brand Co. of Chicago, being in charge of its rubber boot and shoe department during the last four years, has been elected president and treasurer of the Interstate Rubber Co. of Omaha, Nebraska, the place filled for so many years by the late Z. T. Lindsay.

THE NEW PRESIDENT OF THE INTERNATIONAL STAMP MANUFACTURERS' ASSOCIATION.

Mr. Gus. A. Meyer, junior, a member of the firm of Meyer & Wenthe, is the new president of the International Stamp Manufacturers' Association, elected at its recent convention. Mr. Meyer is one of the most popular of the younger members of the stamp trade, and this, combined with his excellent business ability and training, especially fits him for the presidency of so important an association.

THE NEW SECRETARY OF THE RUBBER CLUB OF AMERICA.

Here is a photograph of Mr. Harry S. Vorhis, recently elected secretary of the Rubber Club of America. He is a Yale man, having left that famous institution under the elms some dozen or fifteen years ago. After graduating he made straight for a newspaper office in New York—which shows his *penchant* for work. For some time he wrote for the financial papers of the metropolis, and then did the same kind of work in Boston. The

HARRY S. VORHIS.

goal of every young newspaper man's ambition is the office of the "New York Sun," and Mr. Vorhis made it early in his career. He was on the staff of that brilliant journal for six years, leaving to take up the publishing and editing of technical publications, in which work he has been engaged very successfully for several years.

He has not been associated hitherto with the rubber trade, but his general knowledge of financial and industrial conditions in this country, together with his all-around capacity, marked him as a very desirable man for the secretaryship of the club in its ambition to carry out a number of important undertakings for the benefit of the rubber trade at large. Mr. Vorhis expects to devote a very considerable part of his time and energy to the work of his new position, and the plans which the officers of the club have had in mind for some time to make the club helpful in a large way to the trade, and which have not hitherto matured because no one had sufficient time to devote to them, will now undoubtedly be carried to a successful issue.

CHARLES E. WOOD.

Mr. Charles E. Wood, who was with the New York Commercial Co. for nineteen years, is now operating as a broker with offices in the Importers' & Traders' building, 24 Stone street, New York, where he has already developed a considerable clientage. Mr. Wood was born at Piermont-on-Hudson, in 1876, and received his early education in the public schools, finishing

CHARLES E. WOOD.

at Trinity school, after which he entered the employ of the New York Commercial Co., with which house he remained until its assignment, when he commenced on his own account as above stated. He is regarded as an excellent judge of the various gums, and his many friends in the trade are giving him gratifying support.

Mr. Wood has established several important connections, among them being the agency of the Derby Rubber Co., Derby, Connecticut.

PERSONAL MENTION.

Mr. George B. Hodgman, president of The Hodgman Rubber Co., and also president of the Rubber Club of America, spent the greater part of August on a canoeing trip in the wilds of Maine.

Mr. A. L. Comstock, superintendent of The American Rubber Co., Cambridge, Massachusetts, returned the middle of August from a trip to Europe, taken for rest and pleasure.

W. H. Elenbeck, former special representative of the United States Tire Co., is the new manager of the company's Worcester branch, L. E. Hevaner, who formerly had charge of this station, having given up the sale of tires in favor of a motor car agency.

Mr. Frederick A. Smith, who for the last 18 years has been superintendent of the United States Rubber Co.'s reclaiming plant at Naugatuck, Connecticut, and who has been connected with the rubber interests in that city for a quarter of a century, has resigned his position, to take charge of the reclaiming plant of the Boston Woven Hose and Rubber Co. of Cambridge, Massachusetts.

THE VULCAN COMPANY DOUBLES ITS CAPITAL STOCK.

The Vulcan Rubber Co., which was organized in Erie, Pennsylvania, a year ago with a capital stock of $100,000, has decided to double this amount and to make extensive additions to its plant and equipment. The company's chief product consists of solid and pneumatic tires.

DON'T MAKE BALATA BELTING.

In a paragraph in the August issue of this publication on balata belting, which gave the names of a few of the manufacturers of this belting in the United States, the New York Belting and Packing Co. was included, this information appearing to come from reliable sources; but a letter has since been received from that company saying that this was an error and making the statement: "We do not make balata belting, nor do we recommend its use."

MAKING BALATA BELTING IN MANHEIM.

Mr. W. J. Glendenning, the works manager of the Manheim Manufacturing and Belting Co., of Manheim, Pennsylvania, sailed for England on the 20th of August for a brief holiday, expecting to return by the end of September. Mr. Glendenning came to this country two years ago to start the Manheim works in the manufacture of "Veelos" balata belting. The company has been very successful in this sort of manufacture, and its sales of balata belting have constantly increased. The president of the company is Charles Bond, of Philadelphia, and the general manager and treasurer is M. G. Hess, of Manheim.

AMERICAN HAND SEWED SHOE CO.

The American Hand Sewed Shoe Co., of Omaha, Nebraska, has manufactured leather shoes for the last thirty years, and in addition to this work it has been a large distributor of rubber footwear. The "Omaha News," published in that city, in its issue of August 8 contained the following paragraph:

"Damaged credit, due to unfortunate investments, close money conditions, and the prolonged illness of A. T. Austin, president of the corporation, has forced the American Hand Sewed Shoe Co. of Omaha into straitened financial circumstances. There is some question as to whether the firm will continue in business, A. A. McClure, the manager, stated. A reorganization is sure in any event. Mr. Austin will probably not continue as head of the company. The largest creditor is the United States Rubber Co. The American Hand Sewed Shoe Co. was organized here in 1884 by A. T. Austin, the present head."

Later advices from Omaha state that Mr. R. F. Spencer, the comptroller of the United States Rubber Co., has spent quite a good deal of time in that city trying to straighten out the shoe company's affairs, and the information is added that if the company resumes business it will be operated by the United States Rubber Co.

A THREE-DAYS' CONVENTION WITH SIXTY SPEAKERS.

President H. M. Swetland of the Federation of Trade Press Associations in the United States announces that the program has been completed for the eighth annual convention at the Hotel Astor, New York, September 18 to 20. Acceptances have been received from over sixty speakers of national reputation in the manufacturing, selling, advertising and publishing fields. There will be fifty ten-minute addresses at the editorial, circulation, advertising and publishing symposiums on vital questions affecting all those who have dealings with the business press of America.

Other features of the convention will be an exhibit of successful class, technical and trade journal advertising campaigns, a business meeting at which will be told the inside stories of the big trade paper publishing successes and an "inspirational mass-meeting" with addresses by representative business and professional men on subjects of live interest to editors, publishers and advertisers. All the regular sessions of the convention will be open, but tickets must be secured for the "inspirational mass-meeting." These may be obtained from any member of the Federation or from W. H. Ukers, chairman of the Committee on Arrangements, 79 Wall street, New York.

TRADE NEWS NOTES.

An ordinance which has been passed by several Alabama cities, after some agitation by the local automobile clubs, makes liable to a fine of from $25 to $100 anyone found guilty of placing in the street any article that might do injury to automobile tires.

The Knight Tire and Rubber Co. of Canton, Ohio, has recently established a branch in St. Louis, Missouri, to handle its product in that city and vicinity, under the name of The Knight Tire Co.

The machinery of the Leicester Rubber Co., formerly of Trenton, New Jersey, is being moved as rapidly as possible to the company's new location at Catasauqua, Pennsylvania, and operation of the plant at this latter point is expected to commence early in September.

A new rubber industry is to be started at Regina, Saskatchewan, it being the intention of the Gutta Percha & Rubber Mfg. Co., Ltd., of Toronto, Ontario, to open a branch in that city. If arrangements satisfactory to the company can be consummated, it purposes building a new plant, and negotiations tending to this end are now under way with the Mayor of the city.

Certificate of incorporation has been issued to the Amazon Rubber Co., under which it is authorized to engage in the business of rubberizing cloth, manufacturing rubber goods, auto supplies, rubber boots and shoes, rubber surgical supplies, etc. The authorized capital stock of the company is $100,000, and the incorporators, all of whom are residents of St. Louis, are: W. H. Schewe, Carl G. Schwarz, E. F. Schewe, H. F. Schewe, and Andrew Peterson. The company's plant located at Switzer avenue and the Wabash Railway tracks, St. Louis, Missouri, will be in operation by November.

An estimate of the quantity of tires that will be needed to equip the 1913 output of the Ford factory places the number at 800,000. This would indicate that the Ford people expect to market about 200,000 cars this year.

Building contracts have been entered into for a number of cottages at Hanover, Massachusetts, to be erected by the E. H. Clapp Rubber Co. of that place for occupancy by its factory operatives and their families. The lack of suitable homes has been a contributing element in the difficulty experienced in the past by this concern in securing or retaining desirable employes, and it is hoped that by these building operations this condition may be relieved. A number of the cottages are to be ready for tenancy by September 1.

The employes of the Tyer Rubber Co., of Andover, Massachusetts, held their annual outing this year on Saturday afternoon, August 9, assembling in Boston and proceeding thence to Nantasket. In addition to the usual features which go to make the success of the average outing, one of special interest was afforded in this case, on both the outgoing and return trips, by the spectacle, off Governor's Island, of the burning of a steamboat.

The Detroit Rubber Co.'s business in the city from which it takes its name is now in charge of Mr. Louis K. Rittenhouse, who for some time previously had held a position in the company's Boston branch.

The management of the Philadelphia branch of the Republic Rubber Co.—left open by the disappearance some time ago of J. W. Lyman—has been filled by the appointment of B. C. Swinehart, former manager of the Cleveland division, to that post. The business of this company in the northwest will hereafter be taken care of from its station at 13th and Hennepin avenues, Minneapolis, Minnesota, to which point it has moved from St. Paul.

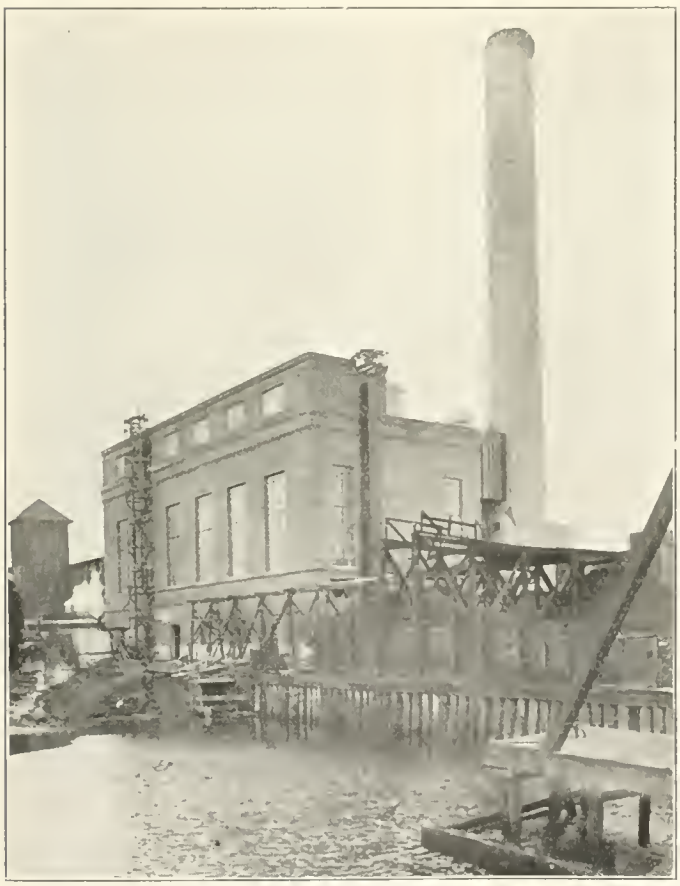
Plans are being considered by the Ohio Seamless Tube Co., of Shelby, Ohio, for additions and extensions the cost of which is approximated at $400,000, and for the opening of a stock warehouse at Detroit, Michigan. This expansion is planned with a view to securing automobile trade.

Fine New Buildings of the Boston Woven Hose.

THE completion of the handsome and efficient new power-house of the Boston Woven Hose and Rubber Co. marks another important step in the notable series of enlargements and improvements in the plant of this enterprising concern, and well serves as an example of the thorough rehabilitation of the factory, and the modernization of its modes and methods of production.

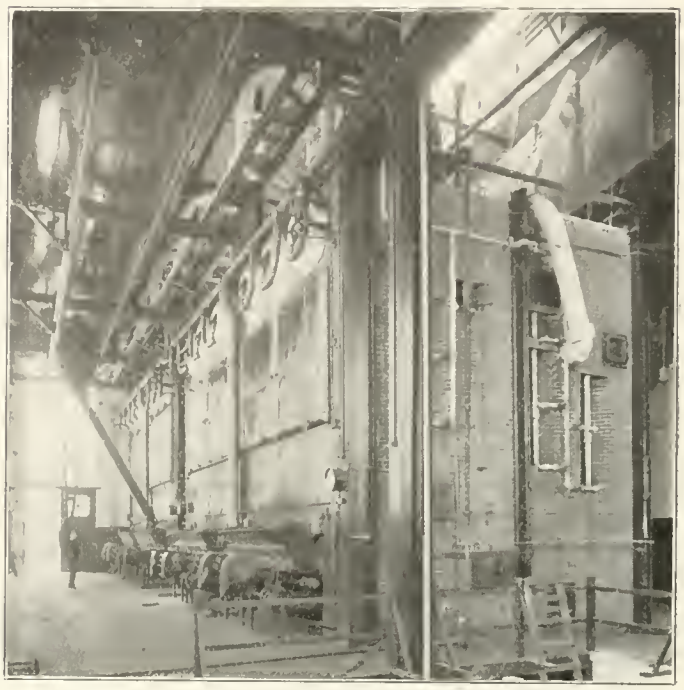
This new power-house is built upon twentieth century lines, and contains the very latest devices for economical and efficient service. The building is of cream brick with steel window casings and sash, glazed with wire glass. The graceful chimney rises to a height of 167 feet and can be seen for many miles. A glance at the boiler-room shows the liberal height of the structure. Here four Babcock and Wilcox, Foster superheating boilers, of 600 horse-power each, are already in operation, while there is room to install as many more when the occasion requires. Adjacent to this building is the coal pocket where the coal is dumped direct from the cars, or from lighters which come to the wharf. By means of the Taylor system the coal is carried from here to the loft above the boiler-room, discharged into chutes, where it is weighed and then stoked under the boilers as required, without a particle of hand labor.

There is an air-compressor of the latest construction, made by the Sullivan Machine Co. Two 750-kilowatt Westinghouse-Parsons turbines are already at work, and two similar engines,



THE NEW POWER HOUSE WITH CHIMNEY 167 FEET HIGH.

but of 1,250 k.w. each, will be installed by January 1, with another of 2,000 k.w. to come later. When these are all in place the new power plant will be, perhaps, the most modern and up-to-date in all its appointments in this country. It will be capable of generating sufficient electricity to furnish power for running all the machinery of the present plant, with sufficient reserve for



BOILER ROOM, SHOWING FOUR 600 H. P. BOILERS.

further enlargements, and to furnish the lighting for all the buildings of this great manufacturing establishment.

The whole aspect of this new building is one of safety, comfort, convenience and efficiency. There is almost an over-abundance of space, light and air, but withal it is thoroughly business-like, strong and substantial.

Immediately adjoining this new power-house there is now approaching completion the new mill-room, which when finished will be in every respect as modern as the engine-room in all its appointments. The building, which is of reinforced concrete, is 240 feet long by 100 feet wide. One half of this is of one double-height story, with saw-tooth roof skylights. The other half of the structure is four stories high. Built entirely of fire-proof materials, with all the bolts for the heavier machinery accurately placed and imbedded in the original concrete, this building will be one of the largest and most complete mill-rooms connected with a mechanical rubber manufacturing concern. The completion of this building marks the passing of all of the original plant, the doing away with all of the wood-constructed buildings, and results in the most modern mechanical plant in the country.

As soon as this new building is occupied, the office building, which was the original mill, will be reconstructed and rearranged for the selling and executive business of the company. Only one-half of the building is now so occupied, but the demands of the steadily increasing business require still further expansion of the cost, auditing, selling and accounting departments.

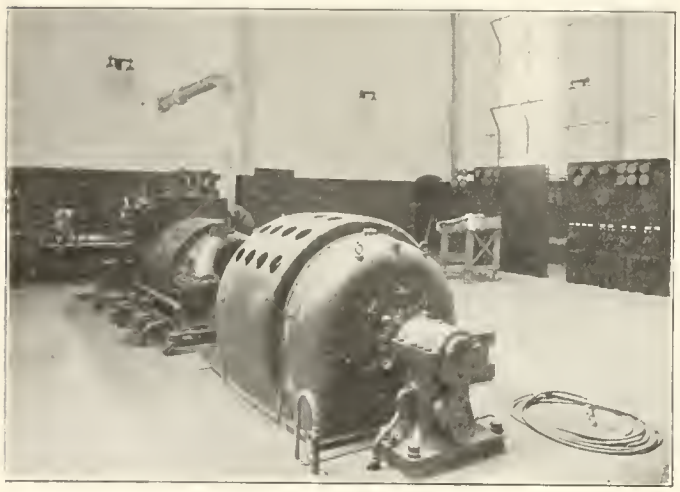
The Boston Woven Hose and Rubber Co. of today is the outgrowth, or reorganization, of a concern founded in 1870 by Theodore A. Dodge. The present company was incorporated under the laws of Maine on May 17, 1899, and capitalized at $1,200,000. The charter of the corporation was changed, in 1906,

to conform with the state laws of Massachusetts. The board of directors, elected in 1899, comprised: J. N. Smith, president; B. F. Spinney, vice-president; H. B. Sprague, treasurer; J. Q. Bennett, secretary, and W. A. Bullard.

All of these directors served in their various capacities until 1912, when death very suddenly claimed Mr. Bullard, and less than two months later, Mr. Smith. Vice-President Spinney was elected president to succeed Mr. Smith, and Mr. Creighton has been chosen as a successor to Mr. Bullard, and these were added to the board: George E. Hall and J. Newton Smith.

Soon after the reorganization Mr. A. M. Paul became general manager, continuing in that position until April, 1907, when he resigned to become owner and manager of the Davidson Rubber Co. of Charlestown, Mass. Mr. George E. Hall, the present manager, succeeded Mr. Paul, taking active charge July 15, 1907.

The growth of the concern has been phenomenal, as is



TWO 750 K. W. WESTINGHOUSE-PARSONS TURBINES.

graphically told in tabular form, showing the gradual yet steady expansion during the last fourteen years:

	No. Employed.	Sq. Ft. Occupied.	Pounds Produced.
1899	530	247,530	2,327,000
1900	582	"	3,732,112
1901	612	"	3,589,608
1902	679	"	6,072,532
1903	726	"	6,149,655
1904	750	"	6,278,748
1905	815	250,400	7,144,853
1906	987	"	8,672,515
1907	1,011	"	10,399,711
1908	1,012	378,200	9,456,028
1909	1,050	470,575	12,745,216
1910	1,127	600,566	13,727,532
1911	1,196	601,943	13,379,156
1912	1,288	627,780	17,891,811
1913	1,304	719,310	18,996,410

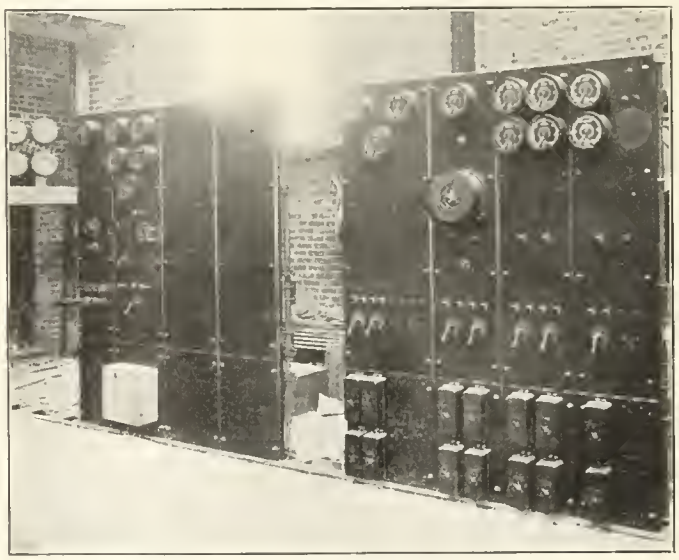
To date, August 2.

The product of the company comprises nearly every variety of mechanical rubber goods, the largest or principal items being garden hose and fruit jar rings, altho rubber belting, fire hose and rubber tape are hard pressing these lines for supremacy. Over ten miles of garden hose are produced daily, tho sometimes the production of a single day is more than double that amount. The jar ring output is tremendous. If one day's product were piled, one ring above another, the column would be 3.8 miles high. These rings laid down in a straight line, touching at their edges, would extend 208 miles. The tape produced each day, figured on ¾-inch width, if run in one continuous line would reach nearly 350 miles. Rubber heels are produced at the rate of 16,000 pairs per day. Both woven and braided fire hose are manufactured, a million pounds of yarn being used annually for this purpose, while for garden hose, etc.,

THE COAL CONVEYOR.

over 3,500,000 pounds of cotton duck and sheeting are required. This is claimed to be the only concern in the country making the hose complete, with all the fittings and metal accessories; a large foundry and machine shop being an auxiliary of the factory.

Connected with this concern, but operated at Plymouth, Massa-



ELECTRIC SWITCHBOARD.

chusetts, is a reclaiming plant producing over 5,000,000 pounds of reclaimed rubber annually.

A MOTORCYCLE FOR A HORSE.

There is a hardware man in a little town in Missouri who is evidently willing—living up to the peculiar reputation of his state—to "show" people. He is proving that a motorcycle can do the work of the horse. He has hit upon a device which is not only a great convenience in his business, but must necessarily prove a good advertisement. He has made a light delivery wagon, equipped with bicycle wheels, and has arranged it so that it can be attached to the back of a motorcycle. He puts his wares in his delivery wagon, the boy mounts the motorcycle, which, taking the place of the horse, draws the wagon about town. And it has this further advantage over the horse, that when it isn't working it isn't eating.

THE OUTLOOK FOR THE WALPOLE TIRE AND RUBBER CO.

ON August 2, on a petition by Mr. Rensselaer L. Curtis, receiver of the Atlantic National Bank of Providence, Rhode Island, Judge Dodge of the United States District Court in Boston, appointed Robert G. Fisher temporary receiver for the Walpole Tire and Rubber Co.

It might be stated at the beginning that it is believed by the receiver, the creditors and stockholders that the Walpole company is entirely solvent, that it has a wide margin of assets over its liabilities, that the receivership will be only temporary and that the company will soon be able to continue its business as successfully as hitherto.

To give a proper history of the Walpole Tire and Rubber Co. it is necessary to mention its parent, the Massachusetts Chemical Co., which was established in Walpole, Massachusetts, in 1891 and which for many years did a highly successful business in the preparation of insulating compounds, impregnating fabrics with these compounds, and the manufacture of insulating tape. In June, 1910, the Walpole Rubber Co. (which name was later changed to the Walpole Tire and Rubber Co.) was formed by the merger of the Massachusetts Chemical Co., the Walpole Varnish Works, the Walpole Shoe Supply Co., The Valveless Inner Tube Co., of New York, and the Walpole Rubber Co., Ltd., of Granby, Quebec. The company was capitalized at $3,000,000, divided equally between 7 per cent. cumulative preferred and common stocks.

This new company engaged in a wide variety of rubber manufacture, including friction, rubber tapes, varnishes, paints, compounds, druggists' sundries, molded rubber goods, rubber heels, and later, rubber tires. Its business grew at a very satisfactory rate. In the first six months of 1912 its sales aggregated $667,587.65, while for the first six months of the present year the sales aggregated $1,197,194.58, showing an increase over the year before for the same period of 80 per cent.; and this business, it is stated on excellent authority, has been done at a very fair profit, amounting during the present year at least to 10 per cent. net.

It was the ambition of the company to work its tire department up to a position where it would turn out 500 automobile tires a day, but this great increase in its tire business as well as its general business required a big increase in its financing operations, for rubber goods are sold on long-time credit. When, consequently, the Atlantic National Bank of Providence—through which it was accustomed to get its accommodations—went into a receiver's hands last April it proved very embarrassing for the Walpole company, as it had almost $900,000 locked up in its merchandise inventory which could not be turned into ready cash without a great sacrifice.

The company had also been carrying an additional burden in attempting to put the Consumers' Rubber Co. on its feet. This company, located at Bristol, Rhode Island, went into the hands of a receiver in the spring of 1912. Quite a little of its paper was held by the Atlantic Bank, which prevailed upon the Walpole company to assume the management of the Consumers' company—and it was reorganized and started afresh, the Walpole company controlling the bulk of its common stock. But this reorganization was evidently not successful, as the Consumers' company is said to have been run during the past year at a considerable loss. A receiver was appointed for it on August 1, and thereupon, the following day, the receiver of the Atlantic National Bank—to which the Walpole company was indebted, directly and indirectly, through its subsidiary companies, for an amount somewhat in excess of $100,000—applied for a receiver for the Walpole company.

The receiver appointed by the court, Mr. Robert G. Fisher, has been acting as treasurer of the Walpole company since its partial reorganization a few weeks ago. He was made receiver on the request of Mr. McAdoo, Secretary of the Treasury. Soon after his appointment a movement was started among certain of the creditors to have an additional receiver named, on the ground that Mr. Fisher's experience had not properly qualified him for this difficult position. The stockholders, in the meantime, were anxious to have an additional receiver appointed so that their interests might be safeguarded. The largest stockholders, with the amount of their holdings, are given as follows.

Otis N. Pierce, New Bedford	$66,000
E. Draper Blair	30,000
Clair Draper, Hopedale, Massachusetts	24,000
Montgomery Clair, Washington	20,000
S. P. Chandler, Nashua, New Hampshire	15,800
W. J. Fallon, Roxbury, Massachusetts	15,000

The largest merchandise creditors on notes are:

Edward Maurer, New York	$92,226
Endurance Tire and Rubber Co., New York	30,000
Charles T. Wilson, New York	27,980
Robinson & Co., New York	20,338
Heidelbach & Ickelheimer, New York	17,986
L. Littlejohn & Co., New York	16,364
Adamson Machine Co., Akron, Ohio	15,500

The capitalization of the company, which, at the time it was formed in 1910, consisted of $1,500,000 each of preferred and common stock, was later increased to $4,500,000, $3,000,000 preferred and $1,500,000 common, the actual outstanding stock at the present time being $1,903,900 preferred and the full amount of common. From the time of its organization, three years ago, until last spring, the company paid 7 per cent. dividends on its preferred stock and 4 per cent on its common.

The company's assets and liabilities as of June 30 are set forth in a statement submitted to the court in connection with this petition. The figures which are given below indicate the essentially sound condition of the company's position.

ASSETS.

Plant	$1,230,815
Patents, goodwill, etc.	1,312,419
Stock other companies	20,450
Treasury preferred stock	103,000
Cash	23,860
Trade	197,805
Sub. and coup. notes	15,944
Other accounts receivable	89,954
Consumers' Rubber Co.	27,030
Notes receivable	40,090
Prepaid accounts	10,678
Merchant inventory	863,998
Contingent assets	190,595
Total	$4,126,638

LIABILITIES.

Accounts payable	$258,705	
Notes payable	847,800	
Contingent liabilities	190,595	
Accrued taxes	3,600	
Accrued payroll	9,609	
Reserves:		
L. O. Duclos com.	3,000	
Disc. and doubtful accounts	30,534	
Doubtful notes received	9,514	
		$1,353,357
Balance of assets		$2,773,281

It is set forth in the petition to the court, and corroborated through other channels, that the company's plant is now in full operation, with a fine volume of orders ahead, upon which substantial profits will naturally be realized—so that it would appear that the creditors need not feel any particular apprehension about the outcome.

Anyone who is at all familiar with the rubber trade can recall to mind other companies which in past years have been temporarily embarrassed but which have emerged most successfully from their difficulties and for years have been numbered among the most prosperous members of the rubber manufacturing fraternity.

On August 26, Judge Dodge in the United States District Court, appointed Robert O. Harris of Bridgewater, Massachusetts, co-receiver of the Walpole Tire and Rubber Co., to act in association with Robert M. Fisher of New York, appointed receiver early in August.

THE CONSUMERS' RUBBER CO. RECEIVERSHIP.

The Consumers' Rubber Co., of Bristol, Rhode Island, which was organized in 1905, and whose experience during the past eight years has not been altogether a bed of roses, was petitioned into bankruptcy and a receiver appointed on August 1. The chief petitioner was R. L. Curtis, receiver of the Atlantic National Bank of Providence, to recover $42,685.54 loaned on notes. The receiver is Robert S. Emerson, of Pawtucket, Rhode Island, clerk of the Tenth District Court. This company was petitioned into receivership a year ago last spring, but the Walpole Tire and Rubber Co. took over a controlling interest in its common stock and assumed its general management, with the hope that it might be put upon a paying basis. For the first few months after this arrangement went into effect the prospects of the company seemed fairly bright, but its business during the last few months has been carried on at a considerable loss. The petition states that the company is willing to be adjudged bankrupt and unable to pay its debts.

Our Providence correspondent, in his letter, "The Rubber Trade in Rhode Island," in this issue, goes into the affairs of this company in considerable detail.

A RUBBER MILL STOREHOUSE BLOWS UP.

The population of Reading, Massachusetts, particularly that part of it nearest the Reading Rubber Works, was thrown temporarily into a condition of panic on August 5 by the blowing up of the storehouse belonging to the rubber company, in which there was stored a variety of explosives and inflammables, including several tons of celluloid, 50 gallons of naphtha and solvent, 50 barrels of alcohol and a number of barrels of a combination of alcohol and lamp black. The roof of the building, which was made of steel, was blown 60 feet away. Three of the brick walls of the building were blown out and scattered over a radius of several hundred yards. Fortunately the 50 barrels of alcohol, being protected by a wall, did not explode. By rare good fortune, the rubber works, about 150 feet from the storehouse, were closed down, only a few workmen repairing machinery being in the building. These escaped without injury. There was no one in the storehouse at the time, so there was no loss of life. The building, however, was a complete wreck, and its contents, valued at $13,000, were also destroyed. The fire department appeared on the scene but was unable to get near enough to the building to be of any assistance, owing to the tremendous heat, the flames rising to a height of 200 feet.

FOR WEEK-END AUTO TOURS NEAR NEW YORK.

The touring bureau connected with the B. F. Goodrich Co. has issued a map of a fine week-end tour near New York City. The map covers the distance from the city to the Delaware Water Gap, through Tuxedo, Port Jervis and Bushkill, and a return trip through German Valley and Morristown.

TRADE NEWS NOTES.

When the new mill of the LaCrosse Rubber Mills Co., La Crosse, Wisconsin, now under construction, is completed, the company will have a building 260 x 70 feet, entirely of concrete and steel, and its manufacturing capacity will be doubled. The company makes rubber footwear and employs a very large corps of traveling salesmen.

The annual convention of the Federation of American Motorcyclists, held late in July in Denver, was attended by representatives of a number of tire companies, among them—C. J. Welch of the United States Tire Co., New York; J. F. Reddick and A. C. Goodwin of the Goodyear Tire and Rubber Co., Akron, Ohio, and L. B. Lyman of the Diamond Rubber Co., Akron, Ohio.

Additions which will cost approximately $75,000 are being made to the plant of the Pennsylvania Rubber Co. at Jeannette, Pennsylvania. These consist of a four-story concrete and brick building 40 x 120 feet, and a one-story concrete and brick structure 120 x 120 feet, both supplied with all the latest ideas in the way of factory equipment.

The Ten Broeck Tyre Co., of Wilmington, Delaware, recently incorporated, will operate a factory in Louisville, Kentucky, devoted to the manufacture of automobile tires.

The value of the automobile tires exported from the United States during May of the present year was $396,816, and for June, $431,125.

A service station intended exclusively for the convenience of users of Goodyear tires is to be established in Cleveland, Ohio, by The Goodyear Tire and Rubber Co., of Akron, as soon as the three-story building at 5213 Windsor avenue, which has been leased for the purpose, can be remodeled.

The National Leather and Shoe Finders' Association—formed in 1904, and now having a membership of 387—held its ninth annual convention this year from July 22 to 24, in Philadelphia; and on Tuesday, the 23, after the regular meeting of the association, the members were entertained by the Foster Rubber Co., the steamer "Columbia" having been chartered for a trip on the Delaware river, with a view of Cramp's shipyards and the League Island navy yard, where all those who wished were permitted to visit the warships in dock. The return trip was devoted to dinner, which was served on deck, and to admiration of the beautiful souvenirs of the occasion which were presented to the members of the association and the ladies who accompanied them. These souvenirs consisted of leather vanity cases for the ladies and brown ooze leather collar boxes for the men.

The Philadelphia branch of the Federal Rubber Mfg. Co.—of which Edward J. McCaffrey has been made manager—has become one of the busiest in that company's chain of agencies, and has been instrumental in greatly increasing the demand for its product.

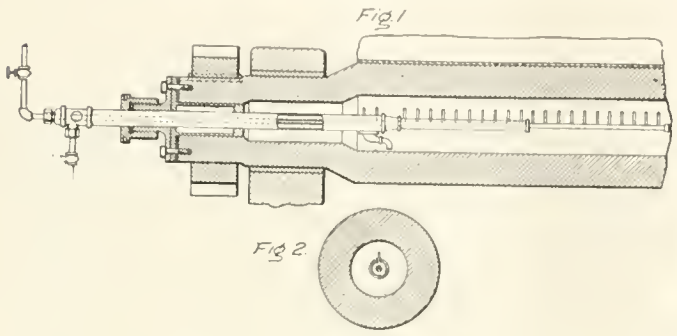
Mr. J. B. Abler, who has been connected with rubber manufacture in Akron for the last 20 years, is now acting as superintendent of the Sterling Rubber Co., Ltd., of Guelph, Canada, of which company Mr. F. L. Freudeman is secretary and treasurer. This company was organized in September, 1912 and has been making goods since the beginning of this year. It manufactures high grade rubber specialties for surgeons and electricians, and druggists' sundries.

The Boston, Massachusetts, branch of the Dayton Tire Co. will in future be managed by Joseph M. Everett, whose interests in the tire business of that city have heretofore been divided between the Walpole and Diamond companies, with both of which he has been connected. This appointment was made possible by the promotion of E. C. Newcomb, former manager.

New Rubber Goods in the Market.

A COMBINATION DOUBLE TUBE TEMPERATURE REGULATOR.

THE Florence Combination Double-Tube Temperature Regulator, adapted for the regulation of heating and cooling mills, calenders and mangles, is made by Frank L. Trefethen, whose factory is at 199 Broad street, Lynn, Massachu-

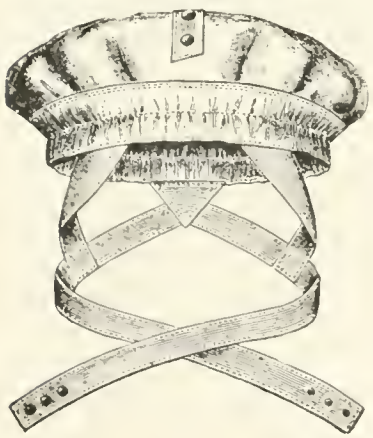


"FLORENCE" TEMPERATURE REGULATOR.

setts. It is claimed that this device insures even temperature of the entire length of a roll, maintains position under steam or water pressure and can exhaust direct to atmosphere.

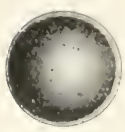
TO HOLD ICE BAGS ON THE HEAD.

It is a well known fact that fever patients or children are apt to throw off the ice bags placed on their heads which have to be replaced. The necessity of constant watchfulness is avoided by the use of the new ice-bag holder, which is made of rubber material and shaped like a cap. The ice bag (not too full) is inserted through an opening in the cap. A bandage holder is made, likewise of rubber material, on the same principle. [Sächsische Gummiwaren Industrie, Johannes Steinbruck, Dresden.]



A GUN THAT SHOOTS A RUBBER BALL.

Probably a ball was the first article ever made of rubber. The South American Indians have been amusing themselves with rubber balls for centuries—Columbus saw them playing with them when he was over here. Here is an air gun that shoots a rubber ball. The advantage of using a rubber ball is that the youngster can use the gun in the house, practicing at any target he chooses without doing very much damage. This rifle is called the "3-in-one," because, in addition to its ability to use a rubber ball as ammunition, it can be used with a cork on the end of a string—chiefly for the amount of explosive sound that can be extracted from it in

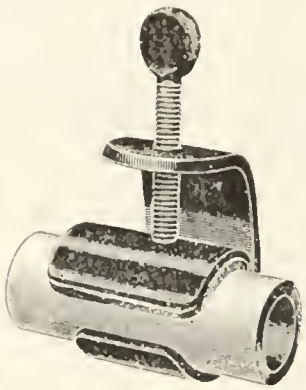


THE KING 3-IN-ONE.

this way—and also for regular shot, where the range is out of doors and the target a suitable one. (The Markham Air Rifle Co., Plymouth, Michigan.)

A TEMPORARY LEAK STOPPER.

The accompanying illustration shows a device, called "The Aqua Stopper," for repairing temporarily leakages in lead or iron pipes used for water, gas or steam. It consists of a screw clamp with an iron shield and a rubber washer. The rubber washer is loose, so that it can be put at any point under the shield where its services are required. The screw presses the shield against the washer and closes up, for temporary purposes, the leakage in the pipe.



A TEMPORARY LEAK STOPPER.

This, of course, is not intended as a permanent repair, but it will serve well enough until the plumber can find it convenient to get around. It is simple and inexpensive and can be used an indefinite number of times.

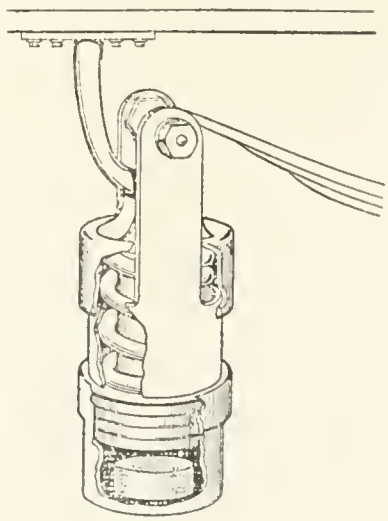
A NEW ANTI-SKID TIRE.

To be sure there is nothing particularly new about an anti-skid tire—anti-skid tires of many types have been on the market for some time—but here is a new type. It is the Lee Anti-skid, and, as the accompanying illustration shows, it has a zig-zag tread, with various lugs or knobs interspersed with the zig-zag band, and with fairly deep channels running between the designs, so that the edges of these various lugs —not to mention the continuous zig-zag lines —have a good opportunity to get a tenacious hold on the surface of the road.

The same manufacturers have previously made a zig-zag tread, but this new tread differs a little in design from the old, and also has a greater thickness of rubber. (Lee Tire and Rubber Co., Conshohocken, Pennsylvania.)

A COMBINATION OF STEEL AND AIR AND RUBBER.

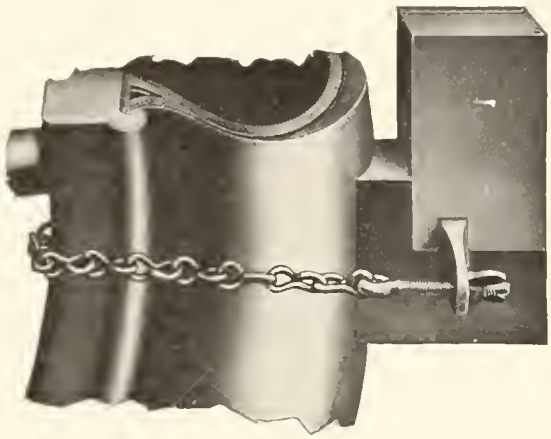
Here is a shock absorber that combines a trinity of resiliency. In the first place it has a steel coil within a cylinder; that absorbs quite a little of the shock. Connected with this steel coil is a piston that plays up and down in an air chamber, adding the elasticity of air to that of steel, to deaden the jolt. And then beneath the air chamber—as will be noticed in the accompanying illustration—there is a block of rubber, which lends its valuable aid to the good work. Co-operation is the great law of life—and this absorber is certainly built on the co-operative plan. (C. G. Polley & Co., Cambridge, Massachusetts.)



POLLEY'S SHOCK ABSORBER.

A PORTABLE STEAM TIRE VULCANIZER.

It is a great convenience when a repair on a tire is to be vulcanized to have the vulcanizer in the tool box of the car where it can be applied in a moment. The "Positive" Vulcanizer is certainly easy to carry about as it is small in size and weighs only 3 pounds. It is a steam vulcanizer and can be used on the shoe when the tire is inflated, without even jacking up the wheel, and can also be used on the inner tube. It will be noticed by the illustration that there are two sets of compartments; one is for water and the other is for gasolene or other fuel. The operation is simple and quick. The proper amount of each fluid is inserted in the proper compartments, and enough gasolene ignited to burn 20 minutes. Then, allowing 10 minutes for the repair to cool, the motorist can go on his way. While steam does the vulcanizing, it will be seen that the steam compartments are open at the top, so that there is no pressure and therefore no liability to injury on this score. Where the inner tube is to be vulcanized it can be laid over an inflated casing or on the special block which is furnished with each outfit. (Positive Tire Vulcanizing Co., Davenport, Iowa.)



"POSITIVE" PORTABLE STEAM TIRE VULCANIZER.

RUBBER BALL SUGGESTION FOR THE RETAILER.

A recent entertainment given by the University of Cincinnati—the institution upon whose legal faculty ex-President Taft until recently held the post of honor—affords an excellent suggestion to dealers in large rubber balls, especially such as may have a surplus of these on their hands which they do not wish to carry over to the Christmas holiday season.

A market for such may be discovered by keeping an eye on the doings of the high school or college in the dealer's home city, and when the students are found to be contemplating an entertainment of one sort or another, giving them the suggestion as carried out in the institution aforesaid. In brief, the idea is this—that a Greek dance be introduced into the program, either as an *entr 'acte* or at some appropriate point where play or program may be interrupted.

The players in the Cincinnati entertainment were girls, the most comely of course in the class, and in order to minimize expense each of these girls fashioned for herself a Grecian tunic,—a simple robe costing very little. Any young woman who is able to dance at all can quickly acquire the rhythmic round dances of the Greeks, given to an accompaniment of appropriate music. The more young women taking part, the more kin, friends, admirers of course will come to see; and hence the greater the net results of the entertainment. Therefore this particular university dance was composed of as many performers as the stage would conveniently allow.

In order to make the dance unique, Prof. Joseph Harry, who introduced it in connection with the "Frogs of Aristophanes"—the first performance of this play in two thousand years—equipped each of these pseudo-Grecian maidens with a big rubber ball, handsomely gilded over by rolling in a bath of gilt paint. In the course of the dance the balls are tossed high in air, then caught in the two hands by the girls, every so often. Of course the balls are too big not to be caught every time; nor are they thrown so high as to be missed.

It is very obvious that the use of these gilded balls is open to a variety of permutations and combinations. For instance, the dancers in the front and in the rear rows can throw their balls into the air simultaneously, and then the dancers in the intervening rows can go through the same exercise. By alternating different rows, and then by alternating individuals, there is opportunity for great variety of movement and effect. In the dances given in Cincinnati a great many of these combinations were used, but it is not necessary to state just what ones, as anyone devising such a dance can suit himself. This feature was a great success when given during the college exercises above mentioned, and this success can be duplicated anywhere else under similar circumstances. So any dealer in rubber toys who has an overstock of large hollow rubber balls can work out this suggestion for what he may find in it.

COLLEGE GIRLS IN A GREEK DANCE WITH RUBBER BALLS.

A NEW TIRE FILLER CALLED "BETTERN-AIR."

It would be possible, of course, to fill most of the pages of this publication each month with descriptions of substitutes for the pneumatic tire, for they are legion; but occasionally one comes along that seems more promising than its thousand and one companions. A new substitute recently brought on the market is called "Bettern-Air." It is the invention of a German chemist who has been working on it for the past six years. This "Bettern-Air" composition is intended to take the place of the inner tube. It is made in rolls of various sizes to fit various tires and is cut to the proper length. It is then inserted in the outer shoe and a small wedge piece put at the point where the two ends come together. The tire is then ready for use. The manufacturers claim that they have given it two years' test, with extraordinary results. They say that it has been used in tires where after 4,500 miles of travel it shows no effects of wear. The claim is not made that it is good for racing tires—it is not lively enough in its resiliency for a 60-mile clip—but for 30 miles an hour and anything under that it is said to be as resilient as air. It is being marketed by The Galvanizing Co., of Philadelphia, and the agents in the New York district are Bailey & Johnson, of Brooklyn.

NEW TRADE PUBLICATIONS.

THE NEW ALLEN CATALOG.

ONE of the best catalogs of metal and rubber goods issued of late is that of the W. D. Allen Manufacturing Co., of Chicago (No. 28), just to hand. Some idea of its completeness is afforded by the fact that the index of the principal articles comprises some 1,200 items.

Belting occupies the leading position, 20 pages being devoted to leather belting, 16 to belt accessories, and 7 to cotton belting. Rubber belting next claims attention, the brands "Lexington," "United States," "Yale," "Defiance," "Special," "Three Star" and "Mascot" being described and illustrated. The various styles of hose follow, including fire, water, steam, suction, oil, acid, sandblast, air drill, pneumatic, vacuum, air brake and other classes, among which are garden hose and special fire hose for factory and inside protection.

Mechanical rubber goods are represented by sheet, piston and spiral packing, rubber pump valves and gaskets; while a full line of rubber matting is likewise included. Lawn mowers, spray nozzles and sprinklers follow in appropriate connection, in addition to other hose accessories.

The metal portion includes shafting, couplings, pulleys, sheaves, gearing, link belting, elevator buckets and spouts, spray and other pumps, drills, valves and other forms of mechanical hardware.

In most cases the various articles are illustrated, and the 638 pages are replete with matter of interest and value to buyers of the lines of rubber and brass goods described.

"SALAMANDER" INSULATED WIRE.

In its new catalog (7 x 4½, 18 pages) the Independent Lamp and Wire Co., Inc., York, Pa., has grouped in attractive shape its principal specialties. This has been done with the view of affording in convenient form such information as may be of service to prospective customers for its wire and other products, sold under the brand "Salamander." Among its specialties are magnet wire, asbestos insulated and braided copper wire conductors, and motor coils.

The booklet is replete with information, of both a general and a special character, including the weights of copper wire in various diameters and other useful tables. Of practical value are the directions for handling "Salamander" Asbestos Insulated Wire, in which a dozen rules are laid down for the guidance of the worker using it.

The text is rendered more effective by well executed illustrations. One cut represents a heap of old burned out field coils, showing the condition in which they are received by the company for the purpose of re-insulation by its new process.

"NO RIM CUT" NEWS.

Among the salient features of the activity displayed this year by the Goodyear Tire and Rubber Co., of Canada, is the continuation of its policy indicated by the slogan "With and for the Dealer." In its new monthly issue, the "No Rim Cut News," the company outlines its principle of working only for the dealer, and never against him.

By this publication it is hoped to bring about a "get-together" feeling between the company and dealers; and if the trade develops the idea, the result must be mutually satisfactory. This expression of the company's views is much aided by the excellent illustrations, depicting various appropriate Canadian subjects relating to its operations. [Goodyear Tire and Rubber Co. of Canada, Ltd., Toronto.]

OXFORD RUBBER CO.

One of the most attractive and comprehensive catalogues recently issued in the rubber clothing trade has been put out by the Oxford Rubber Co., which has received a great many flattering comments with reference to its completeness and physical construction.

FISK TIRES.

Prominent in the interesting collection of recent tire literature is the handsome booklet issued by the Fisk Rubber Co., Chicopee Falls, Massachusetts, devoted to the merits of the "Heavy Car Type" of Fisk Tires.

Among the leading features of the construction of this tire is the perfect equilibrium maintained between its several parts. To obtain this result, high-grade material and expert workmanship are not sufficient. What is needed is to find the exact proportion of strength necessary in each layer of rubber and ply of fabric. Too much weight in any part of a casing is as dangerous as too little.

Such is the general principle emphasized in this review of the merits of Fisk tires in general, and of the "Heavy Car Type" in particular. The Fisk company claim to be the only manufacturers who have maintained four plies of fabric in their three inch tires.

The text is supplemented by effective illustrations of the Clincher Tire Bailey Tread, Clincher Town Car Tread, Fisk-Dunlop Tire, Plain Tread and the Fisk Removable Rim. To those already using Fisk tires this booklet gives additional reasons for continuing to do so, while its forcible reasoning equally appeals to those contemplating their adoption.

NORTH BRITISH BALLOON FABRICS.

In its present development of Balloon and aeroplane fabrics, the North British Rubber Co. is carrying out the policy which has marked its operations for considerably over 50 years, claiming that its rubber manufacturing plant is the most complete within the British Empire. Thus for the delicate processes connected with the above fabrics it has had special facilities.

The importance of this branch of its product has led to its bringing out two attractive booklets, "Concerning Aeronautics" (32 pages) and "North British Aeroplane and Balloon Fabrics" (8 pages), in which the general and special features of the subject are fully explained.

Prominence is given to the tests of diffusion, strength, tearing, bursting and moisture absorption. One of the most striking features of the larger booklet is a list of the various cloths for aeronautic purposes, with specifications of their different constructions. The text is supplemented by a number of artistic illustrations, showing the North British fabrics in use.

Anyone interested in the subjects treated will benefit by the perusal of these two contributions to the literature of aviation.

ATLANTIC WIRE.

Few lines of manufacture involve so much detail as that of wires and cables, by reason of the multiplicity of sizes and the various forms in which they are used. This fact is exemplified in the case of the Atlantic Insulated Wire and Cable Co., Stamford, Connecticut, which has issued its price list in the form of three separate booklets, uniform in size and arrangement, applicable to its three standard grades of rubber-covered wires and cables of the National Electric Code Standard of 600 volts.

The three booklets represent first the "Dolphin Atlantic" new code wire, the list bearing date January 1, 1913, and filling 11 pages 7 x 4. In the second booklet is the list of "Triton Atlantic," dated June 1, 1913, filling 15 pages and containing all particulars regarding that high-grade wire. The third booklet gives the price list, dated June 1, 1913, of the "Neptune Atlantic" wire (30 per cent rubber), the details occupying 15 pages.

Three main divisions are shown in the respective lists: B. & S. gauge, solid and stranded wire, and circular cables. Considerable work has evidently been involved by the compilation of these three booklets, the handy form of which renders them convenient for buyers. This company is to be congratulated on the way in which the details have been presented.

The Editor's Book Table.

FIRES AND FIRE FIGHTERS. BY JOHN KENLON, CHIEF OF NEW York Fire Department. New York, 1913. George H. Doran Company. [Cloth, 410 pages, with 45 plates. Price $2.50 net.]

WHEN a big subject is handled by a competent man a satisfactory result is to be anticipated. This has undoubtedly been the case in the instance of the volume by Chief Kenlon, who by his thirty years' experience as a fire-fighter and in the higher ranks of the fire department, has a distinct claim to attention.

Starting from the palmy days of Rome under the Caesars, he conducts the reader through the decadence which marked the dismemberment of the Roman Empire up to the renewed interest in fire-fighting which marked the last century and has since been manifested.

CAPACITY TEST, HIGH PRESSURE SYSTEM, NEW YORK.

Prominent among the events recorded was the designing by Richard Newsham in the eighteenth century of a practicable hand engine from which water was pumped through a hose, being thus the predecessor of the manual engine, which in turn gave way to the steam fire engine. In 1808 a Philadelphia house introduced riveted leather hose, while about 1820 an English firm started to manufacture rubber hose.

Proceeding to deal with his personal recollections, Fire Chief Kenlon devotes twenty pages to reminiscences of his thirty years' life as a fire-fighter; also drawing largely upon his own experiences in the chapters on "Great Fires and How They Were Fought," "The Hotel Peril," and other branches of the subject in its modern aspect. The personal character of the work is throughout prominent.

Special interest attaches to the chapter on "Apparatus for Fire Fighting," in which the merits of the steam pump, water tower and other appliances are fully discussed. As to chemicals, the author expresses the opinion that while useful in residential districts with detached houses, they are not applicable to large commercial buildings.

The decisive feature governing fire-fighting in all countries and under all conditions may be summed up in the two words "water supply." This problem, according to the author, is solved by the high pressure system, which he regards as the most up-to-date plan of water supply known to science. This service in the Borough of Manhattan protects approximately 2,600 acres, in Brooklyn about 1,000 acres, and at Coney Island about 146 acres. The system was put into regular use in New York in 1908.

The value of the work as a text book on the subjects treated is enhanced by the chapters on "The New York Fire Department," and "Underwriters and Salvage Corps." The appendix contains a series of practical tests for fire engines. These include the friction loss in fire hose, based on tests of best quality rubber-lined fire hose, as well as nozzle pressure through various lengths of rubber-lined hose in different widths.

Nor is Chief Kenlon's survey of the subject confined to this country. Special chapters deal with the conditions and past history of the question in England, France, Germany, Austria-Hungary, Switzerland and Italy. A chapter of particular value deals with "Fire Control in Schools, Factories and Hospitals."

In this brief review it is impossible to do more than indicate the various points covered by the author. The work should undoubtedly be in the hands of everyone in any way connected with the inter-elemental struggle of fire-fighting.

HANDBOOK OF BRITISH GUIANA. EDITED BY ALLEYNE LEECHman. Georgetown, 1913. Permanent Exhibition's Committee. Price 2 shillings. [Cloth, 8vo, 284 pages, with 74 illustrations.]

To make a work of reference attractive is a task involving much constructive ability and a close attention to detail. That the editors and compilers of this Handbook have succeeded so well is a testimony to the completeness of their work.

British Guiana enjoys the advantage of having at its service the Permanent Exhibitions' Committee, a body which looks after

the interests of the colony as regards publicity; the issue of the Handbook belonging therefore to its regular functions. The committee in 1909 brought out a work of this description, but as the issue was rapidly exhausted it decided upon publishing a larger edition in more condensed form. This intention has been carried out by the publication of the above volume.

The Handbook sub-committee was composed of Professor J. B. Harrison, Mr. Frank Fowler and Mr. J. Wood Davis, while the general editorial work has devolved upon Mr. Alleyne Leechman of the Department of Science and Agriculture, with the assistance of various prominent officials.

The scope of the Handbook includes four divisions: The Country, Political, Economical and Statistical. In the opening section the history of British Guiana is first dealt with, its geography and geology following and the division concluding with the climate and hygiene of the colony. From the geographical section it is seen that British Guiana has a coast line of 270 miles and an area of 90,277 square miles.

Under the political heading we find that the population in 1911 was 296,041, of which number 126,517 were East Indians and 115,486 blacks and Africans, Europeans only representing 3,937. Immigration is next treated, followed by details of the constitution and government, this section terminating with a description of the educational system.

In the economical section are grouped the various subjects affecting the productiveness of the colony and which go to make up its eleven million dollars worth of annual exports. Imports represent about nine million dollars a year. The agricultural products of British Guiana are next passed in review, including sugar, rum, rice, cocoanuts, cacao, coffee, plantation rubber, limes, fruits and fibers; while the next chapter takes up the forest industries, including balata, wild rubber and timber. The consideration of the mining industries closes the discussion of the economical resources of the colony. A brief but suggestive chapter deals with the manufacture of sugar and rice and calls attention to the special opportunities existing for the establishment of factories in various lines.

In the statistical section a number of interesting tables give figures of immigration, rainfall, revenue and expenditure, imports and exports, etc. One table shows the average yearly exports of balata for quinquennial periods to have been: 1893-1897, 226,625 pounds; 1898-1902, 401,956 pounds; 1903-1907, 497,790 pounds; 1908-1912, 1,075,216 pounds. The bulk of the balata exports is to the United Kingdom, but increasing quantities are now being shipped to the United States. The exports to that market increased from 9 per cent. of the total in 1904-5 to 15 per cent. in 1911-12.

Trade with the United States, according to American returns, is far from having attained its possible development. Of the nine million dollars of British Guiana's imports this country furnishes only 1¾ millions, while we take only about 1¼ million dollars worth, out of total exports from the colony of 11 millions.

MR. ANTHONY N. BRADY'S WILL.

The will of the late Anthony N. Brady was made public August 4. The widow receives $1,000,000 and an annuity of $60,000, together with the Brady residence in Albany and all its contents; $100,000 is given to charitable institutions, being equally divided among the Albany Hospital, Albany Hospital for Incurables, St. Peter's Hospital of Albany and the Homeopathic Hospital. The rest of the estate—which is variously estimated at from $75,000,000 to $100,000,000—is divided into six equal parts and bequeathed to his two sons, three daughters and to a granddaughter, the child of a deceased daughter. It is estimated that nearly one-third of his fortune was represented in his tobacco interests. His interests in the rubber trade, especially in the United States Rubber Co., General Rubber Co. and Rubber Goods Mfg. Co., are known to have been very large, but just how large has not been divulged.

OBITUARY RECORD.

JOHN D. CHEEVER.

THE death of John D. Cheever occurred very suddenly on August 16, at Coburg, Ontario, where he had gone a few days before for a short summer vacation. Mr. Cheever was formerly a prominent figure in the rubber trade but retired from his

JOHN D. CHEEVER.

active interests in this industry about ten years ago. Mr. Cheever was born in New York City in 1859 and was the son of John H. Cheever, founder of the New York Belting & Packing Co. He was a graduate of Trinity College, and upon leaving there became connected with the New York Belting & Packing Co., of which his father was then president. Mr. Cheever continued his connection with the company until it became a part of the Rubber Goods Corporation, when he became identified with the Mechanical Rubber Co., of Cleveland, remaining with that concern for a short time. Subsequent to this, Mr. Cheever became associated with Henry W. Poor & Co., with which house he remained for four or five years, this constituting the last of his active business career, tho for a number of years afterwards he gave attention to his important iron ore interests.

He was a director of the Okonite Co. from its inception until the time of his death. Mr. Cheever was one of the originators of the National Horse Show Association, the organizer and first president of the Rockaway Hunt Club, and a member of the Union, Racket and Tennis, New York Yacht, Brook, and Turf & Field clubs.

He left an estate said to be "at least $50,000," the principal beneficiaries under the will being his widow, his daughter, Mrs. Gertrude G. Porter, 969 Park avenue, New York, and his brother, Henry D. Cheever, who, in conjunction with Clifton P. Williamson, is an executor of the estate.

MR. F. M. SHEPARD'S WILL.

The will of the late Frederick M. Shepard was admitted to probate in Newark, New Jersey, on July 31. Under its terms, the estate—the value of which is not given—is left to the widow and five children. The widow is bequeathed the home in East Orange, stocks and bonds of the Orange Water Co., stocks of the East Orange Safe Deposit and Trust Co., and a parcel of land in East Orange. The rest of the estate is divided equally among his five children, except that his daughter, Annie R. Shepard, receives in addition his real estate at Delaware Water Gap, and his daughter, Edith M. Shepard, all his real estate at Norfolk, Connecticut.

Some Rubber Interests in Europe.

NETHERLANDS RUBBER TRADING.

ACCORDING to the report of United States Consul General Listoe, of Rotterdam, the local rubber market was exempt from wide fluctuations during 1912. Forest rubber in unclean and lower qualities was in much less demand than plantation rubber, which found a ready market through the whole year. Only small quantities of *Castilloa* and *Manicoba* were imported during that period.

The prices paid in Amsterdam and Rotterdam were in general quite satisfactory and above the level of other markets. Several shipments of rubber were sent to the Netherlands, which in former years had been consigned elsewhere. United States purchasers were regular buyers in Rotterdam, a continued expansion of which market is anticipated.

In the twelve monthly inscriptions of 1912, a total of 1,034,440 pounds was disposed of, four-fifths of which consisted of plantation rubber. A further total of about 100,000 pounds was sold outside of the public auctions.

Some 35,200 pounds of leaf gutta was sold by inscription in 1912. The crop of balata suffered from the drought in Surinam, the quantity marketed in the Netherlands amounting to only 400 tons.

The exports from the Rotterdam district to the United States included the following amounts:

	1911.	1912.
Crude	$165,168	$316,950
Waste	54,757	16,178

Exports of rubber from Amsterdam to the United States represented in 1911, $30,975, and in 1912, $278,495.

RUBBER ORGANIZATION FOR AMSTERDAM.

An association of 30 houses has been formed at Amsterdam in the interest of the local rubber trade. It is preparing regulations for the conduct of business and will include an arbitration committee for the settlement of disputes as to quality and other matters. Further applications for membership are pending.

RUBBER MANUFACTURERS IN BOGOTA.

NOT very much has been heard regarding rubber manufacture in Colombia, but a recent inquiry of one of the public officials in Bogota brought out the fact that there is at least one man in that city who has devoted a great deal of time and thought to the possibilities of rubber. He is Ismael José Romero. Being a traveler and quite a good deal of a scientist, he began about twenty-five years ago to make a theoretical and practical study of the botany of the rubber tree as found in Colombia, traversing the country and exploring many of its forests. He related his experiences in a little book, which has proved so popular that it has run through several editions.

Having informed himself very thoroughly as to the botany of rubber and the extent of its growth in that republic, he began in an experimental way to do some manufacturing, producing quite a variety of waterproof fabrics and some other articles. His products were awarded a gold medal and diploma at the Fair held in Bogota in 1891; a gold medal, silver medal and diploma at the Exposition of Arts and Commerce held in Medellin in 1898; and first prize, gold medal and diploma of honor at the Centennial Exposition in Bogota in 1910.

Owing to lack of resources, he states he has not been able to establish a rubber factory in that city for all classes of fabrics, but believes that such a factory would be eminently successful.

GERMAN CRUDE RUBBER STATISTICS.

GERMAN statistics for the first five months of the last five years show that up to 1911 the quantity had increased, while it fell slightly in 1912 and 1913. Exports followed more or less the same course, but the reduction was much more important in 1913.

The exact figures are:

January-May.	1909.	1910.	1911.	1912.	1913.
Imports ..*pounds*	5,534,100	8,419,300	9,593,100	9,066,460	8,846,300
Value in millions of dollars	12.02	18.29	18.24	17.90	17.47
Exports ..*pounds*	1,364,800	2,307,100	1,902,200	2,309,000	1,639,400
Value in millions of dollars	2.31	4.97	4.11	4.39	2.63
Cons'ption *pounds*	4,169,300	6,112,200	7,690,900	6,757,460	7,206,900

The largest quantities of rubber were imported from Brazil, while a good deal was received from Mexico, Congo and Camerun. German East Africa showed a remarkable increase in its production. The quantity shipped to Germany during the first five months rose from 86,600 pounds for 1910 to 357,500 for 1913.

Owing to the importance of Germany in the distribution of rubber, it is necessary to consider the imports and exports together, thus arriving at the net consumption. Treating the figures in this way it will be seen that the quantity of rubber used in Germany increased by 80 per cent. between the first five months of 1909 and 1913.

Prices have this year considerably fallen in Germany and stand lower than in 1909, as will be seen by subjoined table, giving the average price of different grades of rubber for the month of May for the past five years. Equivalents in American currency per pound:

	1909.	1910.	1911.	1912.	1913.
South Camerun	$0.77	$1.32	$0.66	$0.77	$0.57
Upper Congo	1.01	1.76	.99	1.19	.70
Peruvian balls	.89	1.59	.82	.87	.58
Mexican rubber	.90	1.54	.82	.91	.61

THE HACKETHAL INSULATING PROCESS.

Herr Louis Hackethal, Director of the German Telegraphs, discovered, in 1899, after many years' trials, a process for the effective insulation of overhead electric wires. It consisted in wrapping the bright or already insulated wire with layers of paper and fiber, saturated by a special process with a patented composition.

Among the advantages claimed for this system is the protection of all electrical connections against reciprocal disturbances. Hence, it has been adopted for fire engine and signal stations, alarms, block stations and electric clocks.

REMARKABLE MILEAGE FOR SOLID TIRES.

They appear to be getting some remarkable solid tire mileage on the other side of the water. The Paris General Omnibus Co. reports that it has used some tires for 30,000 miles before it was found necessary to take them off the wheels; and some of the tires on French army trucks have shown a mileage exceeding 20,000 miles. To be sure the omnibus tires are probably used on more than ordinarily good streets, but in the use of army trucks it is not possible usually to pick out just the roadways on which tires could be used to the best advantage.

SOME RUBBER NOTES FROM LONDON.

ONE of the features of recent parliamentary proceedings at Westminster has been the annual review of Colonial trade by Mr. Harcourt, the Colonial secretary. He referred to the comparative steadiness of receipts of rubber from British West Africa, which, however, were no larger today than seven years ago, describing the increased output of Ceylon and Malaya as "a marvelous result of science applied to forestry." The growth of balata exports from British Guiana was also commented upon, with special reference to the rise from £40,000 to £140,000 within six years.

BRITISH RUBBER GOODS EXPORTS.

British Exports of rubber goods, excluding tires, for the first six months of 1913 amounted to £1,443,778, as compared with £1,322,299 for the corresponding period of 1912 and £1,333,239 for that of 1911. Tires have only been quoted for the first time this year, so an exact comparison is in that case impracticable. The value of tire exports for the first half of this year was £731,361. Insulated wire and cables show for the first six months of 1913 marked advances on the corresponding periods of the two previous years, having been £1,437,803, against £1,041,712 in 1912 and £571,885 in 1911.

SPALDING VS. GAMAGE.

In the judgment lately rendered by the court, the claims of A. G. Spalding & Bros. have been fully supported in the now celebrated "Orb" football case. An order has been issued restraining A. W. Gamage, Ltd., the sporting goods dealers, from advertising and offering for sale as firsts, footballs which had been rejected as inferior by Messrs. Spalding, the manufacturers. Beyond the question of stopping the defendants from selling, was that of damages. In its decision the court evinced a disposition to award compensation for the losses sustained, remarking that a "tort" had been committed. While affirming the principle of awarding damages, it added that the needful details on that subject had not yet been presented.

The case, it will be remembered, grew out of the rejection by Messrs. Spalding of some 6,000 "Molded Orb" footballs which had been found unsatisfactory in 1910, at which time they stopped making balls of this type. In 1912, while still holding the old stock, they brought out the new "Improved Sewn Orb." About May of the last-named year, these old balls were sold to Mellis, Schein & Co. as waste material. This firm sold the balls to the Gamages, who seem to have offered them as the "Improved Sewn football," then being sold by the plaintiffs. The evidence tended to show want of care on the part of the defendants in the advertisements inserted. In handing down its decision the court said that the plaintiffs had every right to complain of the grave damage they had sustained.

THE GORTON RUBBER COMPANY'S STAFF.

In consequence of the recent changes in the Gorton Rubber Co., its staff is evidently making new arrangements. Mr. W. Downs, late sales manager of the company, has joined the Russian Tire and Export Co. in order to develop the band tire business of the Prowodnik Co. Mr. F. G. Billett has been appointed agent for London, Belgium, Holland and Denmark for Redfern's Rubber Works, while Mr. R. S. Humphries, the Gorton Co.'s representative in the Midlands, has taken up that territory for the St. Helen's Cable Co.

RUBASTIC, LTD.

This new rubber substitute, referred to in the European press, is the invention of Mr F. J. Healey, who belongs to the scientific department of the Faraday Institute London. Mr. Healey is said to have carried out the preliminary investigations and to have subsequently founded a company in Basle to continue his work.

A company has been registered in England with a capital equaling $5,375,000, of which $5,000,000 is in preference shares. The common stock is in shares of one shilling each.

The objects of the company include the smelting of metals, the reason for which is not considered apparent in connection with artificial rubber. Its offices are in Southall, Middlesex, and the officials are said to be French.

The English press is recommending caution, in view of the limited information available. Altho it is said to be adapted for printing rollers, hose and balls, the new article is apparently not claimed in England to be an "artificial rubber."

RUBERITE.

Among the claims made for this newly introduced compounding ingredient, is that of increased elasticity and resiliency in the manufactured product, through mixing with new, waste or reclaimed rubber. It is claimed that it takes the place of carbons, another advantage being that of preventing the adhesion of rubber to the mold. The inventor, Mr. Robert Currie, of 7 Normandy street, London, is known to rubber manufacturers in connection with other improvements.

ELECTRICITY IN MINES.

With reference to the subject of the New Home Office rules as to electricity in mines, Mr. W. T. Anderson of W. T. Glover & Co., Manchester, has called attention to four classes of coverings for light and power cables: rubber; paper lead covered; paper leadless; bitumen. Of these he considers rubber-insulated metal sheathed cables the best, tho their cost renders their adoption in many cases impracticable. Rubber cable is, however, nearly always used for "tailing" cables of other descriptions.

COMMERCIAL VEHICLE SHOW.

The tire section of the Commercial Vehicle Show at Olympia (lasting from July 18 to 26), included 27 exhibits, forming an unprecedently complete display of solid vehicle tires. Among the notable exhibitors was The B. F. Goodrich Co., Ltd., which made a special feature of its rubber studded tires with side flanges. The North British Rubber Co. made a specialty of the "Dueasble" tire, fitted to clincher wheels, while the Michelin Tire Co. showed the "Semelle" non-skid tires, which have for some time been a feature of its product. The regular standard makes of British solid tires were well represented. The "Liga Gummiwerke" of Frankfort, Germany, exhibited their continuous solid band tires, in addition to their rubber matting.

LIGA TIRES, LTD.

This company has been formed to undertake the agency for England of the "Liga Gummiwerke" of Frankfort, German, which was established last year. Mr. S. Patterson is sole director and manager of the company, which claims to have shown for its product excellent records for mileage.

RUBBER TANNED LEATHER CO.

Mr. E. C. C. Smith was lately appointed receiver and manager. He reported at the adjourned meeting that arrangements were pending for the formation of a company with considerable capital. If negotiations were successful, the company would be continued and the creditors paid in full.

RUBBER REGENERATING CO.

This Manchester company is now installing a new horizontal cross-compound condensing engine of 1,000 h. p. It is expected to shut down during the first week of September for the purpose of connecting and starting the new engine.

ALUMINUM FLAKE.

Typke & King are understood to have made arrangements for distributing this product in the United Kingdom, acting for the Gammeter-Brodbeck Sales Co. of Akron, Ohio.

MACINTOSH CABLE CO.

This new company has been registered in London with a capital of £25,000 for the manufacture and sale of cables, chains, wire or ropes. The directors are Sir Frederick H. Smith, Bt., Frederick M. B. Smith and T. H. M. Harvey.

COMPETITIONS AT NEXT YEAR'S LONDON RUBBER EXHIBITION.

THE fourth International Rubber and Allied Trades Exhibition, to be held in London from June 24 to July 9, 1914, includes a number of highly interesting competitions, a special program of which has been issued.

Among the principal competitions are:

INDIA RUBBER WORLD Trophy: Silver cup, value $1,000, for best process of extracting latex from wild *Hevea, Castilloa* or *Manihot* trees;

"Grenier's Rubber News": Silver trophies, value £50 and £15. Best samples of commercial rubber from Malaya, Java, Sumatra and Indo-China;

Association des Planteurs de Caoutchouc, Antwerp: Silver cup for best sample of plantation rubber grown in Dutch East Indies and Indo-China;

Mincing Lane Tea and Rubber Share Brokers' Association: 75 guineas and 25 guineas. New ideas for use of plantation rubber;

President's Trophy: For most interesting exhibit affecting rubber;

West India Committee Competition: Three silver cups for West India Exhibit;

Rubber Growers' Association: (1) Medals—Best commercial samples of plantation rubber; (2) Gold medal—Best exhibit of plantation rubber; (3) £50 and gold medal—Improvements in plantation rubber; (4) Medals—Exhibit of rubber flooring; (5) Gold medal—Rubber articles for commercial purposes; (6) £50 and gold medal—New applications of plantation rubber.

Planters' Association of Ceylon Diamond Jubilee Competition: Trophy. Samples of commercial rubber.

"India Rubber Journal": £25. Plan and description of rubber estate factory; £25, photographs of factory work.

"Rubber World": Trophies, silver cup and salver—Ideal Rubber Estate; Special trophy, Wild rubber.

"Tropical Life": Gold medal. Best sample *Ceará rubber.*

"Gummi-Welt": Gold medal—Rubber manufacturing machine of German manufacture

Inquiries should be addressed to The Awards Committee, care of A. Staines Manders, 75 Chancery Lane (Holborn), London, W. C., England.

USES OF RUBBER.

Special interest attaches to three of the competitions at the London Rubber Exhibition of 1914, forming Nos. 4, 5 and 6 of the series of six competitions inaugurated by the Rubber Growers' Association.

COMPETITION 4 offers gold, silver and bronze medals for the three best exhibits of rubber flooring in tile or sheet form; open to manufacturers of any country.

COMPETITION 5 offers a gold medal for the greatest variety of articles made from rubber for commercial purposes.

COMPETITION 6 offers a prize of £50 and a gold medal for the discovery and application of each new use for plantation rubber, as may be adjudged the most valuable, special consideration being given to the weight of such rubber which the application is likely to consume.

The scope of these three competitions renders them of special interest to manufacturers.

PRIZES FOR ESSAYS AND PHOTOS.

The "India Rubber Journal," of London, will offer two prizes, to be awarded at the rubber exposition to be held in that city next summer. One prize, of £25, will be offered for the best essay, with diagrams, on rubber estates; and the second, for a like amount, for the best series of photographs of rubber estates.

A NEW RUBBER FROM QUEENSLAND.

READERS will no doubt be interested in a sample received by THE INDIA RUBBER WORLD from Mr. Joseph Campbell, M. A., M. I. M. E., of Cairns, North Queensland, of a rubber extracted by him from a species of Apocynaceous tree, which grows abundantly in and near the North Queensland "scrubs." This, he claims, is the first time wild rubber has been extracted in any quantity in North Queensland.

Rubber planting has been for some time carried on in that state; among others by the Gossypium Park Estates, Limited, of which Mr. Campbell is managing director.

While the company is chiefly interested in the production of cotton, it is engaged to a limited extent in the manufacture of rubber solution and vulcanized sheets; and this fact has caused the members of the company to feel much interested in the general subject of rubber, including both the production of the crude article and its manufacture.

Mr. Campbell's discovery grew out of his work in the laboratory of the company. In his earlier experiments he had used chemically prepared cotton in conjunction with the juices of the trees referred to, but later on he found it was not necessary to do so. His object was to bring about polymerization, on the degree of which the quality of a rubber depends; and by the use of these juices he was able to make three or four different qualities, of which he preserved careful records, being thus in a position to reproduce them at any time.

The rubber made by Mr. Campbell's process has been valued at 3/ per pound, taking the basis of fine hard Pará at 4/2. He estimates that when the company's rubber plantation comes into bearing next year, by mixing his compound with natural rubber latex he can greatly increase the yield. In order to carry his process through the initial stages he has formed a small syndicate. According to Mr. Campbell's report to the London directors of the company, the plantation now approaching the bearing stage includes three acres in *Manihot Dichotoma* and two in *Manihot Glaziovii.* The hurricane of January 30 last put back the trees about six months. He is, however, so satisfied with rubber prospects that he intends bringing the plantation up to 12 acres, ploughing out poor cotton with that end in view.

Queensland has the reputation of extreme fertility, and its needs on the subject of agricultural instruction have been put forward in the present discussion as to the proposed college. As it is understood there are millions of rubber trees in the State, there would seem to be possibility of important results from Mr. Campbell's "Queensland Rubber," provided it has the properties claimed for it, including that of vulcanizing perfectly.

QUEENSLAND AS A SOURCE OF RUBBER.

In a recent press interview Sir Rider Haggard, who has been traveling through Australia and New Zealand on behalf of the Dominion Royal Trade Commission, said the fertility of Queensland was such that he firmly believed there was nothing grown in Ceylon which could not be produced with equal success in that colony. He added that he considered it would be possible to grow rubber in many parts of Queensland, were it not for the labor problem. He added:

"At the present time Queensland is very largely undeveloped, but its wealth is almost unlimited and the natural resources only need the necessary labor to be put into practical use. It is all virgin soil and its fertility is extraordinary."

The principal difficulty as to labor in Australia consists in the objection by the white population to the importation of lowly paid black labor. As a result of the opposition developed, the latter class of workers was all sent out of the country.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude and Compounding Ingredients."

Some Rubber Planting Notes.

THE MALAYAN RUBBER INDUSTRY.

IN view of the present and prospective importance of the Malayan rubber production, special interest attaches to statistics on the subject, lately compiled by Mr. Lawton Brain, Director of Agriculture of the Federated Malay States.

The growth of the industry is shown by the annexed figures:

STATISTICS OF MALAYAN ACREAGE AND YIELD.

Years.	Area under Rubber—acres.	Crop pounds.
1906	99,230	935,056
1907	179,227	2,278,870
1908	241,138	3,339,922
1909	292,035	6,741,509
1910	362,853	14,368,863
1911	542,877	24,904,043
1912	621,621	42,462,401

It will thus be seen that the increase of output has been far in excess of that shown for acreage, representing per acre for 1906 about 10 pounds, for 1911 about 50 pounds, and for 1912 about 70 pounds.

An indication of the growing productiveness of the Malay Peninsula is afforded by the fact that between 1911 and 1912 the acreage increased about 15 per cent. and the number of workers about 12 per cent., while the output showed a gain in quantity of 75 per cent. The value would seem to have advanced from £6,000,000 in 1911 to £9,000,000 in 1912—a rise of 50 per cent. Such a result is evidently due to working the estates up to their productive capacity, and at the same time as far as possible economizing the cost of labor.

The relative importance of the area planted with rubber in the various territorial divisions is shown as follows: Federated Malay States, 399,197 acres; Straits Settlements, 94,263 acres; Johore, 91,827 acres; Kelantan and Kedah, 34,837 acres; Trengganu, 1,497 acres; total, 621,621 acres. About two-thirds of the area thus belongs to the Federated Malay States.

Such are a few salient points of this interesting group of statistics, which has been supplemented by another table, showing the area under cocoanuts to be 60,997 acres, or about one-tenth of that under rubber.

PAHANG RUBBER CO., LTD. (FEDERATED MALAY STATES).

The report of the Waterhouse Co., Ltd., of Honolulu, agents for the Pahang Rubber Co., expresses the belief that the manager's estimate of 140,000 pounds of rubber for this year's crop will easily be attained. Last year's production was 60,138 pounds. Attention is called to the natural advantages possessed by the state of Pahang, which, should the labor question be solved, would render the company's property one of the most productive estates in the Malay Peninsula.

PERAK RUBBER PLANTATIONS, LTD. (FEDERATED MALAY STATES).

The report presented at the recent London meeting of this company, shows that its area is now 2,045 acres, of which 1,299 are cultivated. During 1912, 640 acres were tapped, an average of 5¼ pounds each having been produced by 59,200 trees.

For the year 1912 the cost f. o. b. had been 1*s.* 0 1/2*d.* per pound, as compared with 1*s.* 4½*d.* for the previous year. A still further reduction is looked for in the future.

KUANG RUBBER PLANTATIONS (FEDERATED MALAY STATES).

This company (which is under the control of the Société Financierè des Caoutchoucs) in its report for 1912, states that the crop was 11,822 pounds. A yield of 64,500 pounds is estimated for 1913.

RUBBER IN BRITISH ADMIRALTY CONTRACTS.

On a recent occasion Mr. Denman, M.P., asked a question in the British House of Commons affecting rubber. He inquired from the Secretary to the Admiralty as to whether any contracts with that department stipulated that the rubber used should come from foreign sources, asking that such discrimination should be avoided in future.

In his reply, Dr. Macnamara said that the stipulation as to a particular source was generally removed from Admiralty specifications in 1897, the condition as to the supply of Pará rubber being only retained in the case of some unimportant items.

He added: "Our general stipulation is for pure caoutchouc, irrespective of country of origin, and we will consider whether there are still adequate reasons for the retention of Pará in the few cases referred to."

In a detailed report by Messrs. Clayton Beadle & Stevens, the Rubber Growers' Association has put forward a number of arguments in favor of plantation rubber, emphasizing the contention that manufacturers should have the option of using either variety in Admiralty and other government contracts. It is urged that plantation smoked sheet rubbers not only satisfy the claim for the highest class of material, but that the results obtained are practically the same as those secured with hard Pará. Even if the figures are slightly lower, they satisfy the Admiralty tests.

It is added that as plantation Pará passes the rigorous tests of the English government, there is no reason for its exclusion from specifications, particularly as it is a British-grown product.

COMMITTEE OF RUBBER GROWERS' ASSOCIATION.

A representative committee was recently appointed by the Rubber Growers' Association, London, to investigate the late fall in the price of plantation rubber, as well as to report on the possibility of arriving at some arrangement for protecting the interests of producers.

The committee includes: Mr. Noel Trotter, Sir Edward Rosling, Mr. Arthur Lampard, Mr. Richard Magor and Mr. Herbert Wright.

VALLAMBROSA RUBBER CO., LTD. (FEDERATED MALAY STATES).

An interesting report of this company's business was presented at the ninth ordinary general meeting of shareholders held on August 7. Its position is historical, it being among the oldest—if not in fact the oldest—of the successful eastern companies, and having been registered early in 1904.

The total extent planted under rubber is 3,346 acres, of which 1,767 acres planted before 1910 were tapped during the year ending March 31, 1913, while the remaining 1,579 were planted in 1910, 1911 and 1912, and are not yet in bearing.

Returns of the yields for the last seven years to March 31 show: 1906-7, 156,922 pounds; 1907-8, 225,302 pounds; 1908-9, 272,741 pounds; 1909-10, 371,316 pounds; 1910-11, 411,476 pounds; 1911-12, 409,880 pounds; 1912-13, 426,484 pounds. The total cost of production and sale in 1912-13 was 1*s.* 5.49*d.* per pound, while the net price realized was 3*s.* 10.75*d.* per pound, as compared with 4*s.* 8.12*d.* for the previous year.

Dividends have been for 1906-7, 55 per cent.; 1907-8, 55 per cent.; 1908-9, 80 per cent.; 1909-10, 250 per cent.; 1910-11, 175 per cent.; 1911-12, 130 per cent.; 1912-13, 100 per cent. The rate of dividend in 1909-10 was due to the exceptionally high price of rubber.

Three estates form the property of the company, situated in the Kapar District, Klang, Selangor. Its progress is interesting as showing the operation of an old company.

TITLE FOR MR. ROSLING.

Shortly after his recent arrival in England, Mr. Rosling, so prominently connected with the Ceylon rubber industry, received from the King the title of "Sir Edward Rosling."

BAMBRAKELLY (CEYLON) TEA AND RUBBER CO.

During the financial year ended March 31 last, the yield secured by the above company was 80,003 pounds, as compared with 47,595 pounds for the preceding annual period. The area tapped was 338 acres, the average per acre being thus about 250 pounds.

SIAK (SUMATRA) RUBBER ESTATES, LIMITED.

In order to meet the requirements of their increasing output, the Siak Rubber Estates are putting up a new factory, at an expense of £3,000 ($15,000), the cost of which will be shared by the neighboring Pakan Baroe Estates, Limited. The factory will be the joint property of the two companies, and will have a joint manager and joint medical arrangements; so that the principle of co-operation is fully carried out.

REPLACING TOBACCO BY RUBBER.

In his address at the recent meeting of the Toerangie (Sumatra) Rubber and Produce Estates, Ltd., Mr. C. A. Lampard stated that after harvesting the area now planted with tobacco, it was intended to discontinue that cultivation and to devote attention solely to rubber. The area under the latter is now about 1,260 acres, and it is contemplated to plant a further 800 acres.

DIRECTOR OF RUBBER CULTURE FOR NETHERLANDS INDIES.

According to a report from Medan (Sumatra), the Netherlands Government has decided on appointing a Director of Rubber Culture. His salary will at first equal $280 per month, rising by annual increments to $400 a month.

TANDJONG RUBBER CO. (SUMATRA).

Returns for the twelve months ended June 30, 1913, show for the above company a crop of 217,284 pounds against 34,864 pounds for the corresponding period of 1911-1912.

THE PROSPECT FROM A JAVA COMPANY'S STANDPOINT.

At the recent London meeting of the Djember Rubber Estates, Limited, Mr. H. C. Hadfield, chairman, expressed the opinion that motor traction is only in its infancy. He added that if rubber dropped to 2s. 6d. per pound, it would be a risky matter to equip and send expeditions to the interior of Brazil, which require a large outlay before any rubber can be marketed. He quoted an estimate that Java would soon be able to place rubber on the London market at 1s. per pound, adding that should the price go down to 2s. 6d. the company would still have a very lucrative article to dispose of.

JAVA PARA RUBBER ESTATES, LIMITED.

On the occasion of the London meeting of the Java Pará Rubber Estates, Limited, Major Frank Johnson, the chairman, referred to the generally admitted opinion that Brazil could not produce wild rubber under 3s. per pound. If the article permanently reached that price or less, the production of wild rubber would slowly but surely cease; leaving the world's demands to be met by the product of the plantations. It would then, he added, be a case of the survival of the fittest.

PLANTATION RESULTS PER ACRE.

In addressing the recent London meeting of the British Rubber Estates of Java, Mr. Stanlake Lee, chairman, said that with rubber at its present price, or much less—say 2s. 6d.—the rubber plantation industry would still remain one of the most profitable fields for the investment of capital.

A fair average production, he added, is represented by 400 pounds per acre per annum. At 6d. per pound profit this makes £10; that is, 20 per cent. on a capital of, say, £50 per acre.

RUBBER PLANTATIONS IN THE DUTCH EAST INDIES.

Apropos of the International Congress and Exhibition which are to be held in Java in the Fall of 1914, it is interesting to note the extent of foreign rubber plantations in the Dutch East Indies—which comprise Sumatra, Java, the greater part of Borneo, most of New Guinea and various smaller islands. The foreign capital invested in rubber estates in these islands amounts to $92,000,000, the greater part of which represents British investments. A recent consular report places the amount of American capital invested in rubber plantations in these islands as $4,000,000. This probably is rather an under-estimate and does not take into consideration the large amount of money the United States Rubber Co. has recently put into its 80,000-acre tract in Sumatra.

LAND BANK FOR DUTCH GUIANA.

In its annual report on conditions in Dutch Guiana, the British Legation at the Hague records the fact that the colony had an unsatisfactory year in 1912. The causes assigned for this situation include drought and scarcity of labor, the balata industry being thereby particularly affected.

With a view to affording Surinam agriculturists much needed credit facilities, the establishment of a "Land Bank" has been proposed. This undertaking, it has been hoped, would meet with the support of the Netherlands government, but a measure introduced for that purpose has been defeated in the Dutch Second Chamber.

LOK KAWI RUBBER, LTD. (NORTH BORNEO).

The yearly report of the above company to December 31, 1912, shows a total of 1,685 acres under rubber, with approximately 221,000 trees. It is added that the labor force consists of 307 Chinese.

CASTILLOA PROGRESS IN COSTA RICA.

RUBBER AND BALATA IN BRITISH GUIANA.

AMONG the characteristics of the great tropical forest of the South American continent are its dampness and its luxuriant vegetation. It is in these regions of Brazil that the *Hevea Brasiliensis* grows indigenously, thriving in a humid atmosphere. These features being reproduced in the forest region of British Guiana, it is natural to look to that section as affording facilities for the growth of Pará rubber.

This variety grows best on the flat but well-drained lands along the banks of rivers, as well as upon the lower slopes of hills. An official estimate places at nearly 11,000,000 acres the area of accessible lands in the colony, of which 9,000,000 are as yet not alienated from the Crown. A large part of these lands is considered suitable for Pará rubber, and in order to develop this cultivation the government has established in various districts experimental plantations. The points sought to be ascertained have been the rate of growth, the best cultural methods and the yields of the different trees.

Results of experiments have shown that *Hevea Brasiliensis* grew vigorously in most instances. Experiments were undertaken in 1905 with *Sapium*, the outcome of which was so encouraging that all land now being put into rubber is practically being planted with *Hevea Brasiliensis*.

Figures issued by the Board of Agriculture are instructive. In 1907-8 the total was 416 acres, while in 1911-12 it had increased to 2,259 acres, of which about 1,700 are under Pará rubber and the remainder the indigenous *Sapium*. Owing to the active demand for Pará seedlings it is anticipated that the area under rubber will be greatly increased during the next few years.

SEEDS.

In 1897-1899 several Pará rubber trees were distributed from the Botanic Gardens. These have grown well, and their seeds have been collected and planted, but the colony will for some years have to depend on supplies of seeds from the East for the expansion of rubber cultivation.

Within the last four years more than a quarter of a million seeds have been imported by the government, from which the average germination has been nearly 80 per cent. The plants raised from these seeds have been sold at cost to cultivators. Increased orders have been placed by the government for seeds to meet the larger demands for plants.

TAPPING.

Tapping of Pará rubber has been started at two estates on the Demerara, one in Berbice and at the experimental stations of Onderneming and Issorora, the yields having been reported as satisfactory, and the product of good quality. At Issorora experimental station in the northwestern district, one-fourth of the Pará rubber trees at four years of age were of tappable size.

COST OF CULTIVATION.

On flat lands requiring drainage, the cost, including superintendence and the purchase of plants, represented $65-$70 per acre for the first year, and $25-$30 in subsequent years. On higher ground, where the initial expenses of drainage are less, the first year's cost might be reduced to $48 per acre.

LABOR.

No complaints have been heard of scarcity of labor for the operations of plantation companies, and it is considered that a sufficient supply will be available for the next five years. The opinion has, however, been expressed that, as with the sugar industry, it may be ultimately necessary to obtain indentured labor from the East.

WILD RUBBER.

The indigenous *Sapium* furnishes small quantities of rubber from the forests. This, it is said, has been exported for many years as "Orinoco Scrap." In 1904-5 the exports of rubber were shown separately as 950 pounds. In 1907-8 nearly 7,000 pounds were exported, since which time the quantity has fallen off. It is said that this reduced collection of rubber is due to the higher profits made by collecting balata.

BALATA.

While the development of the British Guiana rubber industry is to a great extent prospective, balata collection has attained a steady position, the average annual yield since 1908 having been about 1,000,000 pounds. For the three preceding quinquennial periods the figures had been:

	Yearly Average. *Pounds.*
1893-1897	226,625
1898-1902	401,956
1903-1907	427,790

Of the quantity produced, the largest proportion goes to the United Kingdom, the share of the United States having been 9 per cent. of the total in 1904-5 and 15 per cent. in 1911-12.

According to the "Handbook of British Guiana, 1913," balata takes the third rank in the exports of the colony. The total annual exports represent about $11,000,000, of which about $7,000,000 consist of sugar, $1,000,000 of gold and nearly $750,000 of balata.

GROWTH OF BALATA.

The balata trees of British Guiana are to be found all over the colony, particularly on the banks of the smaller rivers and creeks in the low-lying lands. They are possibly more abundant in the county of Berlice, where the industry of balata collecting has been established for thirty years, practically all the male population in the Canje district taking part in the work.

With the growing demand for balata its value has increased, and search has been made for the article in the districts of the far interior, notably in the upper reaches of the Essequibo river, from which point some of the best shipments are being received.

TAPPING.

Changes in meteorological conditions considerably affect the yield per tree, the average of one gallon of latex each which they usually give at the first tapping equaling about five pounds of dry balata.

In tapping balata trees, incisions not exceeding 1½ inches in width are made, about 10 inches apart, with a cutlass. The cuts are in a "feather stitch" pattern, going up the trunks. Tapping starts at the base of the tree and at first only reaches a height of 12 to 15 feet, but later on is often conducted as high as the principal branches. A zig-zag course is pursued by the latex from cut to cut, till it reaches a calabash at the base of the tree. From these calabashes it is gathered into gourds or kerosene tins. Being then taken to the camp, it is poured into shallow trays (*dabrees*), with a capacity of five to thirty gallons, where it congeals and from which it is removed in sheets. After being allowed to drain these are hung up in a drying shed, and are forwarded when dry to town for the purpose of transshipment. It takes four to five years for the cuts to heal, and no further tapping is permitted during that time.

The minimum girth at which bleeding is allowed is 36 inches at the height of four feet. Only one-half of the girth may be bled at one time.

Owners of balata grants have to take out licenses for the sections in which they propose to operate. These licenses run for fifteen years, or during the King's pleasure, and do not include any planting rights.

BALATA BLEEDERS.

Balata is collected by black and colored laborers, who are paid according to the quantity gathered, and have to be registered before employment. At that time they usually get money advanced for the purchase of food and implements. After reaching the tract to be worked, a camp of rough leaf-covered huts is constructed, and preparations are made for the collection and congelation of the latex. Small cuts are made in the nearest trees to ascertain their condition and the prospects of their repaying tapping.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED JULY 1, 1913.

No. 1,065,942. Vehicle wheel. F. Hopkinson, East Orange, N. J.
1,065,978. Tire. W. T. Smith, Bolton, England.
1,066,121. Bath apparatus. J. F. King, Milwaukee, Wis.
1,066,210. Tire shoe releasing tool. P. T. Mahon, Cranston, R. I.
1,066,217. Swimming and life preserving belt. M. D. Nekarda, New York.
1,066,268. Combined eraser and brush. A. M. Goldzier, New York.
1,066,381. Foot cushion for sewing machine. R. E. Daniel, Spartanburg, S. C.

Trade Mark.

66,634. Revere Rubber Co., Providence, R. I. The initials *H. C.* Belting, hose and packing, etc.

ISSUED JULY 8, 1913.

1,066,480. Artisan's india-rubber glove. H. C. Finlay, Sydney, New South Wales, Australia.
1,066,516. Life saving suit. J. E. Moore, Nelson, British Columbia, Can.
1,066,524. Garter. B. W. Parker, New York.
1,066,697. Swimming glove. L. M. Baker, Columbus, Ohio.
1,066,759. Elastic cord or strand. M. W. Schloss, New York.
1,066,784. Elastic tire for automobiles. C. W. Barrett, San José, Cal.
1,066,851. Tire protector. T. Y. Stewart, Winnipeg, Manitoba, Can.
1,066,873. Vent for nursing nipples. P. Wisotzky, Frankfort-on-the-Main, Germany.
1,067,012. Eraser. E. Faber, New York.
1,067,051. Atomizer comb. J. J. Moore, South Charleston, Ohio.

Design.

44,298. Rubber vehicle tire. J. Connolly, Detroit, Mich.

Trade Marks.

66,101. Adhesive Vulko-Fiberene Co., Oklahoma, Okla. The words *Vulko-Fiberene* in a disconnected circle. A liquid compound for preventing and stopping leaks in pneumatic tires.
67,467. The Russell Mfg. Co., Middletown, Conn. The word *Rusco.* Woven machine belting.

ISSUED JULY 15, 1913.

1,067,239. Guard for tires. A. W. Crain, Petroleum, Ind.
1,067,307. Vehicle tire. J. Christy, Akron, Ohio.
1,067,337. Hose coupling. H. H. Hewitt, Buffalo, N. Y.
1,067,361. Wheel tire. T. Midgley, assignor to The Hartford Rubber Works Co.—both of Hartford, Conn.
1,067,386. Vehicle wheel. J. J. van Iderstine, Kansas City, Mo.
1,067,497. Vaginal syringe. H. S. Williams, San Diego, Cal.
1,067,507. Antiskidding vehicle wheel tire. M. A. Dees, Pascagoula, Miss., and T. M. Dees, Midlothian, Texas, assignors to American Tire Co., St. Louis, Mo.
1,067,558. Pneumatic tire for vehicle wheels. Jacques Steinberg, Paris, France.
1,067,563. Armored tire. A. G. Wagner, Akron, Ohio.
1,067,639. Resilient tire. W. E. Budd, Elizabeth, N. J.
1,067,668. Resilient tire. H. McCleary, Washington, D. C.
1,087,726. Automobile tire. H. P. Fouque, New York.
1,067,754. Article of footwear. J. H. Pearce, Westmount, Quebec, Can.
1,067,761. Sanitary belt and pad. A. Schulz, Westfield, N. J.

Trade Marks.

68,692. Lee Tire & Rubber Co., Whitemarsh township, Montgomery county, Pa. Illustration of man's face in section of tire.
71,001. Illinois Iron & Bolt Co., Carpentersville, Ill. The words *Southern Crescent* over illustration of moon and sun. Tire benders and tire shrinkers.
71,151. I. B. Kleinert Rubber Co., New York. The word *Triton.* Dress shields.
71,158. Morris Barrow, New York. The word *Poca.* Dress shields.

ISSUED JULY 22, 1913.

1,067,844. Open bellied pneumatic tire shoe. C. S. Scott, Cadiz, Ohio.
1,067,913. Non-skidding device for wheels. W. E. Gerth, Chicago, Ill.
1,067,949. Resilient tire. W. S. Temple, Sidney, Ill.
1,068,022. Liner for pneumatic tires. R. K. Taylor, assignor to G. S. Field —both of Detroit, Mich.
1,068,025. Tire. R. M. P. Thorp, Cambridge, Mass.
1,068,040. Sectional solid tire. J. C. Cole, assignor to Fisk Rubber Co.—both of Chicopee Falls, Mass.
1,068,041. Rim construction. J. C. Cole, assignor to Fisk Rubber Co.—both of Chicopee Falls, Mass.
1,068,073. Non-slipping rubber heel. E. G. Perkins, San Francisco, Cal.
1,068,180. Tire testing machine. K. W. Sonntag, St. Louis, Mo.
1,068,181. Resilient wheel. G. E. Sprague, West End, Ill.
1,068,224. Vehicle wheel. E. De Journo, Allentown, Pa., assignor to S. Lahe, New York.
1,068,362. Water bag. C. J. O'Riely, Los Angeles, Cal.

Designs.

44,380. Fire hose connection. A. Michak, Rhone, Pa.
44,383. Tire. H. K. Raymond, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
44,384. Tire. H. K. Raymond, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
44,385. Tire. H. K. Raymond, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.

Trade Mark.

70,164. "Semperit" Oesterreichisch-Amerikansche Gummiwerke Aktiengesellschaft, Vienna, Austria.

ISSUED JULY 29, 1913.

1,068,491. Armored hose. W. H. Eynon, Cleveland, Ohio.
1,068,497. Apparatus for tapping rubber trees. E. W. Graves, assignor to Graves & Graves Co.—all of Boston, Mass.
1,068,532. Steel spring automobile tire. O. G. Rugtwet, Longmont, Col.
1,068,572. Wheel. W. H. Dean, Newark, Del.
1,068,590. Wheel. K. Jasiecki, Philadelphia, Pa.
1,068,619. Pneumatic tire. R. J. Wynn, Sault Ste. Marie, Mich.
1,068,653. Apparatus for repairing tires. W. A. Hinds, Hartford, Conn., assignor of one-half to S. H. Hoverter, and one-half to H. E. Eberly, Reading, Pa.
1,068,654. Expander for tire vulcanizers. W. A. Hinds, assignor of one-half to S. H. Hoverter, and one-half to H. E. Eberly—all of Reading, Pa.
1,068,720. Spring tire. Charles A. Wheaton, Stockton, Cal.
1,068,816. Life preserver. J. R. Ortman, Raynesford, Mont.
1,068,866. Life saving suit. W. A. Douglas, Centralia, Wash.
1,068,892. Protective casing for tires. W. R. Green, Chicago, Ill.
1,069,015. Automobile tire pump. A. Jahnsch, Deer Park, Wis.
1,069,025. Automobile wheel and rim. G. P. Pappadakes, New York.
1,069,059. Automobile wheel. E. R. Frederick, Shelby, Mich.

Designs.

44,407. Tire tread. A. H. Marks, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
44,408. Golf ball. P. A. Martin and J. Stanley, Birmingham, England.

Trade Marks.

68,284. O. M. Mackie, Brantford, Canada. The words *Lastic-Air.* Tire fillers.
70,897. Hood Rubber Co., Watertown, Mass. The word *Redwing* in fancy oval. Rubber boots and shoes, etc.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911 and 1912.
**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JULY 2, 1913.]

5,942 (1912). Tread band projections. A. E. Wale, Coleshill, near Birmingham, and Wale's Invulnerable Tyre Syndicate, Broad Street House, London.
5,948 (1912). Rubber protectors for boots. J. A. Redfern, The Cottage, Raglan street, Hyde, Cheshire.
6,081 (1912). Rubber in tire covers. J. B. Salmon and E. W. Roy, 213 Princes street, Dunedin, New Zealand.
6,085 (1912). Anaesthetic inhalers. W. de C. Prideaux, 12 Frederick Place, Weymouth, Dorset.
6,216 (1912). Life belts. C. L. Menzel, Nobby, Queensland, Australia.
6,299 (1912). Synthetic caoutchouc. I. Ostromislensky, and Obstchestvo Proizvodstva and Torgovli Resinovymi Izdeliami "Bogatyr" 15, Miasnitzkaia, Moscow, Russia.
6,300 (1912). Synthetic caoutchouc. I. Ostromislensky, and Obstchestvo Proizvodstva and Torgovli Resinovymi Izdeliami "Bogatyr" 15, Miasnitzkaia, Moscow, Russia.
6,301 (1912). Erythrene and isoprene. I. Ostromislensky, and Obstchestvo Proizvodstva and Torgovli Resinovymi Izdeliami "Bogatyr" 15, Miasnitzkaia, Moscow, Russia.
6,324 (1912). Tire jackets and covers. A. E. Wale, Coleshill, near Birmingham, and E. H. Jones, 318 Euston Road, London.
*6,581 (1912). Improvements in elastic tires. M. Overman, 391 West End avenue, Manhattan, N. Y.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JULY 9, 1913.]

*6,594 (1912). Resilient sections in tires. P. G. Seward, Petersburg, Va., U. S. A.
*6,663 (1912). Tread band surfaces. N. H. Horne, 2511 E. 9th street, Kansas City, Mo., U. S. A.
6,688 (1912). Boot containing strips of rubber. C. M. Hart, The Studio, The Lizard, Cornwall.
*6,734 (1912). Cover of pneumatic tire. C. Orsett, 156 Mount Auburn street, Cambridge, Mass., U. S. A.
6,736 (1912). Rims for beaded edge tires. Margetts International Sectional Tyre Co., 56 Moorgate street, and A. J. M. Smith, Venner Villa, Venner Road, Sydenham—both in London.
6,762 (1912). Two-part rubber tread. G. J. Krol, 76 Boulevard de Versailles, Suresnes, Seine, France.
*6,791 (1912). Fabrics treated with rubber, etc. A. H. Henderson, 2624 North Calvert street, Baltimore, Md., U. S. A.

6,798 (1912). Coating aeroplane fabrics, etc. Ledoc, Heitz & Co., 79 Boulevard du Montparnasse, Paris.

*6,801 (1912). Resilient tires. G. S. Adams, Seaville, and Eureka Double Resilient Tire Mfg. Co., 220 Erie street, Camden—both in New Jersey, U. S. A.

6,877 (1912). Device for catching balls. O. Bischof, 128 Ringbahnstrasse, Berlin-Hallensee.

6,903 (1912). Caoutchouc substances; intermediate compounds. W. H. Perkin, University, Manchester, and F. E. Matthews and E. H. Strange, 7 Maple Inn, London.

7,045 (1912). Studs for football boots. W. W. Moren, 129 Yorkshire street, and H. F. Hart, 174 Horsedge street—both in Oldham, Lancashire.

7,143 (1912). Moulded emergency tire. A. Turnbull, Mungo Works, Bishopbriggs, Glasgow.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JULY 16, 1913.]

*7,298 (1912). Rubber tread in spring tires. G. Gray, Sisseton, South Dakota, U. S. A.

7,333 (1912). Overlapping of inner tubes. Continental-Caoutchouc und Gutta-Percha Cie, Hanover, Germany.

7,392 (1912). Tread band projections. M. A. Kennedy, 18 Bloor street, East, Toronto, Canada.

*7,443 (1912). Suspenders. W. Kops, 16th street, New York, U. S. A.

*7,444 (1912). Elastic webbing. W. Kops, 16th street, New York, U. S. A.

7,457 (1912). Synthetic caoutchouc. Obstchestvo Proizvodstva and Torgovli Resinovymi Izdeliami "Bogatyr" and I. Ostromislensky, 15 Miasnitzkaia, Moscow, Russia.

7,465 (1912). Mud guards. J. T. Catling, 60 Western Road, Plaistow, London.

7,474 (1912). Corsets. J. F. Gems, Bayford House, Lyndhurst Road, Hampstead.

7,509 (1912). Vessels for collecting latex, etc. F. Worthington and W. Hilliers, 27 Mincing Lane, London.

7,512 (1912). Punching balls. W. M. Brooks, Criterion Works, Great Charles street, Birmingham.

7,513 (1912). Wrappers for spare tires. B. Brooks, Criterion Works, Great Charles street, Birmingham.

7,537 (1912). Fastenings for ends of tires. T. Slack, Wellington Works, Stockport, Cheshire.

7,559 (1912). Solution for finishing fabrics. S. Schreiber, 23 Cloth Fair, and M. Semet, 13 Australian avenue—both in London.

7,579 (1912). Detachable tread bands. E. Scott, Cycle Works, Market Place, Wooler, Northumberland.

7,681 (1912). Block tread of rubber. M. Bouchet, 22 Rue Alphonse de Neuville, Paris.

7,751 (1912). Solid rubber tires. L. Brown and C. Macintosh & Co., Cambridge street, Manchester.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JULY 23, 1913.]

7,856 (1912). Air tubes. F. Arnold, Virginia, and W. H. Johnson, Pefferlaw—both in Ontario, Canada.

7,875 (1912). Reservoir shaving brush. E. A. Wixcey, 13a Finsbury Square, London.

*7,884 (1912). Rubber bottle stoppers. H. B. Smith, Bayside, L. I., N. Y., U. S. A.

7,927 (1912). Tapping rubber trees. H. A. Wickham, Royal Colonial Institute, Northumberland avenue, London.

8,065 (1912). Caoutchouc substitute. P. A. Newton, 6 Breams Building, Chancery Lane, London.

8,187 (1912). Backing of rubber in capsuling bottles.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JULY 30, 1913.]

8,215 (1912). Rubber parts in vent pegs. H. Packard, 240 Barkerend Road, and G. Robinson, 244 Barkerend Road—both in Bradford.

*8,241 (1912). Solid rubber tires. J. D. Ingram, Washburn, Texas, U.S.A.

8,259 (1912). Corsets. R. Cownie, Greenbank, Dalrymple Crescent, Edinburgh.

8,309 (1912). Point protectors for pins. D. J. Thomas, Beckett street, Mountain Ash, Glamorganshire.

8,314 (1912). Elastic waistband for ladies' wearing apparel. C. de Lacote, 37 Mark Lane, London.

8,345 (1912). Elastic bandages. G. Haertel, Kommandit-Ges., 1 Ziegelstrasse, Berlin, and G. Haertel, 42 Albrechtstrasse, Breslau, Germany.

8,353 (1912). Securing reserve tires. W. Banner, Brooklands, Branksome Wood Road, Bournemouth, and H. J. Winton, Motor Works, Hill street, Poole, Dorset.

8,361 (1912). Rubber device for locking vehicle wheels. G. R. Lusty, 66 Dean's Way, Gloucester.

*8,374 (1912). Annular cushion tire. A. Steinhauser, 502 Tabor Road, Philadelphia, Pa., U. S. A.

8,402 (1912). Elastic compositions. G. G. Diesser, 513 Seestrasse, Zurich, Switzerland.

8,407 (1912). Pneumatic cushion tire. W. Wunderli, Nanen-Rüti, Canton Zurich, Switzerland.

8,408 (1912). Cow milkers. A. Sabroe, 2 Am Naff, Hadersleben, Schleswig-Holstein, Germany.

*8,413 (1912). Postmarking machines. F. C. Ielfield, 12 Buffalo street, Silver Creek, N. Y., U. S. A.

8,459 (1912). Air balls for measuring skirts. D. K. Stobie, 44 Chiswick street, Brixton, Johannesburg, Transvaal.

8,496 (1912). Rubber balls in tires. W. Freakley, 86 Wellesley street, Shelton, and H. Avnsley, Portland House, Blyth Bridge—both in Stoke-on-Trent.

*8,519 (1912). Improvements in fountain pens. F. W. Howard, 509 West 161st street, New York, N. Y., U. S. A.

8,523 (1912). Rubber-like material from fish. Naamlocze Vennootschap Algemeene Uitvinding Exploitatie Maatschappij, 245 Haarlemmerweg, Amsterdam.

8,554 (1912). Reformed and vulcanized rubber. T. Gare, Bristol Road, Birmingham.

8,597 (1912). Rubber rings in friction gearing. G. P. Otting, 33 Chichester Road, Kilburn, London.

8,610 (1912). Pneumatic cushions for wheels. R. Tickner, 149 Armagh Road, Old Ford Road, Bow, London.

8,621 (1912). Pneumatic tire of felt, etc. S. Jamiolkowski, 21 Przemyslowa, Warsaw, Russia.

8,630 (1912). Preventing the rattling of windows. V. Trevett, 93 Branfield Road, New Wandsworth, London.

8,676 (1912). Extracting rubber from Landolphia and other vines. S. Goldreich, 2 Broad Street Place, London.

8,723 (1912). Separate molding and vulcanizing of tread bands. W. C. Johnson, Broadstone Farm, Colemans Hatch, Sussex.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

452,788 (December 31, 1912). J. W. H. Dew and The Azolay Syndicate, Ltd. Improvement in manufacture of covers for pneumatic tires.

452,789 (December 31). J. W. H. Dew and The Azulay Syndicate, Ltd. Improvements in manufacture of solid rubber and other tires.

452,806 (December 31). W. J. Woodcock. Automobile tires.

452,836 (January 3, 1913). J. L. Vincent. Movable tires for motor trucks.

452,893 (January 6). A. Haller. Elastic vehicle wheel.

452,899 (January 6). W. C. Sneyd and D. V. Jones. Repairs to solid elastic tires during progress of vehicles.

452,903 (January 6). Mme. Du Michel. Manufacture of rubber articles.

452,943 (January 7). Mablou and Carnell. Preparation of artificial gums from starchy substances.

452,969 (January 7). T. Goldmeyer. Sectional air chamber for automobiles.

452,916 (January 7). G. Evans. Improvements in movable rubber heels.

453,008 (January 10). M. P. Prince and C. M. Bernheimer. Improvements in sectional pneumatic tires.

453,054 (January 11). Mold for making hollow rubber objects, especially air chambers for pneumatic tires.

453,097 (January 13). Improvements in the manufacture of "gaiters" for repairing pneumatic tires or in the manufacture of tires.

453,199 (January 15). M. D. Rucker. Improvements in elastic tires.

453,323 (January 17). G. Schneider. Skating sole in rubber of special design.

453,215 (January 15). Zieger and Wiegand. Rubber glove for surgical operations.

453,394 (January 20). L. Collardon. Basic substances for rubber.

453,408 (January 21). W. D. McCormack. Elastic vehicle tires.

453,418 (January 21). C. Martin. New rubber composition.

453,513 (January 21). J. T. Sipe and H. E. Sipe. Improvements in elastic wheels.

453,575 (January 25). W. F. Bersley. Vehicle tires.

453,687 (January 27). C. Sougues. Mudguard with elastic suspension and continuous lubrication.

453,747 (January 29). L. Hervé and C. Marchand. Mudguards for vehicle wheels.

453,890 (January 13). G. Frot. Mudguard for automobiles.

453,915 (February 1). R. W. Sampson. Improvements in plugs for repairing perforations in pneumatic tires.

453,908 (February 1). E. H. Grenet. Rubber valve.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

263,398 (November 28, 1912). Stuffing box packing. Wilhelm Strube, G. m. b. H., Madgeburg.

262,956 (January 15, 1911). Cement for bicycle tires. Pneudichtol Gesellschaft, G. m. b. H., Hanover.

263,109 (September 16, 1909). Manufacturers of insoluble masses from phenols and formaldehyde. Dr. Fritz Pollak, Berlin, Nürnbergerstrasse, 67.

262,903 (March 5, 1912). Rubber tubes for pneumatic tires. Hermann Zeumer, Karlsruhe.

262,904 (July 25, 1911). Vulcanizing appliance for repair of rubber tires. Toledo Computing Scale Company, Toledo, U. S. A.

263,174 (October 22, 1912). Rubber tires with cross-borings and cross-grooves. Benjamin Wladimirowitsch, Wittenberg, Riga.

THE FARMER WHO DARNED HIS TIRE.

An exchange has a story about a Kansas farmer whose inner tube gave way and who thought he could take care of the matter without expert assistance. Accordingly—so the story runs—he secured a strip of rubber and a darning needle and thread and proceeded to sew the strip of rubber on the tube over the puncture; but as it still leaked he took it to the agent in town and told him what he thought of it. Whatever else may be said about this particular agriculturist, this certainly is true, that any man who has a blow-out and only darns his tire is a model of moderation.

Report of the Crude Rubber Market.

THE crude rubber market during the last month has been exceedingly quiet. Prices have fluctuated within narrow limits. Buying has been only for present requirements and on a small scale. It is fairly obvious that big interests are not disposed greatly to increase their stocks at present prices; and on the other hand, sellers are not inclined, at present at least, greatly to shade the current quotations. In a general way the trend of prices for the month has been upward. On July 26 (the report in the August issue of THE INDIA RUBBER WORLD covered the month of July up to the 25th) upriver fine sold in London for 3s. 7d., and plantation pale crepe at 2s. 9½d. With various fluctuations, these prices increased to August 16, when upriver fine sold at 3s. 10¾d., and plantation crepe at 2s. 10d. From that point there has been a gradual and slight subsidence, the closing figures on August 27 being 3s. 9½d. for upriver fine and 2s. 8d. for plantation crepe. The month ended with a larger difference between Pará and plantation than was shown a month ago, the difference on July 26 being 9½d., and on August 27 1s. 1½d.

In New York the lowest figures for the period covered was on July 26, when upriver fine was quoted at 86c. to 87c., and plantation crepe at 69 to 70c. The highest figure for upriver fine in this market was 94c., at which price it was quoted on six different days, viz., August 11th and 12th, and from the 16th to the 20th, inclusive. One interesting feature of the local market during the month was the fact that on July 31 islands fine sold at 72c., the lowest figure for this grade in some years.

The auction sales in London developed nothing particularly exciting. At the fortnightly sale, held on July 29, there were moderate offerings of about 650 tons, which did not affect prices appreciably. At the auction four weeks later (that was on the 26th of August) 1,000 tons of plantation grades were offered, but only 400 tons were sold, smoked sheets selling at 2s. 9d., while pale crepe opened at 2s. 7¾d., and later declined to 2s. 7¼d.

Below is a brief table showing the prices for upriver fine and plantation crepe at the closing (as given in this publication) for the last five months, together with the difference in price between these two grades of rubber:

	Upriver Fine	Plantation	Difference.
April 26	3s. 4½d.	3s. 2½d.	2d.
May 26	3s. 8½d.	3s. 2½d.	6d.
June 25	3s. 8¾d.	2s. 11d.	9¾d.
July 26	3s. 7d.	2s. 9½d.	9½d.
August 27	3s. 9½d.	2s. 8d.	1s. 1½d.

NEW YORK QUOTATIONS.

FOLLOWING are the quotations at New York one year ago, one month ago, and August 30—the current date:

PARA.	Sept. 1, '12.	Aug. 1, '13	Aug. 30, '13.
Islands, fine, new	112@113	74@75	77@78
Islands, fine, old	.....	.....	.....
Upriver, fine, new	122@123	85@86	88@89
Upriver, fine, old	124@125	92@93	92
Islands, coarse, new	58@ 59	30@31	29@30
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	96@ 97	51@52	51@52
Upriver, coarse, old	.....	39@40	.....
Cametá	67@ 68	37@38	37@38
Caucho (Peruvian) ball	92@ 93	51@52	50@51
Caucho (Peruvian) sheet	80@ 81	.....	.....
PLANTATION CEYLONS.			
Fine smoked sheet	121@122	70@71	70@72
Fine pale crepe	120@121	68@69	67@68
Fine sheets and biscuits	117@118	.....	65@66
CENTRALS.			
Esmeralda, sausage	85@ 86	52@	50@51
Guayaquil, strip	.....	.....	none here
Nicaragua, scrap	84@ 85	52@	50@51
Panama	.....	.....	none here
Mexican plantation, sheet	93@ 94	.....	none here
Mexican, scrap	84@ 85	52@	48@49
Mexican, slab	.....	35@	none here
Mangabeira, sheet	.....	.....	.....
Guayule	57@ 58	.....	.....
Balata, sheet	88@ 89	70@72	70@71
Balata, block	60@ 61	51@53	50@51
AFRICAN.			
Lopori, ball, prime	none here	62@	58
Lopori, strip, prime	none here	60@	.....
Aruwimi	104@105	55@57	45@47
Upper Congo, ball red	107@108	55@56	56@58
Ikelemba	none here	57@58	.....
Sierra Leone, 1st quality	100@101	55@58	53@54
Massai, red	102@103	62@63	.....
Soudan Niggers	none here	50@55	.....
Cameroon, ball	none here	40@49	38@43
Benguela	none here	.....	.....
Madagascar, pinky	none here	55@60	.....
Accra, flake	26@ 27	24@25	.....
EAST INDIAN.			
Assam	none here	35@70	none here
Pontianak	6¼@6⅜	6⅜@6⅝	6¼@6½
Borneo	none here	32@30	none here

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During August the market conditions regarding commercial paper have continued just about the same as in July, the demand being light and principally from out-of-town banks, with rates 6@6¼ per cent. for the best rubber names and 6½@6¾ per cent. for those not so well known.

NEW YORK PRICES FOR JULY (NEW RUBBER).

	1913.	1912.	1911.
Upriver, fine	$0.84@ .92	$1.10@1.19	$0.99@1.17
Upriver, coarse	.51@ .56	.85@ .91	.82@ .96
Islands, fine	.74@ .81	1.00@1.08	.92@1.10
Islands, coarse	.29@ .34	.54@ .57	.58@ .63
Cametá	.37@ .40	.62@ .65	.70@ .75

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound.

	July 30, '13.
Old rubber boots and shoes—domestic	8½@ 8⅝
Old rubber boots and shoes—foreign	8¼@ 8⅜
Pneumatic bicycle tires	5 @ 5⅛
Automobile tires	8½@ 8⅝
Solid rubber wagon and carriage tires	8¾@ 8⅞
White trimmed rubber	10⅝@10¾
Heavy black rubber	4½@ 4⅝
Air brake hose	5¼
Garden hose	1 @ 1¼
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾
No. 1 white auto tires	9½@ 9¾

Statistics Para India Rubber (in Tons) Including Caucho.

STATISTICS FOR THE MONTH OF JULY.

	Pará.	Caucho.	1913. Tons.		1912. Tons.	1911. Tons.	1910. Tons.
Receipts at Pará	1,430	690 =	2,120	against	1,940	1,420	2,330
Shipments to Liverpool	530	240 =	770	"	910	1,020	990
Shipments to Continental Ports	30	150 =	180	"	410	130	210
Shipments to America	690	260 =	950	"	1,170	910	890
American Imports	810	380 =	1,190	"	1,160	1,320	770
American Deliveries	790	380 =	1,170	"	1,200	1,290	600
Liverpool Imports	519	197 =	716	"	1,261	739	1,253
Liverpool Deliveries	698	292 =	990	"	1,161	1,699	1,544
Continental Imports	10	50 =	60	"	480	140	170
Continental Deliveries	50	120 =	170	"	460	190	170

VISIBLE SUPPLY—1st AUGUST, 1913.

	1913. Pará.	Caucho.		1912.	1911.	1910.
Stock in England, Pará, 1st hands	941	.....	} 940	{ 3,360	1,244
Pará, 2nd hands	64	.....		{	236
Caucho	...	534	530	780	600
Stock in Pará, 1st hands	330	110	250	490	510
2nd hands	450	220	500	670	230
Syndicate	810	.....	1,750	2,270	.....
Stock in America	160	40	130	330	310
Stock on Continent	10	130	120	60	50
Afloat—Europe	350	270	790	820	450
Afloat—America	160	50	390	280	300
	3,275	1,354			
Total Visible Supply, including Caucho	4,629		5,400	9,510	3,930

POSITION—1st AUGUST, 1913.

Increase in Receipts during July, 1913, against July, 1912 180
Decrease in Deliveries—New Crop, July, 1913, England and Continent, against 1911 461
Decrease in Deliveries—New Crop, July, 1913, America, against 1912 .. 30
Decrease in Visible Supply Pará Grades, against 1st August last year .. 771
Increase in Stock, England, July 31st, 1913, against July 31st, 1912 .. 69

WM. WRIGHT & CO., Brokers.

Liverpool, 5th August, 1913.

During the month 170 tons, including 50 tons Caucho, have been shipped from Europe to America.

Liverpool.

WILLIAM WRIGHT & Co. report [August 1.]

Fine Pará.—The market has been dull owing to the high prices ruling for the near positions, distant offers at a decided discount but buyers holding aloof. Prices have declined somewhat, but the tone at the close is firm. Receipts are larger than last year, but the increase is in Caucho, being 2,160 tons, including 730 tons Caucho, against 2,100 tons last month, and 1,940 last year, showing a decrease of 40 tons in Rubber and an increase of 260 tons in Caucho.

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA, 1913.

[IN SHILLINGS AND PENCE PER POUND.]

January 3, 1913	4/7¼	May 2	3/5½
January 10	4/6½	May 9	3/8¾
January 17	4/6½	May 16	3/10
January 24	4/5¼	May 23	3/9
January 31	4/4	May 31	3/8½
February 7	4/2¾	June 6	3/9¼
February 14	4/3	June 13	3/9
February 21	4/0½	June 20	3/8¾
February 28	4/0½	June 27	3/9½
March 7	3/10¾	July 4	3/9¾
March 14	3/11¼	July 11	3/9
March 20	3/11	July 18	3/9½
March 28	3/9½	July 25	3/8
April 4	3/6¼	August 1	3/8½
April 11	3/4½	August 8	3/10
April 18, 1913	3/4¾	August 15	3/10½
April 25	3/4½		

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

AUGUST 5.—By the steamer *Gregory*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	69,200	12,300	71,400	16,600=	169,500
General Rubber Co.	3,200	1,100	38,900	3,400=	46,600
Meyer & Brown	30,100	.....	12,100	49,900=	92,100
H. A. Astlett & Co.	3,600	2,100	17,800	1,700=	25,200
Henderson & Korn	13,400	1,800	700	.....=	15,900
Henderson & Korn	.....	4,300	28,400	.....=	32,700
Total	119,500	21,600	169,300	71,600=	382,000
Transhipped from steamer *Javary*:					
W. R. Grace & Co.	100	.....	1,100	26,800=	28,000
Meyer & Brown	.....	.....	.....	13,800=	13,800
	100	.....	1,100	40,600=	41,800
Total	119,600	21,600	170,400	112,200=	423,800

AUGUST 15.—By the steamer *Boniface*, from Pará and Manáos:

Arnold & Zeiss	212,700	11,300	65,100	89,600=	378,700
General Rubber Co.	59,100	9,100	30,200	700=	99,100
Meyer & Brown	82,200	10,200	51,100	161,000=	304,500
H. A. Astlett & Co.	15,600	.....	62,700	2,200=	80,500
Henderson & Korn	23,200	9,100	57,600	14,000=	103,900
Ed. Maurer	9,300	15,000	13,900	4,500=	42,700
Ed. Maurer	.....	.....	1,500	.....=	1,500
G. Amsinck & Co.	16,000	5,000	10,800	.....=	31,800
Crossman & Sielcken	.....	.....	2,400	1,600=	4,000
Total	418,100	59,700	295,300	273,600=	1,046,700

PARA RUBBER VIA EUROPE.

		POUNDS.
JULY 12.—By the *Amerika*=Hamburg:		
Various (Fine)		3,000
JULY 12.—By the *Caronia*=Liverpool:		
Arnold & Zeiss (Fine)	33,500	
Arnold & Zeiss (Coarse)	11,200	
Henderson & Korn (Fine)	2,000	
General Rubber Co. (Fine)	2,000	48,700
JULY 19.—By the *Matura*=Ciudad Bolivar:		
General Export & Commission Co. (Fine)		17,000
JULY 24.—By the *Pennsylvania*—Hamburg:		
Meyer & Brown (Caucho Ball)	50,000	
Henderson & Korn (Caucho Ball)	45,000	
Various (Fine)	10,000	105,000
JULY 28.—By the *Carmania*=Liverpool.		
Arnold & Zeiss (Fine)	90,000	
Arnold & Zeiss (Coarse)	13,500	
Robinson & Co. (Fine)	15,000	
Various (Coarse)	29,000	147,500
JULY 29.—By the *Vaderland*=Antwerp:		
Meyer & Brown (Fine)	22,500	
Michelin Tire Co. (Fine)	22,500	45,000
AUGUST 4.—By the *Campania*=Liverpool:		
Henderson & Korn (Coarse)		30,000
AUGUST 4.—By the *Baltic*=Liverpool:		
Arnold & Zeiss (Caucho Ball)	17,000	
Arnold & Zeiss (Coarse)	2,500	
James T. Johnstone (Coarse)	11,200	
Henderson & Korn (Coarse)	67,000	
Henderson & Korn (Fine)	130,000	227,700
AUGUST 5.—By the *Zeeland*=Antwerp:		
Various (Fine)		7,500
AUGUST 9.—By the *Armenia*=Hamburg:		
Arnold & Zeiss (Fine)	7,000	
Ed. Maurer (Fine)	3,000	
Wallace L. Gough (Fine)	8,500	
Various (Fine)	14,000	32,500
AUGUST 11.—By the *Nickerie*=Ciudad Bolivar:		
General Export & Commission Co. (Fine)	45,000	
General Export & Commission Co. (Coarse)	44,000	
Yglesias, Lobo & Co. (Fine)	22,500	
Yglesias, Lobo & Co. (Coarse)	9,000	120,500
AUGUST 11.—By the *Caronia*=Liverpool:		
Henderson & Korn (Fine)	20,000	
Raw Products Co. (Fine)	11,200	31,200
AUGUST 11.—By the *Rochambeau*=Havre:		
Henderson & Korn (Fine)		9,000
AUGUST 12.—By the *Finland*=Antwerp:		
Various (Fine)		11,200
AUGUST 15.—By the *Mauretania*=Liverpool:		
Arnold & Zeiss (Fine)	4,500	
Raw Products Co. (Fine)	11,200	15,700
AUGUST 15.—By the *Pretoria*=Hamburg:		
Ed. Maurer (Fine)	2,500	
Various (Fine)	10,000	12,500
AUGUST 16.—By the *Celtic*=Liverpool:		
Robinson & Co. (Fine)		16,000
AUGUST 20.—By the *President Grant*=Hamburg:		
Wallace L. Gough (Fine)		8,500

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

		POUNDS.
JULY 14.—By the *Colon*=Colon:		
G. Amsinck & Co.	10,000	
Ed. Maurer	4,500	
Mecke & Co.	1,500	
Wessels, Kulenkampff & Co.	700	16,700
JULY 14.—By the *Albinga*=Colombia:		
R. del Castillo	1,200	
Caballero & Blanco	500	
Various	500	2,200
JULY 14.—By the *Ancon*=Cristobal:		
Various		6,500
JULY 16.—By the *Prinz August Wilhelm*=Colombia:		
Suzarte & Whitney		1,000
JULY 16.—By the *Magdalena*=Colon:		
J. S. Sambrada & Co.		2,000
JULY 17.—By the *Antilla*=Tampico:		
Continental-Mexican Rubber Co.		*87,500
JULY 18.—By the *Sibiria*=Frontera:		
Meyer & Brown		1,000
JULY 18.—By the *Esperanza*=Mexico:		
G. Amsinck & Co.	2,200	
Wessels, Kulenkampff & Co.	1,000	
W. Loazia & Co.	600	
Harburger & Stack	300	4,100
JULY 19.—By the *Zacapa*=Colombia:		
R. del Castillo		2,000
JULY 21.—By the *Advance*=Colon:		
G. Amsinck & Co.	3,000	
Pablo Calvet & Co.	500	
Various	2,500	6,000
JULY 22.—By the *Pasari*=Bahia:		
A. Hirsch & Co.		45,000
JULY 22.—By the *Sixaola*=Port Limon:		
Various		3,000
JULY 22.—By the *Emil L. Boas*=Colombia:		
M. Keith	2,000	
Rosenthal & Sons	2,200	
Andean Trading Co.	5,500	9,700

JULY 25.—By the *Mexic*=Mexico:

E. Steiger & Co	1,500	
Harburger & Stack	1,000	
J. Menendez	700	
Murphy & Fultz	1,500	4,700

JULY 26.—By the *Panama*=Colon:

G. Amsinck & Co.	800	
Harburger & Stack	800	
W. R. Grace & Co.	27,500	29,100

JULY 28.—By the *Allemania*=Colombia:

Caballero & Blanco	2,000	
G. Amsinck & Co.	500	2,500

JULY 29.—By the *Carillo*=Port Limon:

I. Brandon & Bros.	600	
Gravenhorst & Co.	600	1,200

JULY 30.—By the *Danube*=Colon:

A. M. Capen's Sons		3,500

JULY 30.—By the *Guantanama*=Tampico:

Arnold & Zeiss		*11,200

AUGUST 1.—By the *Allianca*=Colon:

G. Amsinck & Co.	2,800	
Dumarest Bros.	2,500	
W. R. Grace & Co.	1,000	
Frank Lapiedra	700	
Pottberg, Ebeling & Co.	1,400	8,400

AUGUST 1.—By the *Monterey*=Mexico:

G. Amsinck & Co.	600	
E. Steiger & Co.	1,500	
Hermann Kluge	1,000	
Broederman & Litzrodt	500	
American Trading Co.	2,500	
Harburger & Stack	1,500	
General Export & Commission Co.	1,200	
Laurence Johnson & Co.	1,200	
H. Marquardt & Co.	3,000	13,000

AUGUST 4.—By *El Sol*=Galveston:

Various		*33,500

AUGUST 4.—By the *Prinz Eitel Friedrich*=Colombia:

Caballero & Blanco		500

AUGUST 4.—By the *Antilles*=New Orleans:

Various		3,000

AUGUST 4.—By the *Frutera*=Colon:

G. Amsinck & Co.	2,500	
Rosenthal & Sons	2,500	5,000

AUGUST 4.—By the *Pastores*=Port Limon:

Isaac Brandon & Bros.	1,000	
Wessels, Kulenkampff & Co.	1,000	2,000

AUGUST 5.—By the *Carl Schurz*=Colon:

G. Amsinck & Co.	2,000	
J. S. Sambrada & Co.	2,000	
H. Wolff & Co.	2,000	6,000

AUGUST 6.—By the *Calan*=Colon:

G. Amsinck & Co.	3,000	
United Export Co.	1,000	
C. E. Griffin	900	
Duke & Co.	1,100	
Pablo Calvet & Co.	800	
M. A. de Leon & Co.	700	7,500

AUGUST 7.—By the *Proteus*=New Orleans:

Various		12,000

AUGUST 8.—By the *Morro Castle*=Mexico:

Harburger & Stack	2,000	
General Export & Commission Co.	600	2,600

AUGUST 8.—By the *Metapan*=Colombia:

R. Del Castillo		3,500

AUGUST 9.—By the *Sibiria*=Frontera:

Meyer & Brown	600	
G. N. Schmidt	600	1,200

AUGUST 9.—By the *Armenia*=Hamburg:

Various		11,200

AUGUST 11.—By the *Albingia*=Colombia:

Kunhardt & Co.	500	
R. Del Castillo	500	
Caballero & Blanco	700	
Various	1,000	2,700

AUGUST 11.—By the *Dakatan*=Mexico:

Alexander & Baldwin		4,000

AUGUST 13.—By the *Prinz August Wilhelm*=Colon:

Anglean Trading Co.		3,500

AUGUST 13.—By the *Tagus*=Colon:

Wessels, Kulenkampff & Co.	200	
A. Held	500	
A. S. Lascelles & Co.	800	1,500

AUGUST 14.—By the *Advance*=Colon:

G. Amsinck & Co.	4,100	
F. Rosenstern & Co.	3,900	
Charles E. Griffin	500	8,500

AUGUST 14.—By the *Comus*=New Orleans:

Various		1,700

AUGUST 14.—By the *Zacapa*=Colombia:

G. Amsinck & Co.		1,000

AUGUST 14.—By the *Titian*=Bahia:

G. Amsinck & Co.	36,000	
A. Hirsch & Co.	33,500	69,500

AUGUST 15.—By the *Esperanza*=Mexico:

G. Amsinck & Co.	1,500	
Harburger & Stack	1,000	
J. Menendez & Co.	2,500	5,000

AUGUST 16.—By the *Vestris*=Bahia:

A. Hirsch & Co.		5,500

AUGUST 18.—By the *Prinz Sigismund*=Colombia:

Caballero & Blanco	600	
J. A. Pauli & Co.	400	1,000

AUGUST 18.—By the *Suriname*=Belize:

West Coast Rubber Co.	1,200	
Neuss Hesslein & Co.	1,000	
A. Rosenthal & Sons	600	2,800

AUGUST 19.—By the *Panama*=Colon:

Laurence Johnson & Co.	3,500	
Piza, Nephews & Co.	2,500	6,000

AUGUST 19.—By the *Siraola*=Port Limon:

A. Held	1,000	
Suzarte & Whitney	500	
Wessels, Kulenkampff & Co.	500	2,000

AFRICAN.

JULY 12.—By the *Amerika*=Hamburg: (POUNDS.)

Ed. Maurer		4,500

JULY 12.—By the *Carania*=Liverpool:

Henderson & Korn	3,000	
Robinson & Co.	9,000	12,000

JULY 15.—By the *Finland*=Antwerp:

Meyer & Brown	22,000	
I. T. Johnstone	15,000	
Various	22,500	59,500

JULY 15.—By the *Niagara*=Havre:

Arnold & Zeiss		4,000

JULY 16.—By the *President Lincoln*=Hamburg:

Wallace L. Gough		30,000

JULY 16.—By the *Oceanic*=Southampton:

Various		15,000

JULY 20.—By the *Lapland*=Antwerp:

Henderson & Korn		3,000

JULY 24.—By the *Pennsylvania*=Hamburg:

Meyer & Brown	75,000	
Ed. Maurer	40,000	
Arnold & Zeiss	22,500	
Various	60,000	197,500

JULY 25.—By the *Cedric*=Liverpool:

Meyer & Brown	2,500	
Henderson & Korn	2,000	4,500

JULY 28.—By the *Carmania*=Liverpool:

Arnold & Zeiss		2,000

JULY 28.—By the *Minnetonka*=London:

Arnold & Zeiss	55,000	
General Rubber Co.	65,000	120,000

JULY 29.—By the *Vaderland*=Antwerp:

Meyer & Brown		8,000

JULY 30.—By the *Westerdyk*=Amsterdam:

Meyer & Brown		11,500

AUGUST 1.—By the *Patricia*=Hamburg:

Wallace L. Gough		5,000

AUGUST 5.—By the *Zeeland*=Antwerp:

Meyer & Brown	22,500	
Robert Badenhop	8,500	
Various	16,500	47,500

AUGUST 8.—By the *Adriatic*=Liverpool:

Various		11,200

AUGUST 9.—By the *Armenia*=Hamburg:

Meyer & Brown	70,000	
Arnold & Zeiss	20,500	
Ed. Maurer	11,200	
Wallace L. Gough	18,000	119,700

AUGUST 11.—By the *Caronia*=Liverpool:

J. T. Johnstone	4,500	
Henderson & Korn	2,200	6,700

AUGUST 11.—By the *Rochambeau*=Havre:

Meyer & Brown		11,200

AUGUST 12.—By the *Finland*=Antwerp:

Meyer & Brown	22,000	
American Congo Co.	6,000	
Various	6,000	34,000

AUGUST 15.—By the *Pretoria*=Hamburg:

Ed. Maurer	4,500	
General Rubber Co.	4,500	
Various	53,000	62,000

AUGUST 16.—By the *Amerika*=Hamburg:

Ed. Maurer		9,000

AUGUST 18.—By the *Kroonland*=Antwerp:

I. T. Johnstone	15,000	
Various	10,000	25,000

AUGUST 20.—By the *President Grant*=Hamburg:

Ed. Maurer	17,000	
Various	25,000	42,000

EAST INDIAN.

[*Denotes Plantation Rubber.]

JULY 12.—By the *Amerika*=Hamburg: (POUNDS.)

Charles T. Wilson		*4,000

JULY 12.—By the *New York*=Southampton:

Robinson & Co.	*11,200	
Charles T. Wilson	*11,200	
Rubber Trading Co.	*13,500	
Ed. Maurer	*11,200	
Henderson & Korn	*4,500	
Various	*115,000	*166,600

JULY 14.—By the *Minnehaha*=London:

J. T. Johnstone	*11,200	
Henderson & Korn	*11,200	
Wallace L. Gough	*11,200	
Ed. Maurer	*19,500	*53,100

JULY 15.—By the *Finland*=Antwerp:

Arnold & Zeiss	*150,000	
Meyer & Brown	*39,000	
Ed. Maurer	*45,000	
Wallace L. Gough	*11,200	*245,200

JULY 15.—By the *City of Edinburgh*=Colombo:

Meyer & Brown	*18,500	
Meyer & Brown	*56,000	
Ed. Maurer	*55,000	
H. W. Peabody & Co.	*4,500	
N. Y. Commercial Co.	*11,500	*145,500

JULY 16.—By the *President Lincoln*=Hamburg:

Wallace L. Gough		*1,500

JULY 16.—By the *Arsterturn*=Colombo:

Meyer & Brown	*58,500	
Ed. Maurer	*55,700	
H. W. Peabody & Co.	*4,500	
N. Y. Commercial Co.	*3,500	*122,200

JULY 16.—By the *Oceanic*=Southampton:

Charles T. Wilson	*90,000	
Meyer & Brown	*15,200	
Arnold & Zeiss	*22,500	
Ed. Maurer	*18,500	
Rubber Trading Co.	*2,000	
Robinson & Co.	*3,500	
Various	*100,000	*251,700

JULY 18.—By the *Lothian*=Singapore:

Henderson & Korn	*86,000	
A. Hirsch & Co.	*45,000	
General Rubber Co.	*11,200	
Malaysian Rubber Co.	*27,500	
L. Littlejohn & Co.	*11,200	*180,900

JULY 20.—By the *Lapland*=Antwerp:

Meyer & Brown	*56,500	
Arnold & Zeiss	*50,000	
Various	*22,500	*129,000

JULY 21.—By the *Minnewaska*=London:

Meyer & Brown	*41,500	
Ed. Maurer	*67,000	
Wallace L. Gough	*40,000	
J. T. Johnstone	*35,000	
Henderson & Korn	*15,500	
Rubber Trading Co.	*7,500	
Lunham & Moore	*22,500	
General Rubber Co.	*85,000	
A. Hirsch & Co.	*11,200	
Charles T. Wilson	*4,500	
Various	*25,000	
Arnold & Zeiss	*50,000	*404,700

JULY 22.—By the *Ryndam*=Amsterdam:

Rubber Trading Co.		*4,500

JULY 24.—By the *St. Paul*=Southampton:

Meyer & Brown	*13,000	
Robinson & Co.	*15,000	
Ed. Maurer	*45,000	
Arnold & Zeiss	*22,500	
W. Stiles	*6,000	
Charles T. Wilson	*1,500	*103,000

JULY 25.—By the *Cedric*=Liverpool:

Ed. Maurer		*14,000

JULY 26.—By the *Kaiserin Auguste Victoria*=Hamburg:

Ed. Maurer	*11,200	
Charles T. Wilson	*4,500	*15,700

JULY 28.—By the *Gothland*=Antwerp:

Rubber Trading Co.	*3,500	

JULY 28.—By the *Minnetonka*=London:

Meyer & Brown	*33,500	
J. T. Johnstone	*50,000	
Ed. Maurer	*22,500	
Rubber Trading Co.	*7,500	
Henderson & Korn	*2,200	
A. Hirsch & Co.	*3,500	
Charles T. Wilson	*65,000	
L. Littlejohn & Co.	*11,200	
Wallace L. Gough	*5,500	
Henderson & Korn	*5,000	
Various	*23,000	*228,900

JULY 29.—By the *Vaderland*=Antwerp:

Meyer & Brown	*40,000	

JULY 30.—By the *City of Baroda*=Singapore:

L. Littlejohn & Co.	*25,000	

JULY 30.—By the *Westerdyk*=Amsterdam:

Meyer & Brown	*43,000	
Rubber Trading Co.	*5,500	
Arnold & Zeiss	*17,500	*66,000

JULY 30.—By the *Olympic*=Southampton:

Meyer & Brown	*10,000	
Robinson & Co.	*33,500	
W. R. Grace & Co.	*11,200	
N. Y. Commercial Co.	*112,000	
Arnold & Zeiss	*22,500	
W. Stiles	*3,500	
Various	*33,500	*226,200

AUGUST 4.—By the *Rotterdam*=Amsterdam:

Meyer & Brown	*11,000	

AUGUST 4.—By the *Baltic*=Liverpool:

Ed. Maurer	*7,500	

AUGUST 4.—By the *Philadelphia*=Southampton:

Meyer & Brown	*43,000	
Arnold & Zeiss	*22,500	
Rubber Trading Co.	*2,000	
A. W. Brunn	*2,000	
Raw Products Co.	*11,200	
W. Stiles	*5,500	
Robinson & Co.	*13,500	
Charles T. Wilson	*75,000	
Goodyear Tire & Rubber Co.	*60,000	
Various	*90,000	*324,700

AUGUST 5.—By the *Zeeland*=Antwerp:

Meyer & Brown	*127,600	
Arnold & Zeiss	*16,000	
Rubber Trading Co.	*22,500	
Wallace L. Gough	*11,200	
Robert Badenhop	*8,500	*185,800

AUGUST 5.—By the *Kasenga*=Colombo:

Meyer & Brown	*47,000	
General Rubber Co.	*22,500	
Ed. Maurer	*51,000	
N. Y. Commercial Co.	*17,000	
Various	*42,000	*179,500

AUGUST 5.—By the *Minneapolis*=London:

Meyer & Brown	*63,000	
James T. Johnstone	*33,500	
E. Bonstead & Co.	*22,500	
W. R. Grace & Co.	*5,500	
General Rubber Co.	*123,000	
Charles T. Wilson	*33,500	
L. Littlejohn & Co.	*26,000	*307,000

AUGUST 7.—By the *Majestic*=Southampton:

Ed. Maurer	*22,500	
Charles T. Wilson	*75,000	
Goodyear Tire & Rubber Co.	*25,500	*123,000

AUGUST 8.—By the *Adriatic*=Liverpool:

Various	*2,000	

AUGUST 9.—By the *Amerika*=Hamburg:

Meyer & Brown	*11,000	

AUGUST 9.—By the *Nanaric*=Colombo:

Meyer & Brown	*91,000	
Ed. Maurer	*25,500	
H. W. Peabody & Co.	*22,500	*139,000

AUGUST 11.—By the *Sturmfels*=Colombo:

Meyer & Brown	*72,000	
Ed. Maurer	*47,000	
N. Y. Commercial Co.	*17,000	
Various	*22,500	*158,500

AUGUST 11.—By the *Caronia*=Liverpool:

Western Electric Co.	*5,000	

AUGUST 11.—By the *Minnehaha*=London:

Meyer & Brown	*1,600	
James T. Johnstone	*11,200	
Robinson & Co.	*3,500	
General Rubber Co.	*22,500	
Henderson & Korn	*11,200	
Adolph Hirsch & Co.	*1,100	*51,100

AUGUST 11.—By the *New York*=Southampton:

Meyer & Brown	*25,200	
W. Stiles	*4,000	
Arnold & Zeiss	*50,000	
Goodyear Tire & Rubber Co.	*22,500	
Charles T. Wilson	*75,000	*176,700

AUGUST 12.—By the *Finland*=Antwerp:

Meyer & Brown	*24,000	
Meyer & Brown	*11,200	
Arnold & Zeiss	*18,000	*53,200

AUGUST 13.—By the *Oceanic*=Southampton:

Meyer & Brown	*4,500	
W. Stiles	*6,000	
Ed. Maurer	*6,200	
Arnold & Zeiss	*246,000	
Charles T. Wilson	*5,000	
Robinson & Co.	*11,200	
Rubber Trading Co.	*7,000	
Various	*13,500	*299,400

AUGUST 15.—By the *Pretoria*=Hamburg:

Meyer & Brown	*6,000	
Ed. Maurer	*12,500	
Charles T. Wilson	*3,500	
Wallace L. Gough	*3,500	
Various	*12,500	*38,000

AUGUST 16. By the *Amerika*=Hamburg:

Meyer & Brown	*4,500	
Various	*11,000	*15,500

AUGUST 18.—By the *St. Paul*=Southampton:

Charles T. Wilson	*101,000	
Arnold & Zeiss	*56,000	
William H. Stiles	*10,000	
Robinson & Co.	*18,000	
Meyer & Brown	*4,500	
Various	*20,000	*209,500

AUGUST 18.—By the *Minnewaska*=London:

General Rubber Co.	*302,000	
James T. Johnstone	*68,000	
Meyer & Brown	*14,000	
Henderson & Korn	22,500	
Henderson & Korn	*4,500	
Adolph Hirsch & Co.	*18,000	
E. Bonstead & Co.	*11,200	
Wallace L. Gough	*11,200	*451,400

AUGUST 18.—By the *Jeseric*=Singapore:

Meyer & Brown	*11,200	
Ed. Maurer	*75,000	
United Malaysian Rubber Co.	*27,000	
E. Bonstead & Co.	*11,200	
Henderson & Korn	*45,000	
Various	*22,500	*191,900

AUGUST 18.—By the *Kroonland*=Antwerp:

Meyer & Brown	*60,000	

AUGUST 20.—By the *Olympic*=Southampton:

Arnold & Zeiss	*33,600	
Charles T. Wilson	*18,500	
Raw Products Co.	*11,200	
Rubber Trading Co.	*2,200	
Ed. Maurer	*13,500	
William H. Stiles	*6,500	
Meyer & Brown	*8,000	*93,500

AUGUST 20.—By the *President Grant*=Hamburg:

Wallace L. Gough	*11,200	
Ed. Maurer	*4,500	*15,700

BOSTON ARRIVALS.

IMPORTS IN JULY, 1913.

	Pounds.	Value.
Gutta-jelutong	399,911	$21,258
India-rubber	8,249	5,932

CUSTOM HOUSE STATISTICS.

DISTRICT OF NEW YORK—JULY, 1913.

	Pounds.	Value.
Imports:		
India-rubber	7,946,195	$4,939,476
Balata	132,642	75,234
Guayule	265,029	102,494
Gutta-percha	7,646	6,344
Gutta-jelutong (Pontianak)	330,025	103,277
Total	8,681,537	$5,226,825
Exports:		
India-rubber	69,472	$44,336
Balata	3,304	1,320
Guayule	.....	.....
Gutta-percha	.....	.....
Reclaimed rubber	74,131	17,869
Gutta-jelutong (Pontianak)	.....	.....
Rubber scrap, imported	2,388,818	$216,482
Rubber scrap, exported	198,316	33,201

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR JULY, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					GRAND
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	TOTAL.
Zarges, Ohliger & Ca.	155,077	4,349	23,105	45,956	228,487	67,433	12,320	8,065	22,702	110,520	339,007
General Rubber Co. of Brazil	41,934	8,163	13,163	57,034	120,294	68,338	15,574	10,874	58,831	153,617	273,911
J. G. Araujo	7,632	2,379	6,606	800	17,417	.....	1,000	1,729	2,200	4,929	22,346
Mesquita & Co.	.....	.....	.....	.....	.....	274	.....	1,382	818	2,474	2,474
Théodore Lévy, Camille & Co.	.....	.....	.....	.....	.....	.....	.....	.....	534	534	534
W. Peters & Co.	.....	.....	.....	.....	.....	960	6,007	3,508	698	11,173	11,173
	204,643	14,891	42,874	103,790	366,198	137,005	34,901	25,558	85,783	283,247	649,445
Iquitos, direct	3,622	.....	565	16,705	20,892	17,485	24	3,490	214,570	235,569	256,461
Total, July, 1913	208,265	14,891	43,439	120,495	387,090	154,490	34,925	29,048	300,353	518,816	905,906

EXPORTS OF INDIA-RUBBER FROM PARA, MANAOS AND IQUITOS FOR JULY, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					GRAND
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	TOTAL.
Zarges, Berringer & Co.	43,255	14,316	136,726	26,373	220,670	151,182	19,235	16,550	4,015	190,982	411,652
General Rubber Co. of Brazil	9,004	1,901	46,052	33,328	90,285	17,340	1,020	.....	.....	18,360	108,645
J. Marques	47,160	8,179	134,304	60,390	250,033	54,570	1,530	.....	.....	56,100	306,133
R. O. Ahlers & Co.	.....	.....	.....	.....	.....	1,044	.....	330	690	2,064	2,064
Suarez Hermanos & Co., Ltd.	.....	.....	.....	.....	.....	33,685	103	276	78,545	112,609	112,609
Pires Teixeira & Co.	14,790	3,740	24,750	.....	43,280	47,940	.....	.....	.....	47,940	91,220
Sundry exporters	2,940	.....	1,320	840	4,200	.....	.....	.....	.....	.....	4,200
Itacoatiara, direct	.....	.....	.....	.....	.....	3,450	290	1,920	270	5,930	5,930
	116,249	28,136	343,152	120,931	608,468	309,211	22,178	19,076	83,520	433,985	1,042,453
Manáos, direct	136,524	18,718	39,386	123,516	318,144	137,005	34,901	26,092	85,249	283,247	601,391
Iquitos, direct	3,622	.....	565	16,705	20,892	17,485	24	3,490	214,570	235,569	256,461
Total, July, 1913	256,395	46,854	383,103	261,152	947,504	463,701	57,103	48,658	383,339	952,801	1,900,305

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RUBBER STATISTICS FOR JULY.

DETAILS.	1913.	1912.	1911.	1910.	1909.
Stocks, June 30..*Kilos*	1,085,143	343,191	773,977	460,517	476,420
Arrivals in July—					
Congo sorts	164,603	296,529	198,520	144,697	461,506
Other sorts	27,531	21,662	21,790	42,685	56,358
Plantation sorts	134,531	57,405	42,741	65,517	12,056
Aggregating	1,411,808	718,786	1,037,028	710,416	1,006,340
Sales in July.....	377,209	284,475	571,294	190,431	481,828
Stocks, July 31.....	1,034,599	434,311	465,734	519,965	524,512
Arrivals since Jan. 1—					
Congo sorts	1,815,743	1,713,944	1,841,113	1,800,323	2,177,715
Other sorts	100,572	90,828	268,743	210,207	610,922
Plantation sorts	1,146,460	670,039	374,217	324,577	144,787
Aggregating	3,062,775	2,474,811	2,484,073	2,335,107	2,933,424
Sales since Jan. 1....	2,539,236	2,715,038	2,606,551	2,356,652	3,004,647

RUBBER ARRIVALS FROM THE CONGO.

JULY 16.—By the steamer *Albertville:*

		Kilos.	
Bunge & Co.	(Société Générale Africaine)	12,400	
do	(Cie du Congo Belge)	980	
do	(Cie. du Kasai)	63,000	
do	(Belgika)	1,900	
do	(Chemins de fer Grands Lacs)	1,500	
do	(Forminiere)	1,400	
do		1,000	
Société Coloniale Anversoise	(Intertropical)	10,800	
do	(Comminière)	6,100	
do	(Haut Congo)	7,061	
Credit Colonial & Commercial (Anc. L. & W. Van de Velde) (S. A.), (Comfina)		24,600	
do	(Velde)	14,200	
Charles Dethier	(American Congo Cy)	3,750	
Osterrieth & Co.	(Lubefu)	3,000	151,691

AUGUST 6.—By the steamer *Elisabethville:*

		Kilos.	
Bunge & Co.	(Société Générale Africaine)	13,500	
do	(Comfina)	37,200	
do	(Grand Lacs)	12,600	
do	(Forminière)	3,600	
do	(Belgika)	3,400	
do	(Cie du Congo Belge)	2,500	
do	(Alberta)	400	
do		2,700	
Société Coloniale Anversoise	(Haut Congo)	3,200	
do	(Lomami)	2,000	
do	(Sté Commerciale & Minière du Congo)	7,600	
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde), (S. A.)		12,600	
do	(Velde), (S. A.), (C. C. V.)	850	
Willaert Frères		10,000	
Charles Dethier		500	112,650

Plantation Rubber From the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

(From January 1 to July 28, 1913. Compiled by the Ceylon Chamber of Commerce.)

	1912.	1913.
To Great Britain ..... *pounds*	3,460,030	6,376,151
To United States	1,904,536	3,627,080
To Belgium	615,834	1,831,354
To Australia	104,874	303,049
To Germany	91,819	124,449
To Canada	16,065	.....
To Japan	15,154	132,051
To Austria	12,563	26,716
To Italy	5,885	36,507
To Holland	2,282	992
To France	1,120	.....
To India	100	881
To Norway and Sweden	39	.....
To Straits Settlements	.....	20,064
Total	6,230,301	12,479,294

(Same period 1911, 2,754,085; same 1910, 1,489,878.)

The export figures of rubber for 1913 given in the above table include the imports re-exported, viz., 1,102,718 pounds. To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date, deduct this quantity from the total exports. In previous years the exports of Ceylon rubber only were given.