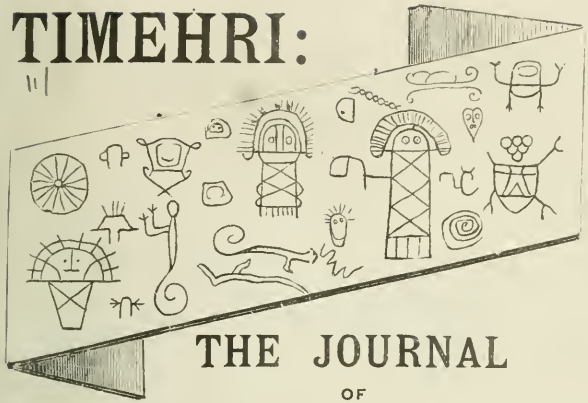
R. A. & C. SOCIETY'S BUILDINGS, WEST SIDE.

TIMEHRI:



THE JOURNAL

OF

The Royal Agricultural and Commercial Society

OF

BRITISH GUIANA.

Editors { JOSEPH J. NUNAN, B.A., LL.B., PRESIDENT.
JAMES RODWAY, F.L.S., ASSISTANT SECRETARY.

Literary Sub-Editor: G. MACKENZIE, ESQ.

Scientific Sub-Editor: REV. JAMES AIKEN.

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TIMEHRI:

THE JOURNAL OF

THE ROYAL AGRICULTURAL AND COMMERCIAL SOCIETY

OF BRITISH GUIANA.

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FOREWORD.

THE ROYAL AGRICULTURAL AND COMMERCIAL SOCIETY OF BRITISH GUIANA.

For the credit of my own much abused profession I am glad to say that it is to a former Clerk of the Court, a learned and public-spirited Scotsman, Mr. W. H. Campbell, LL.D. (Writer to the Signet), that we owe the foundation of this Society. Mr. Campbell had been instrumental in the formation of the Botanical Society of Edinburgh of which he was secretary for four years and shortly after his arrival in this colony he brought together a number of gentlemen interested in the welfare of the colony for the purpose of forming an association with more varied objects but with similar rules. The original draft of the " Proposed Laws " is in the Society's possession and is in his handwriting. The preliminary meeting was held in the Old Court House, Georgetown, on Monday, 18th March, 1844, at two o'clock in the afternoon. The Governor, Mr. Henry Light, was nominated Patron, and a committee was instituted which has since been replaced by a Board of Directors. The first general meeting took place on the 12th of April, 1844, when the first election of officers resulted in the choice of the Hon. Sir Michael McTurk (the leading planter and unofficial member of the Court) as President and of Mr. W. H. Campbell as Secretary. The Old Colonial Hospital building was secured as temporary premises and a Reading Room and the nucleus of a Library and Museum were soon created. Liberal donations were made by successive Governors and by leading citizens for these purposes.

Queen Victoria was graciously pleased to become Patroness and both King Edward VII. and his present Majesty, King George V., in succession have honoured the Society by accepting the title of Patron. It received formal incorporation by Ordinance 21 of 1853 re-enacted and amended by Ordinance 2 of 1866, its present charter. The declared objects of the Society are the improvement and encouragement of the agriculture of the colony and of every branch of industry whereby the resources of the colony are likely to be developed and increased and also the collecting and disseminating of useful information on such subjects.

It is bound to maintain an Exchange Room, a Reading Room, a Museum and Model Room and a Library. It is also authorized to award premiums or grants of money for suitable objects connected with agriculture, manufactures or trade.

How far it has carried out the intentions of its founders is a matter of colonial history, In the words of the pamphlet styled "A Historic Georgetown Institution": "The name of the Society is bound up with the most honourable traditions and happiest associations of the colony. For sixty-six years its proceedings form a record of the public spirit, learning and culture of its leading citizens in planting, commercial, professional and official life." At some later date I may endeavour with the able assistance of Mr. J. Rodway (which has been already invoked for this paper) to review the work of nearly sixty-seven years. At the moment neither time nor space is available for the task. I will only mention that in its very first year the Society dealt in a practical spirit with many questions which have not ceased to be of burning interest in our own day, viz., railway development, mechanical tillage, cattle and sheep farming (especially as to the improvement of breeds), drainage, the problems of sugar chemistry, cultivation and manufacture, and the settlement of the lately emancipated black people upon the land. Those interested in the recent visit of the Banana Commission to Surinam will hardly be surprised to learn that the Committee noted "with pain" the existence of a disease which rendered the profitable cultivation of the plantain doubtful. They also lent their Rooms (22nd January, 1843) for a meeting to advance the project of an East Coast railway. From railway construction they expected that "a new light would dawn upon this fertile land—its ample resources would be made apparent—its natural advantages would be turned to account—and it would be proved to the world at large that no bounds need be set to immigration."

Among the local institutions which owe their origin to the Society are the Chamber of Commerce and the Agricultural Board, developments in a natural course of our Commercial and Agricultural Committees with which we are glad to say they maintain most beneficial and cordial relations.

Among its present claims to consideration the Society can point to its library of over thirty thousand volumes; to its Museum, unique as an exhibition of the fauna of South America and of everything relating to the native Indian life of the Guianas; to its splendid entomological collection, the life-work of a succession of scientific curators; to its rare prints and photographs including the publications of the Arundel Society; to its cool and lofty reading room supplied with all the best periodical literature and open to lady subscribers, to the families of members and to visitors to the colony. Finally it can point to the contributions of the past and present issues of *Timehri* to scientific research, to the value of the papers read at our frequent meetings and to the interest of the lantern lectures given from time to time in the Society's rooms.

The Society has shared in the vicissitudes of the colony's fortunes but has survived to a period of more varied development with activities unimpaired. The reduction of the Government grant to the Museum by more than half in times of financial stress some years ago must cause some twinges of remorse to the ag icultural community in these days of insect pests for its acquiescence in that

no longer doubtful economy. The rents formerly derived from the Pilot Office and Post Office were lost by the abolition of the former and by the removal of the latter institution to another building. Premises specially constructed at the Society's expense to accommodate these institutions are not readily rented for ordinary business purposes and the Society has suffered accordingly. Perhaps it received somewhat summary treatment and very scanty recognition of its services to the community but it has no desire to linger upon its grievances. It has also suffered from the loss of the personal interest and supervision which the independent planter and merchant exercised in its affairs in pre-company days. Joint stock companies are not affected by sentiment or by any other considerations than those directly relating to the particular objects for which they have been incorporated. In the words of a learned judge, "They have neither a body to be kicked nor a soul to be damned." However inevitable on economic grounds, the virtual disappearance of the body of residential proprietors who formerly maintained the dignity and prestige of this colony in public life must be a matter for regret to all classes. It is hardly to be wondered at that the establishment of the Agricultural Board and the Chamber of Commerce which carry out what were formerly the executive functions of the Society's committees should furnish some few at least of their successors with an excuse for not lending active support to the parent organization. It is also little matter of surprise that the opening of the Carnegie Free Library should have proved too great a temptation to many of our less wealthy subscribers and even to some whose absence of civic spirit was the only cause of secession or abstention.

Notwithstanding these losses many forward movements were made during the past year and the Society rose with renewed life to accomplish the objects of its incorporation. The new members, associates and lady subscribers reached the unprecedented number of 113 and we close the year with 461 on our books. This number we hope to increase considerably in the coming twelvemonth besides receiving many repentant seceders once more into our ranks. A series of evening lantern lectures was again inaugurated, the Hon. Sir T. Crossley Rayner addressing an overflowing audience on "West Africa" with His Excellency Sir Frederic Hodgson in the chair and the President of Queen's College (T. A. Pope, M.A.) following on "Egypt and India" with His Honour the Chief Justice, Sir Henry A. Bovell, presiding. The learned Chief Justice introduced the lecturer in a graceful historical address. To give greater emphasis to the social side of the Society a most successful conversazione was held, the Museum being lighted for the occasion. This will be repeated on the inauguration of each new President and on other suitable occasions. Private benefactors enabled a permanent installation for electric lighting to be placed in the Museum which it is proposed to utilize for popular evening demonstrations on various subjects, and in many other ways internal and external improvements have been effected.

The proposal to revive *Timehri* received a prompt and practical response in the shape of sufficient subscriptions and promises of articles. It will strike with surprise many people affected with the inexplicable pessimism of the colony to learn that every promise of an article has been faithfully redeemed. Amongst those who have helped us we are glad to specially mention the names of Mr. J. J. Quelch, formerly Curator of the Museum, and long and honourably asso-

ciated with previous issues of *Timehri.* He deals with his special s udy of insect pests in the investigation of which he is re-visiting the colony ; of Mr. F. A. Stockdale, Assistant Director of Science and Agriculture and Government Botanist, and of Mr. Beckett, manager of the experimental farm of Messrs. S. Davson & Co., Ltd., both of whom deal with the engrossing subject of rubber ; of Rev Mr Aiken who has deserted his favourite study of mosquitoes, in which he has made a high reputation as an investigator, for a *tour de force* on the subject of " Mahogany " ; of the Hon. Sir T. Crossley Rayner, Attorney General, who describes his recent visit to the Kaieteur Falls. The papers by Mr. Luke Hill on the " Street Names of Georgetown " and of Mr. J. Rodway on the " River and Plantation Names," which have been read before the Society, are of permanent interest and value, and the similar paper of Dr. Roth will show that the manners and customs of the native Indians are receiving careful study.

We hope that at the close of the present year the directors will be in a position to repeat the statement of the original committee on its second anniversary that " nothing in the interval had taken place more worthy of notice or more deserving of being esteemed as a harbinger of good than the activity and increased energy with which everything bearing on the improvement of the agriculture, manufactures and commerce of the colony was entertained and discussed. In producing that change the Society might with justice pride itself on having been to a considerable extent instrumental, and the Committee hoped that this spirit of enterprise and unanimity would spread until measures of great and decided improvement should be worked out and the resources of the colony largely developed."

At the second anniversary dinner on the 18th March, 1846, at which His Excellency Governor Light was present, the Hon. E. F. Young, then Government Secretary, speaking of the work of the Society, concluded with an eloquence and optimism no longer in fashion :

" Gentlemen ! from these circumstances alone I think we may augur favourably of the development of the resources of the colony and I trust I am using no hyperbolical language when I say that I believe we shall cast our old prejudices into the cauldron of the laboratory and that thence Medea-like they will emerge in new forms of youth, beauty, strength and profit, which will make this colony like a giant refreshed and strong, prepared to run its course rejoicingly before the eyes of the world. From the union of science with practice which have been too long divorced, there must be, I predict, an issue prolific of benefit to agriculture." And, we might add of benefit to every other branch of the community's operations, legal, commercial, literary and executive. It would be well however if a little of the Hon. E. F. Young's desire to greet the unseen with a cheer should again inspire these activities. The task of providing such an inspiration should be the most important duty of the Royal Agricultural and Commercial Society.

JOSEPH J. NUNAN,
Hon. Secretary and Joint Editor.

THE AGRICULTURAL CONFERENCE.

In view of the approaching Agricultural Conference the Directors have arranged to have the following evening lantern lectures during the sessions at dates to be announced later: Dr. Cramer "Rubber Growing in the East"; and F. A. Stockdale "Rubber Growing in the Colony."

A conversazione and a reception by the Directors of the Society will also take place. The members of the Conference will be invited to these various functions and will be offered all the ordinary privileges of membership during their stay in the colony.

The Annual Conversazione will be held during the month of January when a lantern lecture on "The Kaieteur Falls" will be delivered by the Hon. Sir T. Crossley Rayner.

TIMEHRI.

Among the objects which the Society has p ovided for in its By-laws is one for "establishing and carrying on a periodical publication as the organ of the Society." It was not, however, until ten years after its foundation that any attempt was made to carry this out, and even that proved abortive, the encouragement afforded being insufficient to sustain it beyond the issue of two numbers. No copy of this "British Guiana Journal" of useful information in literature, science and the arts, is apparently in existence probably on account of the fire of 1864, but from the prospectus it appears to have been an octavo of 24 pages, and was sold at a shilling. The two parts were issued on the 1st August and 2nd November, 1854. The Prospectus stated that previous attempts to establish colonial periodicals of a scientific and literary character had resulted in failure, it might therefore appear presumptuous to appeal on behalf of a similar undertaking. Nevertheless, the time was considered opportune, for there was no lack of talent in the colony. However, notwithstanding the efforts of the Hon. William Walker, Mr. Dennis (author of the "Cities and Cemeteries of Etruria"), Mr. W. H. Campbell and many others, the Journal failed to obtain subscribers.

No doubt this attempt prevented further efforts for a long time. At last however, in January, 1882, Mr. (now Sir) Everard im Thurn, then Curator of the Museum, addressed a letter to Mr. W. H. Campbell suggesting that the Proceedings of the Society be published, together with papers on colonial matters. This having been agreed to at a General Meeting Mr. im Thurn undertook to carry out his suggestion in the form of a Journal, which he called "Timehri" from the Indian name of the pictures found on rocks in Guiana as well as other regions of South America. The first number was published in July, 1882, and was favourably reviewed in the colony and elsewhere, in fact, as far as the literary and scientific side was concerned it was pronounced a great success; financially however, it was always carried on at a loss. Mr. im Thurn edited it for five years and when he resigned in 1886 it was feared that "Timehri" would have to be discontinued. However in February, 1887, the Society got the new Curator, Mr. J. J. Quelch, to accept the editorship, for which office everyone felt they could not desire a better man.

A new series was now started, the sixth volume being numbered Vol. 1 (new series). Mr. Quelch's contributions were numerous and interesting, most of them dealing with his bush expeditions. As in the case of Mr. im Thurn the new editor got interesting and useful papers from many good writers and on a variety of subjects. Mr. im Thurn was primarily an anthropologist; Mr. Quelch a naturalist with wide sympathies especially for ornithology: these sympathies are naturally shown in their writings.

In 1893 Mr. Quelch left the colony for a time and Mr. J. Rodway became editor. In 1898 the Directors found it necessary to economise and it was decided to reduce the matter by less than half. This was done; 1898 and 1899 form one volume: and finally 1900 to 1902 consisted only of the Proceedings, the name "Timehri" being struck off. It is hoped that the present revival will be as successful financially as the former was in other respects.

SOME INSECT PESTS OF THE SUGAR-CANE.

By John J. Quelch, B. Sc. (Lond.)

The sugar planter in his fight against insect pests labours under serious disadvantages, which are accentuated under the unique conditions prevailing in this colony. He is mainly troubled here by forms which are normal feeders on native wild plants; and these plants are either indigenous in the cultivated areas, or are characteristic of districts not far removed, from which incursions or introduction of insects may take place. In both cases the numbers in which they occur, and the localities over which they are spread, render extermination an impossibility.

Beyond this, too, the conditions for transportation and drainage on this low-lying coastland, provide an ideal and equable breeding-ground for insects living on the cane. The regular system of navigation canals throughout the cultivation, affords constant supplies of water, thus minimising the effects of drought; while the draining trenches and pumps for carrying off the super-abundant rainfall, prevent the destruction of ground and root pests by complete flooding.

In the case of plants cultivated for their foliage, flowers or fruit, it is comparatively easy, by means of their open spaces, to detect the beginning of insect ravages; and it is therefore more than likely that steps could be taken, at a sufficiently early time, to deal with them in the most effective manner possible.

With the sugar cane cultivation, it is markedly otherwise, since an enormous number of plants are so thickly crowded, and generally over such an extensive area, as to render observation and treatment inoperative or difficult, except under the special conditions of complete and frequent dry trashing, or in the very earliest stages of growth, or after cropping.

The pests that feed upon the leaves of the cane are comparatively unimportant, and the damage trivial; though it must not be forgotten that any, or all of these, may some day become a veritable plague, if successive increase of generations goes unchecked. From their external position, however, such forms are always subject to the attacks of natural enemies which may reduce their numbers, keeping them in check, or even exterminating them in definite localities.

The difficulties lie with those that are internal, feeding on the substance of the cane, such as the giant and the small moth-borer, and the weevil-borer, or with those that take refuge under the clasping bases of the leaves, sucking out the sap, such as the common pink scale insect, so generally known as the mealy-bug. These are sheltered and protected from many of the natural agencies which would serve to diminish them, and their protection is made more secure from the fact that they occur, in one or other of the stages of their life history, in just those parts of the cane that are used in carrying on the cultivation from one crop to another. Thus, after cropping, the giant moth-borer and the weevil-borer are found mainly in the stumps which are ratooned, and the small moth-borer and the mealy-bug in the tops which are used for plants; though frequently young specimens of the former are also found in the plant tops (especially if they have

been left for some time), and specimens of the latter in the stumps —a condition of affairs that leads to the continuous propagation of all these pests, whether fields be ratooned or replanted, and whether the trash be burnt off or not.

In addition to all this, it must be borne in mind that, quite independently of the stump or plant-top, a considerable amount of infection from the eggs, grubs, chrysalids, and even adults, may be present in these fields, either on the ground or the cane débris—whether this débris be more or less rotten hard cane, useless basal shoot with but a few small joints of cane, or the dry or green leaves—according to the kind of insect.

As regards the giant moth-borer, under these conditions, the eggs would be mainly on the ground, and the grubs in the basal shoots : the hard cane refuse is often crammed with the stages of the weevil-borer : the grubs and chrysalids of the small moth-borer would be found in the basal shoots or the soft cane of the green tops, and its eggs on their green leaves ; while the stages of the mealy-bug would be hidden under the clasping bases of the leaves of these same parts. And there may even be adults or chrysalids of some of them about the ground or under the trash, where they may have fallen or have taken refuge.

It will thus be realised that the control of these pests, and under the varying stages of their life history, presents features of considerable complexity. From the use of the term Cane-borers in reference to general insect damage, it would no doubt seem to the uninformed that there should be some one simple method for dealing with them, and that its efficacy would depend on the thoroughness with which it would be applied. In reality the case is far otherwise.

True it would appear that a most complete and certain method, which would also be beneficial for the ground, would lie in a regular alternation of crops, the alternative crop being such as would not be subject to the attack of these pests. But apart from the difficulty of finding any such crop suitable for local conditions, the one hope of such a change would lie in uniform, combined action, which appears to be beyond the powers of a community like ours. But even if this were possible, it would still be the case, considering the high breeding capacity of these pests, that a chance infection from wild or other plants might lead to not inappreciable damage in the one crop.

Even in a country like the United States, where the whole crop is taken off in the fall, and where, with skilled labour and the highest technical advice at hand, it would appear as though it might be possible to eliminate all infection of the crops, the loss is by no means inconsiderable through insect pests. In our great tropical district, it is indeed surprising that the damage has not been greater considering how little regular attention has been given to them.

Failing an alternation of crops of the kind suggested, there can be no doubt that a complete flooding of the fields after cropping, so that all stumps and trash are quite immersed, would lead to the most certain destruction, not only of eggs, larvæ and chrysalids, but even of the adult stages except where they are capable of strong and active flight. In this way, not only would there be a clearance of all the forms enumerated, but of many others which may sometimes occur in numbers about the roots and stumps, and may thus be responsible for some damage, as for instance, the froghopper, the small hardback, the larger hardback,

the cocoa-nut root-borer, the rough root-borer and the gru-gru worm, besides any such casual leaf-eater as there may be.

The field being thus cleared of infection, the greatest benefit would accrue from disinfection of the plant-tops. And while soaking in Bordeaux mixture is generally recommended for this purpose, it seems that the two per cent. solution of corrosive sublimate may be the more efficacious, since it has been found to kill even the eggs of pests without having an injurious action on the eyes of the plants.

In relation to this treatment of the fields and of the tops, there are many points, even drawbacks, to be considered, both as regards the efficacy against pests and the security of the plants.

In the case of the tops, there would necessarily be an extra cost in the handling, and by somewhat more skilled labour, for the selection of the plants. It is obviously useless to secure plants free from infection, if they are otherwise unfit ; and it will often be found that tops are so damaged by former insect attack, or by the burning of the canes before cutting, that they should certainly be thrown aside. This care in the selection of sound plants, free from infection, would repay itself in more vigorous growth, in greater resistance to adverse conditions, and in the comparative freedom from subsequent supplying, all three of which are points of very great importance.

For flooding, the first consideration is the availability of an abundant water supply, which may be a condition of great stringency in dry seasons with many groups of estates, where the water is conserved for navigation. No doubt this difficulty could be obviated by agreement between estates in urgent cases, though most likely it could be met by flooding areas as they are cropped at other times, and other fields in the vicinity, successively, without waiting for the cropping later in the dry season.

Complete flooding of any part, on nearly every estate, makes a pump a desideratum. The initial expenses are thus high, but apart from this power of dealing with infested districts continuously, and in the most satisfactory manner, as has been the practice for some years on Pln. Enmore, it is clear also that this outlay is justified by the largely increased returns obtained by this flooding, especially where it has been prolonged on lands that would otherwise have been abandoned. A pump thus becomes a necessary instrument of the cultivation, and one that would be of very great utility in flooding fields for long periods before re-planting.

In dealing with fields to be ratooned, it is advisable that the flooding should be for the longest period possible which conditions at the time allow ; and no doubt much remains to be learnt in relation to the weather, the soil, and the variety of cane. The eggs of the giant moth-borer are capable of withstanding complete immersion for three days ; and it is likely that, if any field has been heavily infested by this pest, many young grubs would hatch out even after a longer period. At Pln. Enmore, however, actual experience shows that a shorter period of flooding may be sufficient to reduce infestation to a very small percentage. And while a variable number of the stumps will die back after treatment, this is likely to be less than those that would be destroyed by the grubs, if they be left where the infestation is severe. Where grubs are numerous in the stumps

throughout a field, it is appalling to witness the amount of damage, and the quantity of supplying that has to be done, if indeed the crop can be established in any real sense. Failing the cane proper, the grubs can only feed on the hard parts of the stump, and the plants must of necessity die back if there be prolonged feeding as in the case of young specimens, especially where there are several to a stump.

The greatest drawback to any such system of flooding is that it means the destruction or driving out of all the various helps, such as ants and other predaceous and parasitic insects, lizards, etc., which would take part naturally in keeping down the numbers of these pests in all their stages, and the value of which is very considerably beyond what would commonly be imagined. Still, as the field will already have been largely cleared of such helpful forms by the burning of the trash previous to the cutting of the canes (an unfortunate practice adopted locally owing to economic causes, of labour and expense), the drawback is hardly one of much force here, especially considering that any severe infestation indicates the weakness or insufficiency of any such natural help, which could scarcely be expected to be efficient under such conditions.

It is certainly the case that the burning of the trash either before or after the fields are cut, will cause the destruction of many pests, and that on special occasions it may be really advisable ; but, as a general practice, it is clearly injurious, not only in destroying the natural aids towards the control of pests, and thus preventing their development to an efficient degree, but mainly in that it is subversive of the best cultural requirement for maintaining the fertility of the soil and thus of the vigour and vitality of the cane. This constant destruction of what should be valuable and essential humus additions, might be defended if it were really efficacious against our main insect enemies ; but the most casual examination of burnt fields, shows that is it not, as indeed the condition to-day of the estates, after many years of burning, clearly proves. Nor could it be otherwise, since the larvæ causing the damage are internal, and are thus protected from injury.

However prevalent the flooding of fields may become, whether for ratoons or for replants, all such areas must continuously be subjected to the chance of re-infection from other fields in the vicinity, whether in high or low canes, whether on the same estate, on an adjoining estate (that may be separated only by a narrow dam), or in a village cultivation ; and as natural helps will have been destroyed, such infection is likely to be of greatest effect. This certain infection from standing canes is one of the greatest drawbacks of the situation, and it is one that is almost impossible to deal with where, as is customary, the dry trash is left on the canes. This practice is largely conducive to insect development in this moist climate, and it becomes hopeless to lessen the infection of other fields by the iant moth-borer, unless such fields be also flooded some weeks before the cutting of the canes. Were the fields cleared of trash, a very considerable degree of damage might be prevented by catching the moths throughout the whole period of the growth of the cane.

The practice of leaving canes unstripped of the dry trash may be productive of increased returns, as is claimed, and as published experiments show, in other places (though even from these it appears to be inconclusive) ; but under the local

conditions of insect infestation, it is more than probable that it is the cause of heavy loss. This dry trash about the cane can in no case protect it from the attack of the insects in question here. On the contrary, it is a shelter and protection for them from their vigilant enemies, the birds, and directly helps to propagate the infestation. And if it be argued that this trash about the cane is the natural condition, it is obvious that insect infestation is equally so, the only really unnatural part being that of the cultivation itself with the minimum of other growth about it. The worst cases of insect infestation observed in old canes have always been in fields densely crowded with dry trash, where, too, the rind-fungus has been worse, following the small moth-borer and the mealy-bug, which have perforated the cane throughout its growth.

It is of course likely that careless trashing, with the result of tearing the surface at the joints, would render the cane more subject to rind-fungus attack, but where dry trashing is practised, this does not appear to be the case ; while , on the other hand, severe insect infestation means a multiplicity of perforations for the entrance of rind-fungus. A series of field tests over large areas of the general cultivation would be of very great value if they were carried out, and repeated, to eliminate accidental and varying conditions. Small experimental plots, more easily open to light and air, especially in the neighbourhood of trees or high cultivation from which there might be marked control by birds over the cane pests in such plots, whether trashed or untrashed, can hardly be regarded as satisfactory for such purposes.

The value of bird life in the control of insects is one that can scarcely be over-estimated, especially in this tropical district in which there is so large a proportion of the birds wholly or largely insectivorous ; and this is well exemplified in the canefields in connection with those that feed on the day-flying moth of the giant borer. The common barred chicken-hawk, the cream-headed chicken-hawk, the criketty hawk, the red crab-hawk, the common kiskadi, the smaller kiskadi, the solitary tyrant-shrike ("flycatcher"), the common muff-bird, and the old-witch, all do very good service in this way ; and the more active of them, such as the kiskadis and the smaller hawks, will often be seen in pursuit of moths, which have been disturbed by the gang of people employed in catching them. But for the birds many of these would certainly escape.

It is in the fields lately cropped that these birds can do the most destruction, before the growth of the plants provides good shelter for the insects ; and here they will be seen flying about, perching on every point of vantage in or around the field, and frequently (as in the case of the old witch, especially) on the ground. On estates generally, encouragement is being given to these helpers in the form of perches set up in the fields, and in a few cases by the wiser planting of trees. Much might be done by the planting of suitable fruit and other trees along the dams and waste places, and in the wide area of the cultivation itself, to utilise to its utmost this great natural assistance, which is continuously at work. Large numbers of other birds might thus be brought into service by this provision of part diet, and shelter for cover and nesting. Miscellaneous fruit trees would help to keep the mixed feeders in the district, where they would be available for the control of insects ; and sufficient cover for nesting would be even more helpful since the greatest destruction of insects takes place while the young birds are being reared.

Where trees occur along the dams, often they give but very insufficient accommodation for bird life, being too large and scattered to be of much use to the smaller kinds ; and across the mass of the cultivation the distances are too great to allow of much close scrutiny of the higher canes. Closer and more bushy growths are essential to secure the presence of the smaller kinds, which are of so much importance in dealing especially with the moths of the small borer. The wrens, the rootie, the cotton bird, the smaller kiskadi, the solitary shrike (flycatcher) and others, moving about among the grass and bush on the dams, and about the cane-fields, disturb and secure numbers of these little pests, besides others ; but scarcity of suitable shelter and cover renders their help but of the smallest , compared with what it might be.

However efficient the catching of moths may be by gangs or lights, or the cutting out of borers, with other remedial measures, it can at the best be but an incomplete control; and considering the heavy expenditure incurred, it is obviously the wisest procedure to bring into fullest operation the greatest natural assistance in protecting the cultivation from the attacks of such pests. The ravages of the small moth-borer are sufficiently serious already : the added danger from the giant moth-borer, especially considering its rapid and wide distribution over the estates generally, and its sudden and severe development, surely calls for such action.

A list of the Insects and Birds referred to.

Giant moth-borer	*..Castnia licus*
Small moth-borer	*..Diatræa saccharalis*
Weevil-borer	*..Sphenophorus sericeus*
Mealy-bug	*..Pseudo-coccus calceolariæ*
Frog-hopper	*..Tomaspis sp.*
Small hardback	*..Dyscinetus bidentatus*
Larger hardback	*..Ligyrus ebenus*
Cocoa-nut root-borer	*..Strategus alæus*
Rough root-borer	*..Phileurus bajulus*
Gru-gru	*..Rhynchophorus palmarum*
Common barred chicken-hawk ..	*..Rupornis magnirostris*
Cream-headed chicken-hawk ..	*..Milvago chimachima*
Criketty-hawk	*..Rostrhamus sociabilis*
Red crab-hawk	*..Busarellus nigricollis*
Common kiskadi	*..Pitangus sulphuratus*
Smaller kiskadi	*..Pitangus lictor*
Solitary tyrant-shrike	*..Tyrannus melancholicus*
Common muff-bird	*..Elaenia pagana*
Old wife	*..Crotophaga ani*
Common wren	*..Trogl dytes furrus*
Rootie	*..Synallaxis guianensis*
Cotton-bird	*..Fluvicola pica*

KAIETEUR FALL, POTARO RIVER.

A VISIT TO THE KAIETEUR FALL.

By Sir T. Crossley Rayner, K.C., Attorney General.

Comparatively few people outside British Guiana have ever heard of the Kaieteur Fall, in spite of the fact that the Encyclopædia Britannica calls it the "celebrated Kaieteur Fall," and I must confess that I had never heard of it before I came to the colony. But from the time I first heard of it, I cherished a great desire to see it, but the opportunity did not come till September last year, when I made the visit of which I have been invited to give an account in the pages of "Timehri." Although Kaieteur was discovered forty years ago, it is so inaccessible that not many more than fifty persons in all have ever seen it, and as not more than half a dozen of these have ever written any record of their visit, it is small wonder that the world at large knows so little of the scene of marvellous beauty locked up away in the innermost recesses of the only British possession in South America.

The fall is one of the largest in the world having a clear drop of 741 feet and then 88 feet over a sloping rock at the bottom, or a total height of 829 feet, five times higher than Niagara, though not nearly so broad, being from 350 to 400 feet wide, according to the season of the year. It is situated in the Potaro River, and is about 200 miles from Georgetown. The name "Kaieteur," or more properly "Kaietuk" is an Indian word meaning "Old Man Fall," and the name is derived from the fact that formerly it was the custom of the Indians in that part of the country when their old people got too feeble to work and became a burden on the tribe, to put them in a canoe with some food and set them adrift on the river to go over the fall.

The other members of the party with whom I went to Kaieteur were Mr. Fowler, the Commissioner of Lands and Mines, Mr. Buxton, the Governor's Private Secretary, and Mr. Wickham, the Warden of Potaro, who joined us at Tumatumari. We left Georgetown on Monday, the 12th of September, 1910, at 8 a.m., going by steamer up the Demerara River to Wismar, thence by rail across to Rockstone on the Essequebo, where we stayed the first night. As this part of the journey is well known, I will not weary my readers by describing it, suffice it to say we arrived at Rockstone about 6.15 after a very comfortable and pleasant journey, having traversed 73 miles of the distance to Kaieteur.

Next morning, Tuesday, the 13th of September, at 6.30, we started on the second stage of our journey which was up the Essequebo to the mouth of the Potaro and thence eleven miles up the Potaro to Tumatumari. We travelled in Sprostons' launch, or rather in the "Ark," a large flat boat, kindly placed at our disposal and towed alongside the launch. Rockstone is 73 miles from the sea, and at this part the Essequebo is nearly three miles wide and is covered with forest trees to the water's edge. For the first hour we were passing Gluck Island, an island seven miles long and from one to two miles broad, and it is on this island that the beautiful Victoria Regia lily is said to have been first discovered. There are some hundred of islands in the Essequebo in its course of over 600 miles, and we passed several in the course of the day. So wide is

the river in many parts that we seemed to be passing through a series of lakes, rather than along a river, each bend in the river closing in the view and showing a vast lake-like expanse of water. It was intensely solitary, quite unlike the Demerara River we had traversed the day before, where houses, churches and plantations succeeded each other in rapid succession. But on the Essequebo there was no sign of human life beyond an occasional hut or Indian settlement, and the only traffic we saw on the river all day was the launch which had gone up the day before returning, and two boatloads of balata-bleeders going up to the Rupununi. About five o'clock in the afternoon we arrived at the mouth of the Potaro, where we found Mr. E. R. Davson, who was returning from his gold concessions in the Konawaruk, and who went on with us to Tumatumari for the night, returning in the launch next day *en route* for Georgetown.

The water in the Essequebo was very high, and the current being consequently very strong against us, we did not reach Tumatumari till after 7 o'clock, two hours later than usual. Here the river races over a cataract a quarter of a mile long over which no craft can pass, and boats ascending the river have to be portaged round it. Though the Essequebo was so high, we found the Potaro was low, and half the width of the cataract was bare rocks, strewn with huge boulders, some of them as large as a house, many of them with large " pot-holes " in them, worn in the rock by a pebble being swirled round and round by the force of the water.

At Tumatumari we were joined by Mr. Wickham at whose house we spent the night. Next morning, Wednesday, we started from a landing above the falls in a small launch for Potaro Landing, twelve miles from Tumatumari, the furthest point to which there is regular communication, and which we reached about half-past eleven. We were now only about 35 miles from Kaieteur, but that 35 miles is the difficult part of the journey.

From here we travelled in a " tent boat " paddled by Indians. Above Potaro Landing there are several rapids and falls one of which, the Pakatuk, is impassable and boats have to be portaged round it. To avoid delay our boat had been sent on ahead and was to meet us at Kangaruma, above Pakatuk. About one o'clock we started for Kangaruma on foot. For the first two miles we went along the Konawaruk road, and then we struck into the forest along a bush trail. The mid-day sun had been intensely hot on the road and the shade of the forest was delightful after it. The path, if path it can be called, was very rough, and in parts very steep, going over stones, fallen trees, and roots and crossing streams, bridged by a tree trunk, some slimy and not too thick, making us, whether we liked it or no, emulate the feats of a tight rope walker. In places we had to force our way through creepers and dense undergrowth, which almost obliterated the path, for the trail is little used. It was hard going especially to us used to the flat streets and hard pavements of Georgetown. Two hours of this brought us out on the Potaro River again at Kangaruma, nine miles above Potaro landing, for the river makes a wide bend in this part of its course. Here we found our boat, but as it was now three o'clock and we were all tired we decided to stay there for the night.

Our boats hands had already erected a temporary shelter, covered with waterproof canvas sheets, under which we slept in hammocks.

Next morning, Thursday, we started at half-past six and began our boat journey up the Potaro. After four hours paddling we arrived at Amatuk, where there is a fine waterfall over thirty feet high where the river suddenly narrows and rushes and boils over the rocks with great violence. Here we had to portage the boat, an operation I now saw for the first time. The baggage, awning and all the fittings were first taken out, and carried over the "portage," a narrow path cut through the forest round the fall, about half a mile long. Then the boat was hauled out of the water and dragged along the path, which in one part went up for some distance at an angle of at least 45 degrees. When I say that the boat carried besides our four selves, ten boat-hands, a steersman, and my servant who acted as cook to the expedition, sixteen in all, besides all our baggage and food for ourselves and men, for nothing can be got on the way, it will be understood that it was not a small boat, and unless I had seen it done, I could scarcely have believed it possible to get the boat over. It took three-quarters of an hour to portage the boat alone, and including breakfast, it took us over four hours to get past the fall. It was three o'clock before we were off again and after an hour's pulling we decided to camp for the night at the first suitable place. As the banks of the river in this part are high and steep it was some time before we could find a suitable place, but eventually we found a spot where the banks were lower, and pulling in the boat we soon clambered up on to the bank, which was covered with dense bush. Our men soon made a clearing and prepared our camp and in less than an hour two canvas-covered shelters were erected and our hammocks slung under them. We had dinner before it was dark, and by the time our friends in Georgetown had finished theirs, we were asleep in our hammocks.

Next morning before day-break I was awakened by a frightful noise which sounded like the death agony of some animal caught by an alligator, but which I was told was only the howling of baboons in the forest. We were up at 5.30, camp was struck and we were away again by 6.30. The river was very beautiful for we had now entered the Kaieteur gorge. The country here rises about 1,000 feet and forms a vast tableland, through which the Potaro flows, falling over the edge of it at the Kaieteur and continuing its course along a narrow V-shaped gorge, which looks as if it had been scooped out of the tableland by the river. The mountains rose steeply on either side of us, covered with trees from the top to the bottom. It was very misty and until the sun gained power we saw very little as if nature, jealous of our intrusion into her solitudes, veiled her beauties. The river now began to narrow, and at one place we went through a rapid, too strong to paddle through, and the men had to get out a rope and tow us through. After three hours we reached Waratuk where there is a cataract, but not too high for the boat to get over, but too dangerous to go through fully loaded. It was therefore partly unloaded and then hauled through, while we walked round. This and breakfast took a couple of hours and then we started on the last part of our boat journey. About half-an-hour later we got our first view of Kaieteur about ten miles away. It does not face the river, but comes over to the right of it so that all that can be seen from this point is a triangular corner at the top. Every now and then a cloud of mist rose and covered it. It was only visible occasionally as the bend of the river cut off the view at intervals. The river

had now become very beautiful, the mountains closing in on each side, and being very precipitous, and in parts the bare face of the rock showed out among the trees, which seemed to grow wherever there was the smallest foothold. Many of these bare patches of rock looked like solid masonry, the illusion being helped by the strata of the sandstone, which is here the geological formation, showing out like courses of masonry, and it needed little imagination to see in fancy large mediæval castles on the heights above us. In one place the illusion was almost startling for the bare rock came out in two semi-circular masses which looked like massive towers, while the cracks and weather-marks in its face looked like windows and loop-holes, and the illusion was further enhanced by a large cave, with a crust of flat rock over it, just below the towers which looked like the entrance to the castle. Another feature of the river was its absolute solitude, there was no village or hut and the only sign of human life we saw after we left Potaro landing were two Indians, an old man and a boy, in a woodskin.

About 3 o'clock we arrived at Tukait, the nearest point to which a boat can approach the fall, the river from that point being broken up by a series of impassable cataracts and rapids. Here we camped for the night.

Next morning, Saturday, about 7 o'clock we started through the forest for the top of the fall. Four miles over a very rough undulating track which crosses two or three large streams brought us to the face of the tableland which towered almost perpendicularly above us and up which we had a long and weary climb, over rough stones, fallen trunks and tree roots from which the rain had washed away the soil. Near the top we came on to more or less level ground, and passed some enormous boulders, which, as the earth is gradually washed away, will some day roll to the bottom and help to make another cataract in the Potaro River. In three and a half hours we reached the top of the plateau which is quite flat and in parts is bare rock, with nothing but cactus growing in the crevices. There is, however, a thick belt of forest at the edge of the river, through which we made our way and suddenly we came out on the edge of the ravine with one of the most glorious sights in the world spread out before us. Half a mile away Kaieteur rolled sheer over a precipice into a great semi-circular chasm, the bottom of the fall invisible in the clouds of spray, into which the water was broken by its long fall, while every now and then a cold blast of wind blowing up the ravine filled the chasm with mist which rose high above the top of the fall. Away behind it flowed the Potaro over the vast plateau between its forest-clad banks while far off in the distance could be seen the blue outline of another range of mountains stretching away into Brazil.

Words fail to convey any idea of the almost awful grandeur of the scene. Nature is here seen in one of her most majestic moods, the absolute solitude, the intense stillness broken only by the sound of the falling water, produces upon the spectator a feeling akin to awe.

After spending some time at this spot we made our way through the forest belt to the head of the fall where we spent the next twenty-four hours, camping for the night a short distance from the edge of it,

The fall rolls over into its huge basin slightly to one side, and not quite in front of the river, which from here can be seen winding along at the bottom of the deep V-shaped gorge, looking from the great height at which we stood like a little mountain stream flowing quietly on, its surface occasionally broken by the pebbles in its bed. But powerful field glasses revealed that the breaks were great cataracts and the pebbles huge boulders the size of a house. At the foot of the fall the sun shining on the spray formed a rainbow, not standing erect, but lying flat down in the basin, its semi-circular arc encircling the fall, and adding greatly to the beauty of the scene. Behind the fall could be seen the black opening into a great cave, in which thousands of swifts find a home, and later in the afternoon we saw crowds of them returning, circling for some time over the fall, and then in parties of ten or twelve suddenly dropping like stones into the chasm, and then flying up behind the fall into the cave.

One thing struck me particularly, that considerable as is the noise of the fall it is nothing like the deafening roar that one would expect. But the explanation seems to be that by reason of its great height the water is broken up into spray by the time it reaches the bottom. Were the fall only a half or a quarter its height, and if the water fell as a solid mass into the basin below it, the roar would be much greater.

On our way to the fall we came across a party of half a dozen aboriginal Indians on the plateau. Later in the day they came and visited us at our camp, and squatting on the rocks above the fall certainly added to the wildness and picturesqueness of the scene. They were quite naked except for a small apron ornamented with beads and the women had pins, the points outwards, through a hole in the lower lip. As absolutely uncivilized Indians are nowadays rarely seen except in the very far interior, and as none live anywhere near Kaieteur we were fortunate in coming across them. They had come from a long distance and were journeying down the river.

We slept that night at the fall. It happened to be full moon, but unfortunately it was a cloudy night, so we missed the full brilliance of the scene we had hoped for.

But waking up about 2 a.m. I got out of my hammock and went and sat for some time at the edge of the fall. The scene was quite different to what it had been by day, and was weird in the extreme.

The great chasm into which the fall dropped, and into which the moonlight scarcely pene rated, now looked black and forbidding, and was filled with mist which continually rose high above the fall, and with the ceaseless roar of the falling water, involuntarily reminded one of a gigantic seething cauldron, which set down as it was in one of the loneliest and wildest spots on earth was such as some titanic witches in Macbeth might have used. Occasionally or a few seconds at a time the moon emerged from the clouds and shining on the river made a scene of indescribable beauty.

At such moments the contrast between the peaceful moonlit river above the fall and the great black boiling chasm into which it fell was striking and almost startling. It was a scene of such weird beauty as one can never forget.

Next day was Sunday and surely no mortal worshipped his Creator that day in a more splendid fane than we in that magnificent cathedral of nature. We spent the morning viewing the fall from every point near-by where we could get a glimpse of it, and at mid-day we reluctantly bade it farewell and commenced our return journey. We were two hours and a half in descending the plateau to Tukait, where we found the Indians we had seen the day before, with a few others who had joined them, making about a dozen in all. We left Tukait that afternoon and camped at Waratuk, and next day we reached Kangaruma, returning more quickly than we came as we had the stream with us. From Kangaruma we walked in to Potaro Landing, where we once more got into touch with civilization in the shape of Sprostons' launch, and two days later we were back in Georgetown. The trip took eleven days in all, and I believe it has never yet been done in less time.

No one who has not seen it can have any real idea of the majesty and beauty of Kaieteur, and I hope that the time is not far distant when facilities will be given which will enable it to be reached in less time and at less cost than is now possible. Two of those who have seen both Niagara and Kaieteur say that Kaieteur is the finer sight, and when one reflects that more people see Niagara in half-an-hour than have ever seen Kaieteur in the forty years since its discovery, and that people would as readily flock to Kaieteur as to Niagara if it were as easily accessible, this colony should realize, that to put it on the lowest ground, it has a splendid commercial asset in the Kaieteur Fall.

HEVEA RUBBER PLANTATION.

THE INDIGENOUS "RUBBER" TREES OF BRITISH GUIANA.

By F. A. Stockdale, B.A., F.L.S.,
Assistant Director of Science and Agriculture,
and Government Botanist.

In the earlier numbers of 'Timehri,' Mr. Jenman gave accounts of some of the latex-producing trees of British Guiana. Since these articles were published further information has been obtained and as there have been during the past year frequent enquiries in regard to the indigenous "rubber" trees of the colony, it seems desirable that our knowledge of them at the present time should be placed on record. There are still many details that are required, but if this brief survey, chiefly from a botanical standpoint, does no more than awaken a keener interest in a subject in which there are still many "gaps" its object will have been attained. An exact botanical knowledge of the different species of Hevea found in the colony is yet required, while further information in regard to the yields and distribution of the different species is desired. Many details in regard to the different species of Sapium are still wanting, and data in regard to the products obtainable from the lesser known latex-producing plants are very scanty.

Rubber of commercial value is obtained from different species of Sapium, but the products yielded by the indigenous Heveas have so far been found to have but a very low value on the market. Some samples have been valued at a price that might be considered commercially if the yields from the trees were satisfactory, but it is just here that fuller information is most desirable. Material for examination is being collected as opportunities offer, but much yet remains to be done

Local Heveas.

The species of Hevea recorded from British Guiana are *Hevea Spruceana*, *H. pauciflora* and *H. confusa*. In the previous articles in 'Timehri,' Mr. Jenman described what was supposed to be *Hevea Spruceana* and in reports to the Government gives some account of its distribution and yields. From a large amount of herbarium material sent to the Royal Botanic Gardens, Kew, in 1899 and 1900 by Mr. Jenman, there seemed to be some doubt as to whether *Hevea Spruceana* really existed in the colony and the authorities referred the material sent as *H. Spruceana*, to *H. pauciflora* and *H. confusa*. The only specimens of *H. Spruceana*, not referred to other species yet, in the British Guiana Herbarium were collected by Mr. Jenman on the Essequibo river in 1886.

Hevea Spruceana is a Brazilian species, and is described as a tall tree with large smooth, distinctly petiolate, leaflets of a papery or subcoriacious character. The leaflets are ovate-lanceolate and generally of greatest breadth near their basal ends. The petioles have only two-glands at their apices. In this character *H. Spruceana* differs from the other species of Hevea of the colony, as they usually have three or four glands. The female flowers are few in number while the male flowers are very numerous and small.

During the past two years specimens have been obtained in the colony that approximate very closely to *H. Spruceana* in character, and the investigations that are now in hand will doubtless determine whether or not this species exists in British Guiana. The fruits of *H. Spruceana* have not been described, but those of the species found in this colony, apparently very closely allied to it, have large fruits—the seeds being considerably larger than the seeds of *H. brasiliensis*. These seeds are usually long and narrow while the upper surfaces are distinctly rounded. This species (supposed to be *H. Spruceana*) is in cultivation in some situations in the colony.

Hevea confusa is the most widely distributed of our local Heveas. It was first collected by the Schomburgks and abundant material was obtained by Mr. Jenman from the Mazaruni and Essequibo rivers. Seeds distributed to foreign Botanical Gardens have been germinated and this species is represented in several of them. It is also being grown in three localities in this colony, and an opportunity was recently offered to investigate the product of this tree under cultivation. It grows to 60 feet in height, and the bark is smooth except for a few short blunt spines. The leaves are smooth and the petioles are long. The petioles are surmounted at their apices with three or four glands and the leaflets have their greatest breadth about three-quarters the way up. The flowers are few in number and the ovaries are smooth. The fruits are believed to be smaller than those of *H. Spruceana*, but the seeds appear to be relatively larger than are the seeds of *H. brasiliensis* and are truncate. The original papers of Mr. Jenman on the "rubber" trees of the colony, in which he drew attention to the large number of "hatties" scattered throughout our forests and suggested that the "rubber" might be of commercial value, gave the identification as *H. Spruceana*, but it is now generally conceded that the trees to which he was referring were generally *H. confusa*.

H. pauciflora is scattered through our forests and is common in the Pomeroon. In its botanical character it differs but little from *H. confusa*. Its leaves are usually thin and have their greatest breadth about half way, while the seeds are small and rounded. The ovary is hairy. There is reason to believe that the differences, given above, between *H. pauciflora* and *H. confusa* are not constant and that they may really be variations of a single species, but until complete material has been obtained and carefully examined no definite conclusion can be arrived at.

Samples of the "rubber" from the different local heveas have been obtained from time to time and submitted for chemical analysis. All the samples have been of high-resin-content, and were of little or no commercial value. The yields of individual trees are usually small, and from the recent tappings of cultivated trees of *H. confusa* both in this colony and in Jamaica it appears that the yields are no greater under cultivation than under forest conditions nor is the product of any greater value. The latex is slightly yellowish in colour, and coagulates slowly. The product obtained is a highly plastic mass, to a large extent devoid of tenacity and showing an almost complete absence of nerve. Pure "rubber" separated from it has the same characteristics.

Recently specimens of leaves of another hevea have been obtained from the Potaro district. These differ in character to any of the heveas above described.

The leaves are usually thin and have distinctly purplish-red under surfaces. Small samples of the "rubber" that were obtained indicate that it is weak and resinous. The latex is however whitish and not yellow when first obtained. The product from this species appears to be more satisfactory than those obtained from the other local heveas, but what yields may be obtained have yet to be determined.

There is still considerable confusion between the different species of Hevea, and further collections of specimens in this colony are being made for examination. The question of the distribution of heveas in the colony is also a matter of interest, and it is hoped that more people may be interested in obtaining specimens and sending them for examination and record.

Sapiums.

All the specimens of Sapiums sent to Kew for identification from this colony have been referred to three species, but recently material representing apparently two other species has been obtained. *Sapium aucuparium* is the common "gum" or "bird-lime" tree of the coastal region, and often reaches a considerable size. The leaves are usually large and have serrated edges. The petioles are of a reddish tinge, and the two glands at the bases of the leaves are large and thick, turned to the under surface of the leaves. The apex of the leaf is bent over to form a hooked gland, although on many leaves this distinctive character is frequently wanting. The fruits clearly show three divisions and are usually about half an inch in diameter. They contain three seeds which are covered by red arils. The seeds are about a quarter of an inch in diameter and are covered with tubercles. The latex of this tree is yellowish in colour and is very resinous. It does not coagulate readily, and the gum that can be obtained from this species of Sapium is only small in quantity and of no commercial value.

Sapium Jenmani is common in several districts of the colony and grows to considerable size. It is usually found most abundantly in forests of secondary growth, and would appear to be only sparsely scattered in original forest. It is not found on the coastal lands of the colony. The leaves of this species vary considerably in size. They usually have long petioles and end in long bluntly-pointed apices on which there are no glands. The margins of the leaves are not serrated but a few marginal glands can generally be found, while the blades of the leaves themselves are thickly covered with small transparent glands that may readily be seen when the leaves are held up to the light. The petiolar glands are very small and are generally obliquely placed. The flowers are in terminal spikes, the male flowers being numerous and near the apices while the female flowers are few in number and are situated near the basal ends. The fruits contain only one seed each. The seeds are liberated by the fruits splitting open into two halves when they are ripe. The valves fall away and leave the seed hanging from a curved axis.

In 1883, Mr. Jenman gave in "Timehri" his accounts of Sapium rubber, and it is generally believed that a large proportion of the rubber exported from the colony is obtained from this species of Sapium. The rubber when carefully prepared is of high quality, and experiments are now being conducted with a view to ascertaining what yields may be expected from this rubber-producing

tree. So far, results have been obtained from forest trees, and whereas the yields of the first tappings were fairly satisfactory, subsequent tappings have not yielded so well and some of the rubber obtained has been "tacky." From the established plantations of *Sapium Jenmani* results should soon be obtained from cultivated trees of known age.

There is reason to believe that there are several varieties of *Sapium Jenmani.* A pink tinged petiolar kind and a green petiolar kind are common. Rubbers from these different kinds have not yet been collected separately for scientific examination. The Indians also appear to recognise two different kinds of *Sapium J-nmani,* but whether these represent simply varieties or not has yet to be determined.

What appears to be another distinct species of Sapium, but slightly differing from *Sapium Jenmani,* has recently been obtained from the Essequibo district. It appears to be common with *Sapium Jenmani,* and it is almost, if not absolutely, impossible to distinguish between it and that species until it is in fruit. The leaves are practically identical with those of *Sapium Jenmani* in shape and texture, but the male flowers are borne on single terminal spikes with no female flowers situated at the basal ends. After the male flowers have all opened and fallen, the greater portion of the spike falls and two lateral buds elongate into two short spikes bearing the female flowers, the result is that the fruits of this kind, instead of being borne on a single "stalk" as in the case of *Sapium Jenmani,* are produced on two "stalks," so that the fruiting branch is a branched one. This species is common in some of the cultivations in the North Western district. Rubber has been obtained from it from Fort Island, and further samples have recently been procured from some trees at the Bonasika Rubber Reserve where it is found amongst *Sapium Jenmani.* It would appear that the rubber from this species is equal in quality to the rubber of *Sapium Jenmani* but the question of relative yields has yet to be investigated.

Sapium (?) *paucinervum* was first found by Mr. Jenman in the Pomeroon in 1886, but has subsequently been noted in various other districts. The tree is a large one and the leaves are broader than are the leaves of *Sapium Jenmani.* The edges are serrated and the lateral veins are irregularly distributed and rarely exceed more than 10 pairs. The apices of the leaves are blunt and are not hooked, but the petiolar glands are situated on a long curved stalk which is narrowed at the base. The flowers are unknown, but the fruits show three divisions clearly and are about $\frac{3}{8}$-inch in diameter. The seeds are about 3-16 inch in diameter and are slightly rough. This tree is associated by the Indians with *Sapium Jenmani,* but the value of its "rubber" has yet to be ascertained.

Other Latex-Producing Plants.

Forsteronia gracilis is a large woody "bush-rope" widely distributed throughout the forests below a certain mean altitudinal range. The leaves are large, opposite and petiolate, while the flowers are found in terminal panicles, and the young shoots are characterized by numerous, well-marked lenticels. The latex runs freely when first tapped, but the flow rapidly falls off. A small sample of rubber was sent by Mr. Jenman for examination, but was

said to be very sticky. The rubber is reported to contain a large percentage of caoutchouc, but when the resins are removed it is recovered in a soft, sticky, unworkable condition, very similar to the pure "rubbers" obtained from *Hevea confusa*. The investigation of this plant does not appear to have been carried beyond Mr. Jenman's original enquiries.

Plumiera saccuba is found scattered throughout certain districts of the colony, and is generally known in the forests under the general term "maboa." It grows into a fair sized tree and has large simple leaves, and fragrant yellowish-white flowers. It produces, at certain times, a fair quantity of latex, which appears to be resinous in character. An examination of the latex and of the final product that can be obtained from it has yet to be undertaken.

Numerous species of Tabernaemontanas abound in the colony, of which *T. utilis*, *T. rupicola*, and *T. undulata* yield latexes from which rubber-like substances can be procured. These products appear to be resinous but are worthy of further investigation. *Tabernaemontana utilis* is known as the cow-tree and to the Indians as hya-hya. This last term however appears to be a general one as it is applied by the Arawacks to *Sapium Jenmani*.

Another tree that produces latex, from which can be obtained a sticky, resinous substance is known to the Indians as barta-balli. Samples of the "rubber" obtained by Mr. Jenman were reported upon as being of no commercial value, being soft and sticky. The botanical determination of this tree has yet to be made.

MAHOGANY.

By Rev. James Aiken.

"Spanish Mahogany,"—even about the word itself there is a resonant solidity that has in it elements of romance. The sound of the name calls up pictures of generous boards and the play of light mingling with warm deep tones when the crystal and silver were reflected from the polished surface suggesting the depths of some dark forest pool in the tropic land in which the timber had its home. "Walnut" and "rosewood" leave us cold and unmoved, their associations are frivolous in comparison, speak rather of the salon and the drawing-room and lack the suggestions of domesticity which make the deepest appeal to the phlegmatic soul of the Briton. It is a household word. There may be some who would confess to uncertainty about the difference between pitch pine and red, or maple and satinwood, but none so uninstructed as to be "no judge of mahogany." There are woods rarer and more beautiful or tougher and more durable, but none so perfectly adapted to a hundred domestic uses or more gratefully responsive to the loving manipulation of the skilled workman's hand. Even the difficulties of counter running and twisted grain, curls and pick up patches are just so many challenges to skill which spur it on to the finish with which we know the wood will reward the patient craftsman.

The interest of "Timehri" in the wood has its source in our possession of an indigenous timber of the noble family to which the mahoganies proper belong. I suppose that every reader knows that the West Indies is their home. The Spaniards on their arrival in these regions found it plentiful and gave to it its earliest name of Cedra or Cedrela, and by the name of cedar it was known for the best part of a century. The first appearance of the name "mahogany" occurs in Ogilvy's America in 1671, but the name of cedar, misleading as it is on account of its confusion of a tropical tree with an Asiatic plant of the coniferous order, was still applied indifferently to all the West Indian red-woods, soft and hard, for many years after. W. Stevenson in "Trees of Commerce," quotes from "The Mahogany Tree" Captain Dampier's reference in 1681 to cedar. "We reckon," says he, "the pereagos and canoes which are built of cedar the best of any."

In 1724 it was known as a furniture wood in London, and in 1750 Chippendale was famous in the production of those perforated, carved back, ball and claw-footed chairs which make his name a household word.

One of the romantic stories of mahogany is the tale of a cabinet-maker who, at the end of the eighteenth century, bought at Hull an old ship entirely built of mahogany, broke her up with care for the sake of the fine character of the wood and, from the sale of the material to the furniture trade, realised a sum so handsome as to set him up in a timber importing business which flourished throughout the nineteenth century.

Nor are the stories of great fortunes made out of single logs of this timber without foundation. In 1860 a log of San Domingo wood was sold by Messrs. Chaloner & Co., at Liverpool, at over 28 shillings per superficial foot of one inch, that is about $74 per cub. foot. Messrs. Farnworth & Jardine in 1901 sold a log of Cuba mahogany 18ft. 6in. long and 31in. deep at the butt for £761 10s. sterling. In 1903 Messrs. Chaloner & Co. sold three logs cut from one tree of African mahogany shipped at Grand Bassam for the colossal sum of £3,: 29 13s. 3d. sterling, an average rate of $2.16 per ft. superficial, or over $25 per cub. foot. Last year at Liverpool another African log was sold for £1,025 sterling, the invoice working out at $2.40 per ft. superficial. These great prices are mostly given by American buyers for veneering purposes in which " figure " of course is a paramount consideration. Coming to more prosaic levels, the average prices of the auctions sales last year ran for Cuban, San Domingo and Benin mahogany about 10 cents per ft. superficial, the Cuban and San Domingo logs being mostly small stuff about 13 to 16 inches at the butt. African mahoganies other than Benin of which large numbers of logs were sold brought about seven cents per ft. superficial. Some of the Benin shipments, it may be remarked, were recorded as round logs, and it seems that a good deal of timber from various sources is sent to market in that condition. The so-called Indian mahogany, Padouk or Andaman Redwood. (*Pterocarpus indicus Willd*), in reality a leguminous tree, when of good colour, seems to average about 4s. to 4s. 6d. per cub ft. As we shall not have to refer to them again we may mention at this point a few other woods known commercially as " mahogany " but belonging to other orders, such as the Australian mahoganies, Jarrah, Water Gum and Forest mahogany, all of them Eucalypti, and Natal mahogany, one of the Bixineas. It will thus appear that ' mahogany of commerce ' is a large term covering woods of at least four totally separate orders and many different species. Indeed, in dealing with some of the African mahoganies, we will see that included amongst these also are woods of species unascertained which are certainly not mahoganies in the botanical sense.

It is only within the last year that one could distinguish with certainty the timbers that are marketed under this name. Writing in 1905 Mr. Herbert Stone says in " Timbers of Commerce :" " I know of no convincing proof that any of the American kinds met with on the English market are the wood of Swietenia mahogani nor that those shipped from Africa are the wood of Khaya senegalensis." Two series of specimens with claims to authenticity were then known, those at Kew and Nördlingers. On examination of these Mr. Stone found that neither the specimens of S. mahogani nor those of K. senegalensis in the least resembled the trade specimens he had collected of American and African origin.

The uncertainty was deepened by the inconsistency of all with Gamble's description : " Annual rings marked by a continuous line of pores with few or no pores in the Autumn wood," which characteristic, Mr. Stone points out, is found only in some of the softer cedars such as Mexican. It thus comes about that mahogany, the most widely known of timbers, was the least accurately known of any. Mr. Stone's determined efforts have, however, been fruitful and we are now in a happier position. In a letter to me dated June 30th, 1910, he

writes : " I am sending by same mail, two specimens No. 2643 Swietenia mahogani Jacq. and No. 2788 Khaya senegalensis, A. Juss. The former is a piece of the sample sent me by Professor John Gifford, of Cocoanut Grove, Florida, who also sent me some of the leaves. The latter I received from the Imperial Institute. I do not know the name of the collector but it was the Government Botanist of Southern Nigeria. Its local name is ' Ogwango.' I have had the same wood from Lagos under the name ' Oganwo ' and another called ' Bele ' and properly authenticated as Khaya from the Sudan." The tree of S. Mahogani from which the specimen referred to was taken was planted, cut down and botanically identified by Professor Gifford so that there is no doubt of authenicity or of the correspondence of timber and botanical specimens.

With these authentic specimens in hand it is possible to determine the genuineness of timbers pretending to the name of mahogany, though it must be observed that other species of the order Meliaceae have a good claim to be known as such. An interesting point arises here. Our grandfathers' esteem for the wood was mainly on account of its " warm " colour, while most of the old furniture mahoganies I have met with are of a shade that inclines rather to dark and cold and it has become customary in the trade to stain furniture made of so-called mahogany to this very dark shade in which all warmth is entirely lost, whatever its native colour may have been. Now the hand specimen of S. mahogani in my possession has exactly the tone which with clear polishes would show to perfection the warmth which was in former days so highly prized, and which we may mention in passing is a feature of some well-grown varieties of our crabwood when properly finished and polished. In re-working some old nearly black mahogany however I have found that the warm tone re-appears under the plane and, when repolished, the pristine beauty of grain and colour establishes the good taste of our ancestors, and condemns the black stain as a reprehensible fashion where really fine figured wood is in question.

True mahogany then is a warm red wood, tending to orange rather than brown, fine in grain and moderately hard, some pieces beautifully figured and susceptible of a sub-satiny finish under the plane. This description applies to *S. mahogani*. The African species, *K. senegalensis*, is opener in grain, lighter, nearer in colour and grain to good specimens of our colony cedar. Indeed I have before me some pieces of the latter which placed alongside of Mr. Stone's specimen of Khaya would lead one at a cursory examination to declare the two woods identical.

More technically the difference between true American and true African mahogany is chiefly shown in the characters of the rays. Mr. Stone relies, I think with good reason, on the tangential section to separate the species. " In Swietenia," he says in the letter above quoted, " the rays appear crowded, pushing aside the fibres of the wood like packing needles thrust through a bundle of tow. In Khaya they are linear and leave the fibres approximately parallel and while about the same width as those of Swietenia they are about three times the height. Khaya has two kinds of rays . . . the small rays are but few and will require the microscope and careful search. As in the Oak the cells of the large rays are filled with starch while those of the small ones are empty." In

specimens of local grown timbers I have examined I find that the *S. mahogani* grown here corresponds absolutely in these characters with Mr. Stone's description and the specimen he sent me. It is well to emphasise this point that the identity of wood from *S. mahogani* trees is, judging by specimens of various age I have procured, never in doubt for a moment.

I am led, from various specimens of furniture wood examined and a specimen for which I am indebted to a Berbice cabinet-maker, said by him to have been taken from a tree which grew at the Colonial Bank in Georgetown, to believe in the existence in tropical America of a darker mahogany closely related to Swietenia but much more common. I have not yet been able to find in old furniture here a single bit of true mahogany in all the numerous specimens I have examined. On the other hand I have in my own house an occasional table the wood of which is undoubtedly identical with the wood of the Colonial Bank tree above mentioned. This latter specimen is very dark, almost brownish black in parts, coarser in grain, much harder and the pores much larger than in *S. mahogani*, the surface of the planed wood without lustre, almost rough to the touch. In tangential section the rays appear of similar width to *S. mahogani* but one and a half times as high, less regular in alternation, and further apart not of two sizes or with only a ray here and there which seems aborted or may be the tapering end of a full sized ray, and with a tendency for successive ray to coalesce and form one very large ray ; sometimes observable as we shall see in *S. mahogani*.

One specimen of the latter kindly taken for me by Mr. Joseph from a tree in the Public Gardens, New Amsterdam, is from the stump of a limb about seven inches in diameter. It has about one inch of whitish sap well defined from the heartwood and deepens in colour towards the centre. The sawdust is light ochreous rather than red. Another specimen procured for me by Mr. Beckett from a tree at Pln. Providence is from a small branch and is, of course, young wood. It is interesting in that it displays the typical characters of the mature Swietenia beyond any doubt as to its identity. I should be inclined to describe the appearance of the tangential section of this species under the two inch objective as more like coconut matting than anything else. In the local specimens there appear under higher powers some aborted rays and a tendency here and there to a little irregularity in the alternate arrangement and to confluennce of two rays as if the longitudinal fibres had failed to hold their place between.

The nearest approach to *S. mahogani* in British Guiana woods is found in Cedar (probably *C. odorata*) in which the rays are farther apart but approximate in width and are only slightly greater in height. The cells in the rays are rather larger than those of mahogany, three or four diameters of a cell making the width of ray as compared with four or five in Swietenia. There is a strong similarity in size and distribution between cedar and the dark mahogany of which I have already spoken. Compared with cigar box cedars from commercial sources the colony cedar has in tangential section more the characters of Swietenia while the cigar box cedars approach nearer to the characters of our crabwood. The latter (*C. guianensis*) while in transverse and radial sections it presents the characters

typical of mahoganies and similar to the forementioned, differs considerably on close examination of the tangential section. The rays are much narrower and greater in height, not so close together and the pores are wider and more numerous. In other respects while different specimens vary within wide limits in weight, closeness of grain and colour, really good crabwood may be said to be darker than true mahogany, to have a pinkish rather than an ochreous tone, brownish red occasionally occurring, about equal in hardness, opener in the grain but taking a more satiny lustre from the plane, at least on boardwise or, strictly, tangential surfaces. Compared with Khaya crabwood is harder, much more lustrous and rather finer, and straighter in grain than my specimen of the former, which happens to show a twisted grain which may or may not be generally characteristic.

African mahoganies of commerce as I have indicated are of numerous species, and vary much in value. One sample called "Gaboon" and priced on the home market at 1s. 6d. per cubic foot is nearly similar to a good Dalli and inferior to any average sample of crabwood. In a letter to me, dated 28th June, Mr. Stone says that except Khaya "all the other African mahoganies are spurious and are for the most part entirely unlike any kind of mahogany, some being actually white." This is entirely consistent with my experience. In Edinburgh last year in a cabinet-maker's workshop I came across some timber which had been sold to him as mahogany but was more like a very soft Wooley of the colony, drusy in the transverse section, almost white in colour and with bad wind-shakes all through.

Another sample however of so-called "African," from trade sources also, shows up much better. The price paid for this log was, I believe, 4s. 6d. per cubic foot. It is not mahogany although the transverse section bears some resemblance to Mr. Stone's "Caoba" section in "Timbers of Commerce" in the distribution of the soft tissue, of which the arrangement is analogous to that in Hoobooballi (*Stryphnodendron sp.*) but is a fine deep-toned red wood, grainy in appearance, reminding me in this respect of our Determa, rather harder and finer in grain than crabwood. In tangential section the hatching of the pores, the different relation of pores and rays and the size of latter, varying in at least four degrees of height, separate it from the true mahoganies.

It may be remarked however that this latter feature of irregular height of pores is, according to Mr. Stone, a character of Bermuda, Honduras and Tobasco mahoganies (*vide* "Timbers of Commerce," p. 33.) and seems possibly to depend upon the length of the rays and their manner of pinching out, with gradual taper or abrupt.

It will thus be seen that the mahogany of commerce is, speaking generally, anything but mahogany, that what an expert Edinburgh cabinet-maker called the "rale auld mahogany" (it was really a fine dark piece of crabwood I was showing him) is, generally, not Swietenia but an allied species, and that on the whole the nomenclature of timbers of this class is among trade experts in a sad state of confusion.

A word in conclusion about the future of our colonial mahogany or crabwood, and cedar. Either of these woods may be classed for various purposes as equal to the best African timber. The complaint sometimes made of a tendency to

split in seasoning is without much foundation, at least I am satisfied that this tendency is not more marked in crabwood than in many other tropical timbers. In felling teak for example precaution is taken to ring the trees some twelve months before. In the case of certain timbers it is even necessary to allow them to stand in the forest as much as three years after being ringed. The real difficulty in establishing a market in the United Kingdom is in the existence there of large vested interests in the African and Central American forests, which make the people who control the trade indifferent in the meantime to supplies from other sources. It is true nevertheless that supplies are permanently short and that America is compelled to buy in Liverpool fine timber for veneering purposes which in some cases has had its origin in Central American or Mexican forests. It seems, however, to suit the interests referred to, to maintain these conditions and the only way to change their attitude is to pay the way in for our colonial article. This again depends on the possibility of showing such generous supplies and the ability to exploit them here as will maintain a reasonable volume of trade in logs of good size and quality. Judging by the averages in the Burmese teak trade probably not more than ten per cent. of the timber cut would be suitable for export, and on some such basis the volume of trade would require to be calculated. On the other hand in the colony at present there is no discrimination exercised by which timber of a high class may bring its value for ornamental purposes, and good, middling and indifferent lumber is sold by the mills at an overhead price. The prices that offer in the home market for really fine logs are however tempting enough to induce enterprise and intelligence to apply themselves to the commercial problems involved, and I have no doubt that by business diplomacy and tact allied with the necessary knowledge the difficulties alluded to may be overcome and Guiana mahogany become as well known in London Docks as the Axim and Benin marks.

RUBBER.

By Edgar Beckett.

Probably no agricultural product, within recent years, has ever attracted so much attention and had so catholic a consideration, as has the substance known as "India Rubber."

It is now quite one hundred and thirty years ago, that Priestley recognised the fact that rubber was useful for removing pencil marks, while brave old Columbus was probably the very first European who ever set eyes upon the now familiar balls of rubber, when he discovered the Indians at play in their leisure hours.

These observations, however, would have led to nothing were it not for Goodyear's discovery of vulcanisation; we owe a deep debt of gratitude to Goodyear, for there is not the slightest doubt but that for this discovery of his, the gigantic strides rubber production has made in the commercial and planting world, could never have been accomplished. It is a grand leap, from removing pencil marks to the International Rubber Exhibition to be held in 1911!

There has always been an air of romance wrapped round rubber. Here we have Columbus and other intrepid explorers, finding Indians playing at games with rubber balls, and to-day, after a space of over four hundred years, we may yet see Indians in the upper reaches of our rivers, using balls of *Sapium Jenmani* rubber in their games.

"Ball-play" has long been recognized as a form of amusement common to all primitive races.

Indeed, we think we are correct in stating, that it was this habit which attracted the attention of the late Mr. G. S. Jenman and Sir Everard im Thurn, and caused them to investigate the possibility of utilising this substance as a product of commercial value.

Again when we read the history of the starting of the rubber industry in Ceylon, it is as if one were perusing the pages of a romance rather than an account of a plain, prosaic, fact concerning the rapid rise of a commercial product.

The interest which we are now taking in the planting of *Hevea brasiliensis*, was started in Ceylon some thirty-four years ago, as is shown by the accounts given in old numbers of *The Kew Bulletin*.

The *Kew Bulletin* for 1876 mentions the fact that Mr. H. A. Wickham, of the Amazon valley, obtained a commission from the Indian Office to collect and bring to England seeds of *Hevea brasiliensis*. On June 14th, according to the same authority, this gentleman arrived in England with a collection of no less than 70,000 seeds, gathered by him on the Rio Tapajos. Of these, only 2,000 plants were raised by the Kew authorities, and these were despatched to Ceylon in thirty-eight wardian cases. During the next year one hundred more plants were sent to Ceylon, so that in 1877, there were but 2,119 *Hevea brasiliensis* trees on this island. To-day the botanical name *Hevea brasiliensis* is a familiar

household word, and seems to possess a magical interest which has never yet been associated with any other plant, so that it is verily a name to conjure with.

It is of great interest to read of the doubts and fears which possessed would-be planters of *H. brasiliensis* in the Old World. The following extracts, culled from the *Kew Bulletin* of 1893, show how small the promise of establishing a paying business was then apparent :—

" Dr. Trimen to Royal Gardens, Kew.

[Received February 6th, 1893].

" India-rubber (2lbs.) from Hevea *brasiliensis* grown in Heneratgoda Botanic Garden, Ceylon.

" The tree from which this was obtained is now 15 years old, and the stem has a circumference of 6 feet 5 inches at a yard from the ground. It has now been tapped three times and has given the following yield :—

In 1888 it gave 1lb. $11\frac{3}{4}$ oz.

In 1890 it gave 2lbs. 10 oz.

In 1892 it gave 2lbs. 13 ozs.

making a total of 7lbs. $2\frac{3}{4}$ oz. of dry rubber in five years. The tree is in no respect the worse for this treatment ; the rest in alternate years permitting the scars on the trunk to become completely healed " " (Signed) Henry Trimen."

The second extract consists of the report of Messrs. Hecht, Levis and Khan to whom the authorities of the Kew Gardens submitted this sample. It reads as follows :

" 21, Municipal Lane,
London, E.C.,
7th February, 1893.

" Dear Sir,—We have received your yesterday's letter, and also the sample of Ceylon rubber, which you have sent to us. The quality of this rubber is very good indeed, and the curing of the same seems to have been effected in a proper manner. This quality would be easily saleable, and we estimate its value to-day as being about 2s. 3d. to 2s. 6d. per lb., according to whether the rubber would be dry or damp. It would be easily saleable in *large quantities*.

" We return the sample to you, according to your desire.

(Sgd.) " Hecht, Levis & Kahn."

From these small experiments carried on and persisted in, with praiseworthy British pluck, has sprung the rubber trade of the East. The progeny from these trees have spread throughout many countries and have lived to be tapped by various races, possibly their descendants may yet survive to prove the salvation of this so-called " Magnificent Province."

What we would emphasise is the manner in which the Ceylon planter met the terrible fate which befell his coffee areas, the manly spirit in which he experimented with Ceara rubber (*Manhot glaziovii*) and the entire success with which his efforts with *Hevea brasiliensis* have been crowned.

One, at least, of our own sugar-planters, remembered the Ceara rubber experiments in that island, we refer to the late Mr. Henry G. Messervy, at one time Manager of Pln. *La Bonne Intention*, who used to delight in recalling his experience in filing the seeds of *Manihot glaziovii* (the Ceara rubber), an operation necessary for encouraging rapid and successful germination.

But if we are all indebted to Goodyear for his discovery of vulcanisation, we are no less indebted to Dr. J. C. Willis, Director, Royal Gardens, Ceylon, who, carrying on the experiments started by Dr. Trimen in 1877, with the trees at Heneratgoda, discovered that wonderful phenomenon known as "wound-response." It is this wonderful power which places the Para rubber tree (*Hevea brasiliensis*) in a class apart from nearly every other rubber-producing plant in the world.

Dr. Willis found that the Heveas, on their first being tapped, gave a small amount of latex as compared with other latex-yielding plants, but that on the old wound being re-opened, quite a larger amount of good latex was yielded, and that this increase in the flow of latex was even more marked on subsequent tappings. That is to say, if one were to tap some well-known rubber-yielding tree other than *Hevea brasiliensis*, the first incisions might yield some four or five times as much latex as that furnished by *Hevea brasiliensis*, so that, in the absence of any knowledge concerning wound-response, one would naturally conclude that the Hevea was the inferior. But if fresh cuts, a day or two afterwards, are made, either by shaving off the bark of the old wounds or making fresh incisions quite close to the first tappings, the result will be that the one tree will furnish little, if any, latex, all the lactiferous vessels having been drained on the first occasion, while in the case of *Hevea brasiliensis*, not only will there be a flow of nearly double the quantity of latex, but this increase will be continuous and very often in increasing quantities.

There does not appear, therefore, very much chance of other rubber-producing trees being able to compete with *H. brasiliensis*, though they may be commercially exploited with the price of rubber at its present rate. Presumably, when normal prices are reigning, such trees as *Castilloa elastica*, *Funtumia elastica*, *Sapium Jenmani*, *Manihot glaziovii*, and the various other rubber-producing trees, all of which do not appear to possess any indications of "wound-response," there will be small chances of their being cultivated with prospects of commercial success. At present any plant which yields commercial rubber will, naturally enough, have attention directed to it, and so we find Guyuale rubber (*Parthenium argentatum*), the latex of *Asclepias curasavica* and the latices of various species of *Manihot*, *Plumeria*, and other plants, of commercial value to-day, but the future of the rubber planter, because of "wound-response," apparently lies with the cultivation of *Hevea brasiliensis*.

Growers would be well-advised to trust to this plant, its extraordinary power of adapting itself to various soils and conditions apparently marking it out as an exceptionally safe investment to the intelligent and practical agriculturist.

There is evidently still room for a fuller microscopical investigation, in connection with the arrangement of the lactiferous system of *Hevea brasiliensis* and other "rubber trees," for the fact remains that, even with such trees as possess a

lactiferous system similar to *H. brasiliensis*, yet there does not exist this wound-response " phenomenon, which Para rubber alone appears to possess in any marked degree. It is, of course, quite intelligible how trees which have a system of ducts different from that of *H. brasiliensis*, do not show any indications of this power.

It is somewhat remarkable that, in spite of Mr. Jenman's pioneer efforts in connection with our local india-rubbers, in the early eighties, interest in this subject does not appear to have been excited to any extent, his efforts appear to have passed away with little comment. With the exception of the efforts of the late Sir Henry Katz Davson, Mr. Edward R. Davson, Dr. E. D. Rowland, the Rev. Jas. Aiken and a few others, there seems to have been little attempted to arouse activity in the possibility of planting rubber and the exploiting of our indigenous rubber trees and vines. The notorious rubber boom has, however, altered the complexion of affairs. The local history in connection with our own indigenous rubber trees, is of no little interest if only for the fact that it shows clearly how very often a subject can be opened up with every prospect of sustained interest, only to be closed again for a number of years until some further interest is awakened.

To Mr. Jenman is due the credit of calling attention to the *Sapiums* of this colony, one species of which still keeps his memory green in a world which too often is apt to illustrate Marcus Antonius' famous words on men's deeds :

" The good is oft interred with their bones."

Writing on the Balata industry for *Timehri* in 1885, Mr. Jenman thus referred to the now well-known *Sapium Jenmani* tree, the *Touck-pong* of the Caribs :—

" Two varieties of the Touck-pong I find generally and rather plentifully distributed throughout the region which I traversed (*i.e.*, the Canje river district). From one side of the colony to the other these seem to be very uniformly spread. They extend quite down to the estuaries of the rivers, and even along the coast region small trees and saplings springing up are found. In Georgetown and its neighbourhood this form is spontaneous, but all the specimens I have seen there are comparatively young trees as yet small. The trees on the coastlands and about Georgetown I have been able to identify as a form of touck-pong both by specimens obtained for me by Mr. im Thurn on the Pomeroon, where I originally became acquainted with the typical tree, and by the specimens I gathered on the Canje. Though very plentiful and generally and widely diffused, the typical tree is no where gregarious but grows dispersed . . . . . It yields true india-rubber as distinct from balata and gutta percha. *I had not the satisfaction to see a tree tapped in my presence*, (italics are mine), but the collectors informed me that its production of milk is about the same as that of the bullet tree. . . . . The growth is exceedingly rapid, so that it would be one of the best of the caoutchouc trees to cultivate for rubber. Both varieties flower in March and produce a plentiful crop of seed in April and May."

At that time the identification of *Sapium Jenmani* apparently had not been accomplished, for we find Mr. Jenman referring to this tree as *S. biglandulosum* : he continues ; " Yet judging from the leaf and fruit alone, Professor Oliver is

disposed to regard the Pomeroon touck-pong, as quite distinct, and possibly new to science. However, the touck-pong belongs to the great order *Euphorbiacae*—spurge worts,—not to *Moreae*, to which I conjectured, from a sight of leaves alone, in my former report that it might belong. In that report I mentioned cumakaballi as the Arawak name for this tree ; but from recent investigation I feel some uncertainty as to whether the touck-pong is really included with the several plants to which I find that name is applied both on the Pomeroon and Essequibo rivers. I am rather disposed to believe that it is not, from the fact, ascertained by Mr. im Thurn, that on the Pomeroon, the Carabisi Indians ascribe several plants, all, or nearly all, of which, are figs, to cumakaballi, while for *Sapium biglandulosum* or whatever it may prove to be, they use the term touck-pong specially. The Arawak Indians of that region call the latter hya-hya, but this further confuses the matter, as that is the Indian name of the cow-tree—*Tabernaemontana utilis*—which is quite a different thing and has no gum in its copious milk. Cumakaballi seems to be used in a generic sense to embrace, at least, all the larger growing species of fig trees, but apparently not the touck-pong." Some of the trees seen by Mr. Jenman on the Canje were seventy to eighty feet in height and three to four feet in diameter, and they were " in an advanced state of decay from over-tapping " and all the trees he came across had been tapped. It would pay exporters, Mr. Jenman said in effect, to keep the milk separate from balata, instead of selling it mixed with this product, when naturally it could not possibly be recognised by purchasers in England as a new and distinct rubber.

Mr. Jenman sent home a sample of Sapium rubber somewhere in 1884 or 1885, and it was " very favourably spoken of as to quality, and estimated as worth from 2s. 3d. to 2s. 6d. per lb., which is the highest estimated value that has been given by experts for any of the substances, balata or india rubber, produced by this colony."

It will be seen that quite an excellent opinion was formed on this sample, but it must also be noted that Mr. Jenman confesses in his report that he did not see the trees tapped himself, consequently we may safely presume that subsequent specimens of sapium rubber were obtained by Indians or others who, like the balata-bleeder of whom Mr. Jenman wrote, simply mixed the milk of many of the various cumakaballi figs which were found ready to hand with the latex yielded by *S. Jenmani*, which, as Mr. Jenman pointed out, was by no means " gregarious but grows dispersed, a tree here and there." The value of the Sapium rubber soon was depreciated, for we find Monsieur Henri Jumelle—Professor adjoint à la Faculté des Sciences, writing as follows on this large genus of the great Euphorbia family.

" *Sapium Jenmani* of British Guiana (the toukpong of the Caribs and one of the hya-hya of the Arawaks) discovered by Jenman in the alluvial forests of the Pomeroon, gives a useless product, depreciated by the quantity of resin which it contains." In a report on Mr. David Young's estate on the Aruka river, in the North Western District, which I furnished to this Government in February, 1906, and which was published in the *Official Gazette* of May, appears the following : " But can we be certain that in asking the Indians for rubber (toukpong or Hya-hya) Mr. Jenman really received the juices obtained from these *sapiums* ? It is

quite possible that the juices were from another hya-hya. The Arawaks call almost any tree that furnishes some sort of gum, "hya-hya," and, as a rule, have no idea of its value or otherwise. In the North West District, thanks to Mr. Young, they seem now to be taking a more intelligent interest in rubber-producing trees. With regard to Mr. Young's efforts in this direction I would most strongly advise him . . . . to plant in addition to the *sapium sp.* some of the well-known commercial rubber trees, such as *Hevea brasiliensis.* . . . . The whole question concerning the value of the rubber-producing trees of the colony is one well worthy of careful investigation. Valuable information would be forthcoming could some painstaking and energetic officer with some knowledge of plants and soils, be specially commissioned to investigate the question."

It will thus be seen that the question of the rubber trees of the colony practically was in abeyance from 1886 to 1906. In consequence of this report I was ordered to make an expedition to the upper reaches of the Pomeroon and Waini rivers during the months of June, July and August of 1906. In paragraph 8 of the report forwarded to the acting Director of the Department of Science and Agriculture I reported as under :

"This expedition has settled the question as to whether there are valuable rubber-producing trees in the colony—the answer being in the affirmative. There are several species of *sapium* growing scattered here and there in our forest which yield an abundance of latex forming good and valuable rubber. Another point of great importance which has been settled, is, that Mr. Henri Jumelle . . . . —an authority on rubber trees—is wrong when in his *Plantes à Caoutchouc* (p. 15) he speaks of *Sapium Jenmani* as being spoilt by the quantity of resin contained in the latex, giving a useless product. This is not so—the *S. Jenmani* I found in the upper Pomeroon yields commercial rubber. It is evident that, either by aboriginals or others, with the latex of this sapium had been mixed the milk obtained from several of our native ficus plants, such as 'Dukalaballi,' etc.

"Now my experience was that these ficus yielded no rubber at all but only a poor quality resin, and if mixed with the latex of any valuable rubber tree would naturally result in a useless product being obtained. These ficus are much more easily found and would, therefore, be readily tapped by Indians and others for adulterating purposes."

In the last few years more information in connection with the *Sapiums* has been obtained, though probably there is still a great deal to be learnt concerning this genus. For one thing, the tree which just a few years ago was considered to be *S. aucuparium* we now know, thanks to Mr. A. W. Bartlett, B. Sc., B.A., ex-Government Botanist, to be *S. Helmsleyana. S. biglandulosum* yields no rubber and is found growing commonly on our coastlands and in Georgetown itself. There is no doubt, however, but that there are, if not distinct species, several varieties of *sapiums* throughout the colony. The so-called *S. Jenmani*, which yields rubber, and is found growing on certain creeks of the Essequibo river, such as Arraquah creek, etc., do not, in many instances, closely resemble *S. Jenmani* and I have seen large numbers of *Sapiums*, on Liberty Island, the leaves of which are certainly unlike the true *Jenmani*, and was shown balls of

rubber such as is yielded by *S. Jenmani*, and which I was told were obtained from these trees. Probably they are varieties of *S. Jenmani* which also yield commercial rubber.

Sapiums are monœcious, the leaves have either smooth, dentate or serrated margins, sometimes also marginal glands, while at the top of the petiole there are two glands, which, in some instances, can just be detected without the aid of a pocket lens whilst in other cases they occur long and most conspicuous.

The flowers are borne on a long spike and consist of both the sexes, the male flowers being on the upper part of the axis and "are in groups of three or more in the axils of the bracts, the female flowers occupying the lower part and are detached." The ovary is three-celled and the androecium consists of two or three stamens which are free. The fruit consists of a non-drupaceous capsule and is, unlike the Hevea, very small indeed—hence many Indians insist that the trees bear no fruit at all.

What one has to bear in mind is the fact that the *Sapium* does not appear to possess "wound-response" in any degree to make it of commercial interest, if it possesses this power at all. At any rate it has not yet been proved as occurring with any of these trees.

With regard to our own native Heveas considerable work was accomplished by the late Mr. Jenman; through his efforts *H. confusa*, *H. spruceana* and other species were identified. Up to the present not one of our indigenous Heveas has proved to be capable of yielding rubber on any commercial scale. In addition to this it would appear that they are considerably less hardy than *H. brasiliensis*, "large areas in the colony," to quote the *Journal* of the Board of Agriculture, being "eminently suited" to the cultivation of this tree.

At present large trees of *H. brasiliensis* (I have never examined the flowers from these trees but there is every reason to believe they are *H. brasiliensis*), are to be found in the colony on Pln. *Canefield* on the Canje river, which were planted by Mr. Johnson Gill, and on Pln. *Noitgedacht*, Canal No. 1, planted some twelve years ago by the late Mr. T. Garnett.

The trees at *Noitgedacht* have shown "wound-response" and yielded "a high-grade product." This fact should convince any sceptics that there *is* a future for *Hevea brasiliensis* in this colony.

Since so much interest has been taken in the cultivation of rubber in this colony, our own Department of Agriculture has under its control experiments with rubber at the Botanic Gardens, the Issororo Station on the Aruka river, at Christianburg, at Onderneeming School Farm, and at Bonasika on the Essequibo river. Valuable information has already been forthcoming from these young experiments, and their importance will increase as the years go by.

It has been proved conclusively that *Hevea brasiliensis* will adapt itself to many conditions, but that it must be sheltered from the boisterous breezes that prevail on our coastal lands.

Good and efficient drainage is absolutely necessary and for satisfactory returns a regular dispersal of rain is a factor of the utmost importance. It is not a question of the total rainfall per annum, so much as the total number of wet days throughout the year.

With regard to the correct spacing of Para rubber, the consensus of opinion is that wide planting is to be recommended rather than close planting. Yet, however, apparently we have still some more experience to gain in this connection, for we find that in the East a small area planted 10 feet by 10 feet (which is very close planting indeed) yielded last year at the enormous rate of 900 lbs. of dry rubber to the acre!

Again it seems that if a tree of *H. brasiliensis* is left untapped until it attains quite a respectable age and a substantial girth, it will yield sometimes practically little or no latex, whereas if it has been regularly tapped from the time when it has attained a girth of some 20 inches, a yard from the base, it will give remarkably good yields. The value, therefore, of experiments with a tree which shows such varied results under different conditions of soil and climate, must be very great, and as the Board of Agriculture's experiments cover a wide range of soil and climatic conditions, the results obtained in the future should prove of exceptional value and interest.

It is important and encouraging to remember that Mr. John Parkin, M.A., F.L.S., has expressed the opinion, on scientific grounds, that there should be no "marked difference in the quality of the rubber drawn from ten-year-old trees as compared with twenty-year-old ones as in both cases the latex is formed from secondary growth and is not comparable with that derived from lactiferous vessels of primary growth in the twigs and leaves." In other words the "difference in the age of the trees, say from five to twenty years old, appeared to have little or no effect on the physical qualities of the vulcanized rubbers." (Mr. H. P. Stevens quoted in *Tropical Agriculturist.*)

One interesting question appears to be still unsettled, in connection with rubber, and that is the function of the latex. We know that the removal of latex does not seem to damage the tree in any way, and yet there has not yet been found quite a satisfactory answer as to its function. Whether it is for nutrition, or as a water supply, or for protective purposes, are all theories that have been advanced from time to time.

The various methods of tapping *Hevea* trees are now well-known, possibly the most popular method employed is that known as the "half-herring bone system," but it has been more or less definitely settled that it is not profitable to tap higher than six feet from the base of the tree. It is now also generally recognized that too much care cannot be given to tapping operations. It is not unusual to find that the space between the oblique cuts, which consists of twelve inches of bark, can be made to last considerably over two hundred successive tappings—the removal of the thinnest shavings of bark possible, is the objective aimed at. It need hardly be emphasised that the wound or incision must not destroy the cambium layer; so as to prevent this, as far as practicable, special knives have been invented, which are admirably suited for the purpose in view. I have used the No. 1 safety knife and the farrier knife with success. So as to save the area of bark, resource was had to pricking with a tool specially made for this purpose, but, of late, this practice does not seem to have found favour with the authorities on this subject. As might have been expected various experiments have been carried out by scientific and practical men in connection with

this highly important and intensely interesting question. Perhaps the most recent is the method patented by Mr. W. L. Spence, in July, 1910, whose aim has been to reduce the cost of tapping operations by lessening the number of times necessary for collecting the latex, in addition to various other advantages.

By this method constriction of the trunk is obtained by a band of rubber, rope, or steel spring, above the cut, by which ingenious means the latex is literally forced out.

In British Guiana, we are told, an all-important question is the hour at which tapping operations are carried out. From personal experience it can be stated that *Sapium Jenmani* yields latex at almost any hour of the day, but it is said that there is no flow obtained from *H. brasiliensis* when the sun is high in the heavens, and that, consequently, it is necessary to tap during the very early hours of the morning. This is certainly a dismayed account, but one has to remember that the trees which are responsible for this statement are quite ten or twelve years old and have never up to this time been touched. The fact has already been referred to that trees which have never been tapped until they have reached a respectable age and size, often do not compare favourably, as regards the flow of latex, with trees which have been systematically and carefully tapped from the age of from five to six years.

Possibly this may, in some way, account for the rather erratic behaviour of the latex of these trees.

The question is one which must give rise to anxiety, for the difficulties in the way of turning out gangs at a sufficiently early hour in the morning, so as to be in the rubber fields *and at work*, soon after 5 a.m., are distinctly real.

With regard to the question of mixed cultivation, the subject is one, the importance of which demands a special paper for itself. Cacao has been recommended both as a catch crop and a permanent cultivation in rubber areas, whilst limes also appear to have been tried with some amount of success, as a permanent cultivation.

No local paper on rubber can be closed without reference to Macwarriballi (*Forsteronia* near *gracilis*), which genus of the *Apocynaccae* was discovered by the late Mr. G. S. Jenman, and which appears to yield good commercial rubber. It has been found up the Demerara river and in the North Western District. Probably in the future we shall hear more of this interesting plant, through the efforts of the Forestry Officer.

Growers of Para, and other rubber trees, would be well-advised to exercise the greatest caution in clearing forest lands for rubber planting. Strong and sturdy wind belts should not only be left, but also belts of trees some 100 feet in width, at regular intervals, throughout the cultivation, so as to retain forest conditions as much as lies in one's power. It is extraordinary how rapidly changes appear on lands which have been entirely denuded of forest growth.

Every effort, also, must be made to keep up the supply of humus, a by no means easily obtained condition.

For mulching purposes, nothing could be found better than rice straw, huge quantities of which can be obtained at the harvesting of this crop.

To those pessimists who predict an abnormal fall in the price of rubber, the following extract from the *Economist* quoted in the *Tropical Agriculturist* for September, ought, at least, to be re-assuring.

"These figures cannot be held to point to over-production, since there can be little doubt that with lower, and, above all, steadier prices the trade will readily absorb double its present supplies in four years' time. At four or five shillings per lb. rubber would soon find its way back to markets from which it has temporarily been driven out. Meanwhile the plantation investor has the satisfaction of knowing that until the manufacture can afford to dispense with half his available supplies, the price cannot go below the figure at which wild rubber can be turned out, which must always leave plantation a very handsome margin of profit

t may be as well to point out that there is no idea prevailing amongst rubber-growers, to eventually supersede that grand mainstay of the colony—the sugar cane. Rather it is to grow rubber and other products side by side with our staple crop, and so ameliorate the danger, which must always threaten a community, which depends on one industry and one industry alone, for its prosperity—nay its very existence.

THE NOMENCLATURE OF GEORGETOWN.

ITS STREETS AND DISTRICTS.

By Luke M. Hill, M. Inst. C.E.

Some years ago, one of our late Governors suggested that before my final retirement from active work in Georgetown, I should write a paper giving a list of the street names of the city, together with explanatory notes of their origin, history, etc., with which I have been associated for so many years.

As the time for such retirement is now approaching, it seems opportune that I should give effect to the suggestion, though I fear you may find the paper rather dry reading; but its value as a record of some historical worthies may be sufficient excuse for the writing of it.

From Mr. Rodway's story of Georgetown we learn that the capital of the colony was removed from the second island in the Demerara River by the French in 1782, and established at Stabroek, a Government reservation lying between Plantations Werk-en-Rust and Vlissengen, so named by the Dutch in 1784 after Nicolaas Geelvinck, Lord of Stabroek, the then President of the Dutch West India Company.

Stabroek now forms a central ward of the city, which gradually extended right and left along the river façades of the adjoining estates of Vlissengen, La Bourgade and Eve Leary to the north, and Werk-en-Rust and Le Repentir to the south, now comprising the city of Georgetown, which was first so named on the 29th April, 1812—just 98 years ago—when George III was King; and indeed many of our street names will be found to hang on to his reign and those of his immediate successors.

Georgetown was created a city by Royal Warrant in 1842.

I propose to deal with the several districts of the city, seriatim, according to the numbering of the wards, beginning at the sea margin and proceeding up the river; but there are three streets common to most of the districts which run right through the city from north to south, which call for first mention: these are Water street, High street and Camp street.

Water street was so named because it ran along the river foreshore or water-side, forming, indeed, the original river dam protecting the estates from the inroads of the tidal water along their river frontage. The building lots were at first all on the eastern side of the street, the allotments on the other side being termed mud lots, on which were gradually constructed landing wharves or stellings, with warehouses for the storage of goods and merchandise. Most of these mud lots were subsequently further protected by the building of river walls along their façades, and the space between filled up, forming the site for buildings on the western side of the street.

High street forms the leading road or thoroughfare from the East Bank to the East Coast, constituting as it were the King's Highway, which exists, or has a counterpart, in most English towns.

The portion of the street, running through Cumingsburg, somehow got designated Main street by which name it is still often called, but its proper name is certainly High street.

Camp street was so named because it is the leading thoroughfare to the Camp, or garrison, at the extreme north end of the city.

Kingston takes its name from good King George, and the Fort William Frederick, from the Prince of Orange.

Kingston formed part of Plantation Eve Leary, named after the wife or daughter of the original proprietor, Cornelis Leary, the name being still retained in the designation of the garrison lands, forming the remainder of the old estate. Indeed, with two exceptions, all the Kingston street names—Barrack, Fort, Duke and Parade—relate to its military occupation, Duke street being named after one of the Royal Dukes, sons of George III. The laying out of the town district of Kingston was in accordance with the charts of Louis Chollet of 1797 and Joseph Hadfield of 1816.

The land north of Young street, 28 acres in extent, was sold by the original owner Paadevoorts in 1797 to the Government—probably the Board of Ordnance.

Young street—in some of the older charts called Camp Road—takes its name from H. Fox Young, a former Government Secretary, long before the days of the Hon. Wm. A. G. Young, our friend of later years, whose sons are still prominent members of the Public Service, and his daughter wife of our present respected Governor, Sir Frederic M. Hodgson, K.C.M.G.

Cowan street is named after Edward Cowan, at one time Assistant Commissary General at the garrison here.

Cumingsburg was formerly Pln. La Bourgade, and was laid out in streets and building lots by its proprietor, Mr. Thomas Cuming, who called the district after his family name, as per chart of Andrew Rose, S.L.S. of 1807. He made a free gift to the town of the site of Cumingsburg Market, and the plots of land known as the Militia Parade Ground and Promenade Garden, the latter of which was subsequently enlarged by the purchase by the Town Council in 1881 and 1890 of the lots bordering on New Market street, between Carmichael street and Waterloo street. Cumingsburg has a wide façade of 200 roods, being double that of any of the other town districts, and is divided into two sections, known as North and South Cumingsburg.

A striking feature of the Cumingsburg district is the provision made for fresh water reservoirs in the centre of its wide double streets running north and south: these are stocked with small fish-fry which feed on the mosquito larvæ and so tend to keep the pest in check : the surfaces of these reservoirs are more or less covered with Victoria Regia and Lotus lilies, introduced and planted by myself within comparatively recent times.

The High street reservoirs were filled up after considerable discussion in 1895-1896, concreted side drains being constructed to receive the surface drainage of the street on either side, and the centre formed into a shelled walk, or

shaded *Alameda*, which was subsequently officially named by the Mayor and Town Council, Queen Victoria Promenade, in honour of Her late Majesty's Diamond Jubilee.

There were two great fires in Water street, Cumingsburg, in 1864, which afforded opportunity for improving the western section of the district, known as the Burnt District of Cumingsburg. These improvements included the widening of Water street, and the construction of a new line of street between Water street and High street, named Queen street (formerly known as Tiger Bay) and Mundy street, named after Major Robt. M. Mundy, Lieut.-Governor, 1866, joining on to Urquhart street at the northern end, named after Mr. J. Urquhart, a former merchant of Water street.

Hope street was also formed in connection with the same improvement scheme, and named after Admiral Hope, who visited the colony about that time.

Holmes street, forming the western end of Murray street, was opened up about the same time and so called after Sir William Holmes, an Irishman of local distinction, thirty years in the Civil Service, a former Provost Marshal, and Mayor of Georgetown, acted as Private Secretary to several of our Governors and was knighted for his services as Commissioner from British Guiana to the London International Exhibition of 1862. He was also Chevalier of the Legion of Honour, conferred by Napoleon III; he died at Plymouth in 1868.

Between Holmes street and Hope street lies a short narrow thoroughfare, known as Rosemary Lane: why I don't know, except possibly from its fragrance or perhaps pungency.

The other Cumingsburg streets are :—

Carmichael street, named after General Hugh Lyle Carmichael, Lieut-Governor, 1812-13. He died in March, 1813, from typhoid fever, is buried in the Officers' Cemetery, Eve Leary, and a marble tablet to his memory was erected in St. George's Parish Church. He was the author of many reforms in the Public Service.

Waterloo street—a continuation of Wellington street, Lacytown, and named after the great battle and victory of 18th June, 1815.

Thomas street—the leading thoroughfare to Pln. Thomas.

East street—from its easterly position.

Cuming street—after the original proprietor of the estate, formerly known as Cumingsburg Back Dam.

Lamaha street—at one time the north drainage trench of the district, passing along this street, had direct connection with the Lamaha Canal through East street.

New Market street—leading from the then newly established Cumingsburg Market.

Bentinck street—named after His Excellency H. W. Bentinck, Lieut-Governor, 1809-12.

Middle street—the central street of the district.

Murray street—named after Major-General John Murray, Lieut-Governor at intervals, 1815-1823.

Church street—leading east and west from the first parish church, now the Cathedral of St. George.

Robbstown—forming together with Newtown the front portion of Plu. Vlissengen. It was originally called Bridgetown on Andrew Rose's chart of 1807, and leas d by John Robb, who laid the district out in building lots. It was almost completely burnt out in the great Robbstown fire of 1864; after which the land was vested in Commissioners who, during the Mayoralty of Edward George Barr, effected great improvements by the widening of Water street, which previously had been an inconveniently narrow thoroughfare, the opening of North street, adjoining the Cumingsburg Company Path, and the widening and straightening of other streets, including Hincks street, named after Sir Francis Hincks, Governor of the colony from 1862 to 1868, and afterwards Finance Minister of Canada.

Another improvement effected at this time was the extension of the Vlissengen main outlet trench and sluice to the western side of Water street, a large brick culvert being constructed under the street. Formerly this outlet was a tidal canal as far as High street, where there was an old high Dutch koker of brick, replaced as recently as 1882 by the present wide iron bridge; only one vehicle at a time could pass over the old brick koker, it being so narrow.

The other streets of the district are—Robb street, named after John Robb, the founder; Regent street, after the Prince Regent, afterwards George IV.

South street—the southern street of the Ward.

Newtown—This district was built upon soon after the English occupation of 1796, its first chart being by Louis Chollet, G.L.S., dated 15th January, 1805.

A regulating ordinance was passed after a big fire in 1828, prohibiting, amongst other things, rumshops and cooperages being established in the district.

Commerce street takes its name from its position in the business part of the town, but has never had much of a commercial reputation.

America street—probably so named from its connection with the stelling or wharf, off which all American vessels moored in the early days of Georgetown.

By the repeal of the prohibition in the ordinance of 1829, a first rumshop was permitted in this street a few years since, called appropriately "Uncle Sam."

Longden Street—after Sir James Robert Longden, K.C.M.G., Governor 1874-1877. Opened by the Commissioners of Vlissengen in 1880, with the object of relieving the congested traffic in the narrow portion of Water Street. The original intention, however, of carrying it through to the Brick Dam, opposite the western gate of the Public Buildings, has not so far been given effect to, although the scheme, in a modified form, was sought to be revived a few years since.

Lacytown—another leasehold portion of Pln. Vlissengen. the lessee who gave it its name being related to the family of General Sir de Lacy Evans, the hero of the defence of Kars during the Crimean War.

The original proprietor of Pln. Vlissengen was the Hon. Joseph Bourda, M.C.P., whose son and heir, John, went to sea and was never again heard of, in consequence of which the title to the property became complicated, and difficulty arose amongst a number of claimants, who played ducks and drakes with the estate as a sort of "no man's land." Eventually, the Government stepped in and took control of the property under the authority of the Vlissengen Ordinance of 1876, vesting same in the Board of Vlissengen Commissioners, who arranged the claims of the several heirs, set about the general improvement of Lacytown, laid out the new district of Bourda, recouping themselves by the sale of building lots and land in the new district, the collection of back rents from the Lacytown proprietors and the imposition of a special rate on that district to cover the cost of street improvements, drainage, etc., all of which gave rise to a lot of opposition and heart-burning, now happily at an end.

Through the Commissioners and the Town Council I was closely identified with all these improvements and alterations carried out from 1878 to 1885.

New North street—a continuation of North street, Robbstown. This was formerly a narrow footpath known as Church Alley leading to the old Cathedral, and the houses were moved bodily back to make room for the wider street, many buildings having to be bought out where the lots were overcrowded.

Robb street and Regent street are continuations of those of the same name in Robbstown.

Charlotte street—named after Queen Charlotte, consort of George III.

New South street—the southern street of the district, formerly known as Love Lane, a narrow thoroughfare or footpath, widened by the re-digging of the Vlissengen main drainage canal further to the south.

King street—named after George III., died 1820.

Wellington street—after Arthur Wellesley, Duke of Wellington, died 1852, and who was at the height of his military fame in 1815.

Alexander street—after Alexander I. of Russia, died 1825: popular in 1813-1815, when he opposed Napoleon along with the other European powers allied with England.

Bourda street—after the original proprietor.

Stabroek: I have already dealt with the origin of the name of this district. Its streets are few, embracing:

Brick Dam, a wide thoroughfare about a mile in length, formerly a brick paved promenade, hence the name, now a burnt earth roadway, with a mixed avenue of shade trees, finishing at the east end with a fine avenue of Royal palms, planted by the late Mr. Richard M. Jones, more familiarly known in old days as "Dickie Jones," grandfather of our friend the Hon. B. Howell Jones. He has left in many places landmarks of his occupation in avenues of these stately trees, the admiration of all visitors to the colony.

Croal street—formerly known as the Red Dam from its surface covering of burnt earth ; takes its name from the Hon. John Croal. M.C.P., one of Guiana's worthies.

Hadfield street—called after Joseph Hadfield, Architect and former Crown Surveyor of the colony. Hadfield street is a double thoroughfare, formerly having a branch from the Lamaha Canal down the centre, which was filled up in recent years and an avenue of trees planted on either side, with the intention some day of forming an *Alameda*, as in Main street.

The short cross streets in Stabroek are named as follows :—

Manget Place—after Dr. Etienne Manget, for many years Surgeon General, whose property bordered on this street.

Sendall Place—after Sir Walter Sendall, G.C.M.G., Governor of the colony 1898-1901.

Pollard Place—after Hon. W. B. Pollard, Auditor General and a Commissioner of Vlissengen. He is buried in the Bourda Cemetery.

Boyle Place—after Sir Cavendish Boyle, K.C.M.G., Government Secretary and acting Governor on several occasions 1894-1900.

Austin Place—after Hon. Chas. P. Austin, Receiver General, and a Commissioner of Vlissengen, son of the late Bishop Austin.

Chalmers Place—after Charles Cathcart Chalmers, Crown Surveyor for many years ; died 25th December, 1877.

Brumell Place—after John Brumell, Sheriff of Demerara, Police Magistrate of Georgetown, and first Chairman of the Botanic Gardens Directorate : "an old and faithful public servant." His residence was adjacent to this street; he died in 1881 and a Memorial Band Stand was erected in the Botanic Gardens to his memory.

Winter Place—after F. A. R. Winter, merchant, founder of the Hand-in-Hand Fire Insurance Coy.

Sandeman Place—after Patrick Sandeman, Keeper of the Government Astronomical and Meteorological Observatory, which stood on the site of the present street.

These Place names were only fixed on by the Mayor and Town Council about ten years since, the streets being previously known simply as numbered cross streets.

Werk-en-Rust embraces the old Dutch estate of Werk-en-Rust (meaning Work and Rest) whereon was situated, appropriately enough, the early public burial ground for the city, now disused and known as the St. Philip's churchyard.

The front portion of the estate was built upon soon after the settlement of Stabroek, the streets for the most part being narrow and congested, and may be termed the slum district of Georgetown, generally known as the Chinese quarter of the city, often incorrectly called Charlestown, which, as a matter of fact, is quite another district towards the south, over the iron bridge crossing the main drainage canal.

As building operations extended eastwards, the district became incorporated from time to time, piecemeal, so to speak, under various names—North and South Freeburg, North and South Newburg, and Wortmanville,—an outside suburban section farthest to the east, being known as Lodge Village ; all the subdivisions within the limits of the city are however embraced within the Werken-Rust Ward.

The main thoroughfare east of Water Street, and through which the Tramway runs, is known as Cornhill and Lombard street; why I don't know, except by way of sarcasm, as they do not form the centre of any great commercial or banking business like their great prototypes in the city of London.

The short sections of streets between Water street and Lombard street are named De Rooy, Schoemaacher and Bugle, after the merchants who lived, or had their business premises, in close proximity. Mr. Michael Bugle, a countryman of my own, was Mayor of Georgetown in 1872, when cable communication was first established between this colony and England ; and he very properly sent a congratulatory message from " Bugle, Mayor of Georgetown, to the Lord Mayor of London " : the story goes that the reply returned was— " You be blowed !"

The other streets in the district embrace the following :—

Harel street—after Louis Harel—an old French resident of many years, living at the corner who claimed direct descent from the great Napoleon. He owned a large cooperage on the land now occupied by the Town Hall.

Leopold street (also irreverently known as Grog street) was named after Leopold I, King of the Belgians, favourite uncle and mentor of Queen Victoria.

Devonish street—after Mr. John C. Devonish, who resided at the corner. He arrived from Barbados about the year 1820, and kept the first private school opened in the colony. He was the grandfather of the present acting Town Clerk.

Breda street—after a historic town in Holland, where a peace congress was held and a treaty signed 1667, restoring to England the West Indian islands of St. Kitts, Montserrat and Antigua.

Smyth street—after Major General Sir James Carmichael Smyth, Governor 1833-1838. During his regime the Mayor and Town Council of Georgetown and the British Guiana Bank were incorporated 1837.

Henry street—(sometimes known as Centipede Alley) after Jabez Henry, first President of the Court of Justice.

George street—after King George III.

John street—in view of the apparent predilection of the day in naming streets after prominent leaders in the French Wars, this street was probably named after John, Archduke of Austria, one of the allied commanders in the Napoleonic Wars : died 1859.

Bishop street—after Bishop Austin, first Bishop of Guiana from 1842-1892 ; he died shortly after celebrating the jubilee of his Episcopate.

Lime street—a Botanic name, a continuation of Orange Walk in Bourda,

Palm street—from a number of cabbage palm trees in close proximity—now cut down.

Louisa Row—after Louisa, daughter of Mr. H. J. C. Nieuweller, proprietor of the estate.

D'Urban street—after Major General Sir Benjamin D'Urban, Governor, 1824-31.

Bent street—after Judge Bent.

Norton street—after Judge Norton.

Wortmanville—the last district incorporated in the city, 1902, takes its name from its former proprietor, Henry Wortman, planter, who had it partly lotted out in 1843. It now forms part of the Werk-en-Rust Ward, whose main streets are continued through it, only two cross streets remaining to be noticed:

Hardina street—named after the wife of Mr. Hermann Vyfhuis, a daughter of Mrs. Barkey, born Johanna Wortman, daughter of the proprietor.

Hayley street—after William Hayley, my immediate predecessor, Town Superintendent of Georgetown for 26 years, 1852-78.

Charlestown—laid out on the front lands of Pln. Le Repentir, and so named after Charles, Duke of Brunswick, who commanded against the French, and died in 1806.

The district was laid out in two portions, the first in or about the year 1806 extending from the Demerara River to Charles street, also called after Duke Charles; and the second, known as New Charlestown, in 1820, extending from Charles street to Charlestown Back Dam, bordering on the Le Repentir Cemetery.

The original owner of both Pln. Le Repentir and Pln. La Penitence was Pierre Louis de Saffon, a French Huguenot, who, it is said, sought asylum in this colony after the killing by misdaventure of his brother. He gave expression to his grief in naming his two estates; he died in 1784, leaving his property for the endowment of the de Saffon Trust for the support and education of ten orphan children until they attain the age of 16 years, appointing them in perpetual succession his heirs. This old worthy lies buried on his estate, close to the Chinese Church of St. Saviour, the adjacent street, Saffon Street, being named to his memory; Peace be to his ashes.

The main drainage of Le Repentir was diverted in 1878 into the Werk-en-Rust main drainage canal; and eventually the site of the old outlet trench was filled in and a new street opened thereon, named Drysdale street after Hon. R. P. Drysdale, M.C.P., Merchant, Commissioner of Vlissengen, and several times Mayor of the city.

The western end of the old outlet channel is now occupied by the Refuse Destructor erected in 1890.

The old charts of Charlestown show the line of Water street continued right through ; but unfortunately the street was never actually made up, and through slackness of supervision in the early half of the 19th century, was gradually allowed to be absorbed into the riverside properties, south of the old outlet draining channel.

The street along the side of this old channel is known as Pearce's Dam, so named after John Pearce, who owned the large adjacent property afterwards known as Charpentier's premises, now in the possession of Sprostons, Limited.

The other streets of Charlestown are—

Princes street—on some of the older charts this street is named Clarence street after the Duke of Clarence afterwards King William IV., but its more comprehensive title was probably meant to embrace all the Royal Princes, sons of George III.

Evans street—after John Evans, proprietor of Pln. Better Success.

Broad street—from its ample width of 80 feet. This, however, is not always a reason, as instanced by Broad street, Bridgetown, Barbados, where scarcely two vehicles can pass!

Howes street—after Westaway Howes, an old-time merchant of Georgetown, along with his brother Henry.

Sussex street—after Augustus Fred. Duke of Sussex, 6th son of George III, died 1843.

Green street—probably after some member of the Green family, well known in Georgetown in the early days of the 19th century. One of the family, Mr. Gardner Green, was proprietor of Pln. Greenfield on the East Coast.

Lyng street—after William Lyng, a former Clerk of Markets and Town Superintendent and superannuated as such in 1852. He was also Major of Militia and a Justice of the Peace.

Russell street—after Lord John Russell, the celebrated statesman, Minister and Premier of England, youngest son of the 6th Duke of Bedford : died 1878.

Adelaide street—after Queen Adelaide, Consort of King William IV : died 1849.

Bourda : named after Hon. Joseph Bourda, M.C.P., former proprietor of Pln. Vlissengen, of which it forms one of the town districts ; laid out by the Commissioner of Vlissengen in 1879.

The cemetery of the same name is the resting-place of many old citizens of Georgetown : it is now disused except for burial of those who own family vaults or burial rights in the enclosed ground, under the control of the Mayor and Town Council.

The Bourda streets and roads running east and west are in continuation of and bear the same names as those in Lacytown, as are also three of the cross streets, of those in Albert Town, viz., Cummings, Light and Albert streets. The remaining three cross streets are—

Orange Walk—originally a cross dam on Pln. Vlissengen, probably marking the first depth of the estate. It is said to have been planted with orange trees and went under the name of the Orange Walk dam. In laying out the new street a strip of land was left on the west side of the street with the intention of planting it with orange trees in order to perpetuate the origin of the name. However, the idea was abandoned in view of the difficulty in finding a species of orange tree that would not be subject to depredation.

Oronoque street—a continuation of the line of the Oronoque dam on Pln. Thomas, formerly planted with oronoque trees.

New Garden street.—It was at first intended to establish the Botanic Gardens on the vacant land reserved for that purpose immediately to the east of this street, hence the name. However, eventually the larger area of land (about 150 acres) east of the Vlissengen Avenue was selected by the Government and purchased from the Vlissengen Commissioners for the purpose of the Gardens, the original site being now occupied by the Georgetown Cricket Club and Football Ground.

Vlissengen Avenue—is a Government road forming the present eastern boundary of the city, opened up in 1877-78.

Albert Town forms part of Pln. Thomas, and was laid out about the year 1847, being named after the Prince Consort, though for many years it went by the name of Monkey town.

After the Water street fires. Albert Town was denuded of a great deal of its surface soil, it being sold by the lot owners for filling up purposes on the riverside premises, and this accounts in great measure for the relative low level of Albert Town.

Nearly all the streets in this district are numbered on the American plan, the exceptions being :—

Lamaha street—a continuation of the street of this name in Cumingsburg, the same being continued into Queenstown. The same may be said of Church street.

Light street—named after Henry Light, Governor 1840-47.

Albert street—after the Prince Consort. Up to the time of laying out of Queenstown Ward in 1887, this street was a provision dam planted in plantains and cassava.

Queenstown : part of Pln. Thomas, area 108 acres. The Town Council purchased this block of land from the late Mr. Quintin Hogg in 1887 in order to protect the town from insanitary pig-pens and other badly conditioned buildings allowed to be erected there by the proprietor. Being the Jubilee year of the reign of Her late Majesty Queen Victoria, the new ward was appropriately named Queenstown ; and it was suggested that the streets in the districts should be named after the children of the Queen, but this proposition was unfavour-

ably received by the Council, who finally fixed the names as follows :—Lamaha, Church, Oronoque and New Garden streets in continuation of those of same name in adjoining districts.

Anira street—a tributary creek of the Lamaha.

Laluni street—a tributary creek of the Lamaha.

Crown street—after the Imperial Crown.

Almond street—Botanical.

Forshaw street—after George Anderson Forshaw, solicitor, died 1889, many times Mayor of the city. One of his sons was the first member of Council elected for the new Ward.

Rose stree —after Hon. Peter Rose, M.C.P., one of Guiana's " strong men " in the Court of Policy, and contemporary of John Croal.

Irving street—after Sir Henry Turner Irving, K.C.M.G., Governor 1882-87.

It is somewhat remarkable that the name of our late beloved Queen is not perpetuated in any of the streets of Georgetown, though, of course, we have it in the Victoria Law Courts and Victoria Square in Queenstown Ward. At the time of Her Majesty's Diamond Jubilee in 1897 a suggestion was made to alter the name of the Brick Dam to the more euphonic title of Victoria Avenue, but the proposal was not favourably entertained.

Some thirty years ago I travelled out from England with a young Mexican who gave me a friendly message to one of the Fathers at the Roman Catholic Presbytery, who had been one of his masters at Stonyhurst College : he added that he had received a letter from him from some strange address which sounded like a " cuss " word—" Be damned, or some such name ! " Of course, I explained the position, which somewhat modified his opinion of his late master's residence.

There is, I believe, a Victoria Road and a King Edward VII street in the adjoining suburban village of Albouystown, which probably some day in the future will be incorporated within the city of Georgetown.

During the course of my municipal duties extending over 32 years. I have had naturally to deal with many charts and plans of Georgetown and its districts, ancient and modern. The most popular one now in use is probably the plan published a few years ago by " The Argosy " Company, which, I am sorry to say, bears my name—" compiled from various sources under the direction of Luke M. Hill and extended and corrected *to date* "—but unfortunately no date is given (!) which rather detracts from its value. In order to rectify this omission I may mention here, for record, that the date which ought to have been printed was 1905 ; but neither the compiler nor the draughtsman was responsible for this serious omission : the draughtsman, Mr. Robert Mottershead, placed his name *with the date* in the lower right hand corner of the original plan, and which must have been removed by the London printers.

In concluding this paper on the street names of Georgetown, I take the opportunity of acknowledging the aid of our Assistant Secretary, Mr. J. Rodway, and Mr. Hermann Vyfhuis in solving some of the more obscure street names.

OUR RIVER NAMES.

By J. Rodway, F.L.S.

There are many difficulties in identifying the meanings of our river-names, mainly on account of corruptions. By studying the old charts and records however I have done something, but before going further I must mention that nothing can be considered as more than a probability. I must also mention that Arawak is generally intended where not otherwise stated.

As an example of gross corruption we have the Arabian Coast ; it is Aroabisce, from the creek of that name, and in front of it is Tiger Island. The meaning is Jaguar's creek or haunt. The termination bisce is also found in Berbice which should be Beri-bisce the place for beri fish ; the Dutch wrote it Berbeeshes. Corentyne should be Coretini, hawk-river, the termination ini being the same as nni and wini, meaning water. Cabra, Capura, and Cabura answer to para and bisce, all applied like uni to mean creek.

This word for water is contained in a great number of river names, and may be compared with the English Avon and the North American Mississippi, the father of waters. Another word for water is para or bara connected with Para and the great lake Parima, possibly also Pomeron which was once spelt Paurooma. Rain is unipero, seen in the names Winipero, Wenipero and Waini-pero. In the last we have Waini which was once spelt with a G either Guiania or Guina. It can be easily seen that here we have Guiana, the watery country, a very suitable name. In this connection I may state that the Spanish G is generally sounded like W or H and we must try to soften our Guiana as far as possible, for the Arawak words are all soft, *e.g.* Laluni, Maduni.

Something must be said here of word-making among the Arawaks and Caribs. I have not gone far enough to get more than a peep, but even this fills me with admiration. No doubt word-building has taken place in every language, but here it seems to be the grand principle. For example, there is a set of words built up from the root aca or cara which apply to things bright and shining, fiery, red or bright orange, and even fierce and bloody. Acu is fiery, Ara the macaw, Acara, fishes with brilliant spots, Aroa, the fierce jaguar, Arowta, the red howling monkey, Caricuri, gold, Carre-carre, the fiery flower spike of Norantea, Baracara, the red bead tree, Sipari, the sting-ray, Yakari, the cayman, Arinda, the electric eel, and Biara that fish with spiky teeth which suggests horrible mangling to anyone it attacks. As I shall show presently all these forms are represented in the river-names.

Every river-name means something connected with the economy of the Indian ; he ignores the beauty of a landscape, even flowers are nothing to him. Primarily he is a huntsman, and the game animals are necessarily of the first importance. It follows therefore that the value of a place depends on what is to be got from it. And here we have the reason why most of the rivers are named from fishes, birds and beasts. A fair number however refer to houses and settlements, cassava, maize and pine-apple grounds, and the palms suitable for ttchihang the house.

To primitive man the fire or hearth is of the greatest importance, no doubt the first sheds were as much to protect the fire as a shelter for their inmates. It is not easy to kindle a fire from two sticks, especially in very wet weather, therefore the fire-place must be protected. The Arawak name for fire is Ahpo and we have the rivers Aping, Apoacka, and Appapara ; Apparoo is cooked food. The pot is placed on three stones, the fire stones or house stones of Essequebo. Issequa is the root word of house but the Arawaks always connect the pronoun to make up the word. It is not *a* house, but my, his, our or their house, hence Dessekebe, my house or fire stones ; this was the more common way of spelling in early times. Creek names from the house are Issequia and Isoory. The more common name for house is benab or benaboo ; this refers to the covering of palm-thatch and is derived from abanna meaning generally leaves, cultivated plants and dense foliage. Abunnun kali is the cassava plant and aburukunnua, falling leaves. Creek names from abanna are Abanakire, Abenackarie and Aburakuni, also Ibanaqua and Ibanacoa ; Dalibanna is the well-known palm. The Warraw name for house is hunouca, hence perhaps Hanoocacabra, and the Carib tabiala, hence Tabiana, Tabela, and perhaps Tapacooma and Tawi-iquia. A temporary shelter is tubannabu, hence our banaboo.

The staff of life is of course cassava, hence the names Cassairiba and Crushwaya ; a bit of bread, kallikan gives us Calicaboora and bodalli, the cassava slab, Bodalliwalla. Beltiri gives us the Acawois Sayourak-paru. Maize is anay, hence Annai, Hannaita, Hannawohe and perhaps Hainana. The buck-pot is dawada, hence Dodowina. the basket gives us from catauri, Quitaro and Couterbisce, with Coutebanna the material for making it. Wababo, the bow, gives Hobabo, and simara, an arrow, Simerao, Simire and Shim-cano or Shimkuna ; the cano being Spanish for a channel. The arrow cane is ourah, hence Oromong ; oureba the Acawoio for bow, Oureba and Ourebya, and ourali, arrow poison, Yuruari, Yuruan and Aruan. A fish hook, buddehi, gives Boodooda ; the wood for a corial Corahuri and Coriaracury, paddle-wood masara and itsha, Masaruni and Ishtihanna.

Game animals are represented by cama, the tapir, in Camoa, Camouni and Coamma ; the capybara by Cabywa and Cabeparu, perhaps also, from the Macusi paro-oi, Puruni. Deer of two kinds give Sarabaro and Wiribiserecanally labba, Labacabra ; acouri, Kulero, Kularo and Luri ; peccary, Aboovdary ; ant-bear, (bereme) Barima, Barama and Baramoor ; red howling monkey, Aruta, Ituribisce and Itury-cayabba ; coatimondi, Kibiliberi Iwannabanna probably means trees where Iguana were found.

Bees and honey give Mappa and Mapenna and the Wapisiano Kainibea.

Dangerous or disagreeable animals are, aroa, the Jaguar, in Acoabisce, Aroacary, etc. ; kaicuchi and yacouri (Acawoio) the Cayman. Caycootie and Kycutchicabra, and Yacouribaro and Yakire ; the camoudi, Camoudicaboura ; noxious flies Were-weri. Ganguk and Mabooroo ; and ants Curabellicabra.

Birds give many names ; Warracabba from the trumpeter, Mambacca, Mamacabra and Mamacaboora from the Maam, Mahaica and Mahaicony from Mahooka, the horned screamer, Moroko from Moroqui the negro-cop, Anora, the

crane, Rupununi from rupung, a kind of duck, Araqua, and Aracuna from the macaw, Caruanu, Carauaupa, Carauacu and Carubung from carauwi, the toucan, Corentyne from cora, a hawk, Sura and Sura-cabra, Cassy and Caziaque, from two kinds of parrots, Hibibia from the Jay; Cuyuni, Coyoni, Cuyuwini from cuyu the marudi, Bunyatibookoo and probably Bonnesika from the bunya; Canirecoo-roo is probably the domestic cock and its name is an imitation of the crowing.

Fishes, as might be expected, are represented by a host of names. Acara is a name given to several species and we have a genus where the same name has been adopted; there is Acarabise, Acarisi, Acaronisi, Acaracabra and Acaraissu. The perai has Omai, Himi and perhaps Aimutong. The electric eel is in Macusi Arinda; Pirota, Piraca and Pirara refer to bright speckled fishes; the hassa gives us Assacaboura, Assiproua, Ashieparu, and perhaps Ascita-yaya and Azidaia; the haimara, Haimaruni, Haymoora, Haimuracabra, Haiama and Himaraka; and the pacou, Pukuano. Other fish names are Lucananicabra and Lackananny, Arowana and Aruan, Aranama, Biara, Jakato, Aruka and Arima. Konawaruk is probably from Konnairu (*Pimelodus insignis*).

Buraburaro-cabra is from a frog and Mouranero-cabra from the Salempenter lizard.

Among plants, palms are most numerous probably on account of their leaves being so useful for thatching as well as the common use of their fruit. Eta comes first in Itabo and Etoony, then we have from its Macusi name qui, Quiebaro, from the Carib moreechi, Murissecura, Morito and Moritari, and from manaka, Monica and Monicacabra. The troolie, timiti, gives Timitipazzo, Tomatamari and Tomatomatti; the toroo, Tooroobanna, Toorany, Turubanna, Suri-panna. Turabannacabra, Toroparu and Tauracoory, its Carib name patawa, Patawalla, Potaro and Potoco, and the Warau mohee, Muipana. The well-known awarra gives Awarra, Awarri, Awarra-kappa, Yawarabaro, Yawrabo, etc. The weeri gives Wiuri (Carib); the weenamori (Euterpe) Waramori-itaboo (Warau); as rayhoo, Rewa (Arawak) as waboo, Wapau and Waparu (Carib). The cocorite as doe-e (Warau) Dyetooka and as mareepa (Carib) probably Mariwa, Muruwa, Mayawa, etc. The thorny Bactris is bunyaseri, hence probably Boeraserie, and that dreadful touch-me-not, the comawarri of the Carib (Desmoncus) as waiyu (Arawak) gives Waiwa, Wayuma, Wayarimpo, Wayraka, Waiquirie, Wayacaboory, Wayacoorabo and Welcooribo; everyone who has travelled on our creeks knows that it is very common and dangerous.

Timber trees are well represented. The wallaba, wapa (Carib) has Wallaba, Wallabamung, Abary (formerly Wapari) and Abary-itaboo; greenheart, sipu (Carib), Sepumaka and perhaps Supename, mora, Moracaba, Morawhanna and Morabally. Wood for canoes or corials, corahuri, gives Coraheri and Coorehara, bow-wood, Payara, and Wasebacabra; letterwood, Timiriri; and wood for clubs Itakaboora and Ithaka. Crab-wood gives Carapo and Carapu; black lancewood, cariseri, Coliserabo; arisaro, Arisaroo, Arissoa, Arissarabo and Arissimoko; baracara, the red bead tree Baracara and Baracabana; the wild guava, Canje and Canjeballi; the hog-plum Mobay and Mibicooroo, also Hooboo, Hoebou-courou and Hubuacuru; the wild cashew, Hooboodi and Hooboodycooroo; the purple heart Curabelicabra and Cooliburi-caboora, the cabucalli, Coupi, Copana

and Copang; hyawa. Haiawa. Hyaqua. Hyanali and Hyanuri; macou the kinip, Macauri, Macouria, Macarawari, Maccaramoco, and Meckorarussu; hatie the Hevea rubber, Hatio; and silk-cotton, Cumacka. Other names are plain such as Mani, Sawaire, Duka and Duquari, Ebini and Eboony and Koumara, the tonka bean.

Other useful plants are represented; the crowa from the fibre of which bow strings are made has Karau, Curuwa, Curiary, Curuabara and Curibrong. Kurita is possibly the wild cane used for the inner tube of the blow-pipe, Cura.

Few representatives of the supernatural are found. The Minje-mamma is the name of a creek and Wieronie is the Siren's creek; Cassikityu is translated river of the dead and Lucadaia a mythical tree growing on a grave.

Capooi is the moon and irita shining like the moon gives Irritaco; there does not appear to be any reference to the sun or stars.

I will now run over the more important rivers in their order from the North-west. Amacura is from the hammock, Barima the ant-bear, Waini water, Moroka the negro-cop, Pomeroon Salt-water, Wakapoa the black-heart tree, Aroabisce, the jaguar, Iterabisce the howling monkey, Essequebo fire-stones, Cuyuni the marudi, Masaruni paddle-wood, Potaro patawa palm, Siparuni sting-ray, Rupununi duck, Boeraserie prickly palm, Demerara letter-wood, (or Immenary Curatella americana), Mahaica and Mahaicony the Mahooka or screamer bird, Abary the wallaba, Berbice the bari fish, Canje wild guava, Wieronie water-mamma and Corentyne the hawk.

Lama and Lamaha appear to be from illama hunger and Laluni from laliwa, a kind of worm or perhaps Yuliwi, a fire-fly.

There are some names I have not identified and possibly there may be traditions connected with a few as in the cases of the Essequebo and Ituribisce. In both of these there were upsets in the same neighbourhood, chopping seas at the mouth of the Essequebo caused the loss of the fire-stones, and at the exit from Ituribisce the stock of barbecued howling monkeys that had been collected up that creek.

THE NAMES OF OUR PLANTATIONS.

By J. Rodway, F.L.S.

The estates that have been named at different times amount to about two thousand. I shall not attempt to enumerate them all for the majority give no trouble; they are simply old world place-names transferred, as is done in every new country. The principle underlying this class is the memorising of localities connected with early associations. It is needless to give a list of such names; I will however call attention to the fact that the old Dutch name for the early settlements in Guiana was Nova Zeelandia, equivalent to the New Zealand of to-day.

There is more interest in those names which either anticipate or commemorate the struggles and triumphs of the early settlers. The name was not necessarily given at the time of the grant, it follows therefore that some are retrospective and give us a peep nto the life of our pioneers.

No doubt they thought a good name might bring good fortune; possibly they invoked the goddess in such names as *Lucky Hit*, *Lucky Spot* and *Goed Fortuin*. Unfortunately however their hopes were often disappointed and the estates went to rack and ruin; to-day most of them are taken over by the forest. *Successes* proved failures, *Good Hopes* ended in despair. Freedom (*Vryheid*) meant slavery a century ago; *Paradise* and the *Garden of Eden* were hardly abodes of happiness; even *Arcadia* has lost its ideal position as a coffee plantation. *El Dorado* did not bring its owner gold, and notwithstanding its supposed strength, *Gibraltar* became of little consequence.

In looking over a chart where the names are inserted we can see the course of settlement Until 1740 no one could get land unless he was a Dutch subject; it follows therefore that the names in the neighbourhood of Kyk-over-al and on the upper Berbice and Canje are Dutch. After 1740 Essequebo was opened to all nations with a consequent influx of English from the West Indies, followed later by a fair number of French. The upper Demerara was largely English (or Barbadian), the French occupied the West Bank and the sides of the Canals, with a few on the East and West Coasts. Until the British conquest however the coast from Mahaica to the Corentyne had been neglected, then came the boom in cotton and a succession of English planters, who, of course, gave British names. Here we find *Albion*, *Chiswick*, *Hammersmith*, *Epsom*, *Brighton*, *Clifton*, *Liverpool*, etc. *Dunrobin*, *Fyrish*, *Auchlyne*, *Kilmarnock* and *Tarlogie*, as well as *Carnarvon*, proving that English, Scotch, and at least one Welshman were present. The Canals and their neighbourhood have *Middlesex*, *Westminster*, and *Vauxhall —Versailles* and *Bordeaux—Ostend* and *Vriesland*, indicating that the three nationalities were neighbours. Although the United Kingdom is most conspicuous on the East Coast we find *Chateau Margot*, *La Bonne Intention*, *Mon Repos*, etc., French, and *Goedverwagting*, *Sparendaam*, etc., Dutch.

The Barbados system of naming estates from the owners, without any addition, is hardly known here (*Ogle* is an example), but Little England is well to the

fore as might be expected, especially in those named Halls. We have *Barbados Hall, Planter's Hall, Bounty Hall, Tranquility Hall, Airy Hall, Quaker's Hall, Harmony Hall, Carlton Hall* and *Broom Hall.* (*Walton Hall* is named after the Yorkshire family mansion of the Watertons.) Barbados is represented also by *Little Barbados,* and other W. I. Islands by *Niew St. Eustatius* and *St. Christopher's.* German names are Berlyn and Bremen.

Personal names are represented by *Waller's Delight, Keirfield,* and *Christianburg,* the last from Christian Finét, the original owner, a Swede ; Huis't Couverden is doubtful.

A conspicuous class is named after ladies of the family, e.g., *Kitty, Sophia, Cornelia Ida, Eve Leary, Ann's Grove, Elizabeth Hall,* and *Susannah's Rust* (rest). A curious name is *Huis't Amelie's Waard,* probably meaning the house of Amelia's host, guardian, or landlord An affectionate son would perpetuate his love to a father or mother by *Le Bon Père* and *La Bonne Mère,* a kind brother by *Sisters* or *Two Sisters,* and a father by *De Kinderen* (the children).

Partnerships are represented by *Two Brothers, Friends, Two* or *Three Friends,* or between the friends (*Tusschen de Vrienden*), this last spoiled by leaving out one S and often reduced to Tuschen. Other friendly names are *Friend's Retreat, Friendship* and *Fellowship ;* probably also *Le Ressouvenir,* a souvenir of friendship. *Union* (*Vereenigen*) was always useful, as was also *Unity.*

Loyalty and love of country is shown by *Britannia, Waterloo and Wellington, Prins Willem V., Hollandia, Zeelandia, Vriesland, Haags Bosch and Huis in t' Bosch.* The two last refer to the Palace at the Hague and not as some think to old hags. *La Belle Allianee,* which settled the peace of Europe, was worth commemorating.

A strong religious feeling is shown by such names as *Paradise, Garden of Eden, Land of Canaan, Land of Promise, Land of Plenty,* an Angel's rest (*Engel Rust*), an Angel's burgh (*Engelenburg*), *Jerusalem* and *Salem,* also *Joppa.* Through *De Wildernis* from *Egypt,* he passed *Mara* where possibly his experiences were bitter, but trusting in *Providence* expected to come at last to his desired haven.

The *Hermitage* and the oratory (*L'Oratoire*) suggest religious retirement, and the pathetic names of De Saffon's estates penitence, repentance and regret (*La Penitence, Le Repentir* and *Le Regret*) seem also to mean deep feelings of remorse, whatever be the truth of the story that one brother killed another in a duel.

Descriptive names are not rare. Position is indicated by *Look Out, Belvedere, La Reconnaisance* and *Prospect.* Some local condition is shown by *Sandy Point,* sand brook (*Zandvliet*), sand in front (*Zandvoort*), a brook (*Watervliet*), *Dryshore* and high and dry (*Hoog en Droog*). Only up the rivers is high land to be found, it follows therefore that names with mount and hill are very rare ; there is however one hill. (*Den Heuvel*) and bush and hill (*Strik en Heuvel.* Bush is too common to be worth distinguishing, we have however *Bush Lot, Woodlands,* rough bush (*Hardenbosch*) and *Bushy Park,* which last however may be a reminiscence of the English country seat of that name ; *Hyde Park* is obvious, and *Park is* hardly distinctive. A reference to snakes appears in *Slingeland.* Marshes, like bush, are very common but not distinguished ; *Poelwyk* is a marshy retreat,

The neighbourhood of the sea is shown by *Regt door Zee* close to the sea, *Zeezight*, a sea view, *Zeelugt* sea air, *Seafield*, and *Zeeburg* a sea castle. At first sight the eye or hole in the sail appears to refer to a ship, but it is most likely proverbial, *Het oog in t' Zeil*, a flaw or drawback, "a blot on the escutcheon." A new arrival rowed ashore, hence *Strangroen*, or perhaps it is a figure of speech, "pulling hard against the stream."

The drainage is represented by *Nooten Zuil* and *Abram Zuil*, Nooten's and Abram's canals; *Swanenschutz* is the sluice of Mynheer Swaen.

Flatness and a wide view are indicated by *Greenfield*, a beautiful plain (*Belle Plaine*), a fair or wide field (*Belfield* and *Ruimveldt*), a beautiful or extensive view (*Bellevue* and *Ruimzigt*), a joyful sight (*Bly Zight*), a happy dale (*Blyendaal*), a hollow (*Hohleval*), and a beautiful spot (*Schoon Ord*). Freshness and green fields are patent in *Spring* and *Le Printemps*, *Spring Garden and Le Jardin de Provence*; in spring there was *La Parfaite Harmonie* with the song of birds (*Vogelzang*).

The grant was a *Farm* or *La Grange*, (owner des Granges), a *Moor Farm*, a *Dead Tree Farm*. It was lovely, it was the planter's choice (*Mon Choisi*), it pleased him (*Me Delices*); it was well situated (*Welgeleegan*).—*Goed Bananen Land*, *a Canefield* or *Best Coffee Land*. There was also a good neighbour (*Beauvoisin*). The village (*La Bourgade*) seems almost prophetic for the name occurs before Cumingsburg was laid out.

The pioneer was a fortune seeker; like gamblers he often invoked the fickle goddess, hence *Fortuin*, *Goed Fortuin* and destiny (*Le Destin*). When fortune smiled he got *La Petite Fortune*, a tiny fortune, and when she frowned he asked "Why does fortune turn?" (*Hoe draait het Fortuin?*). The project was doubtful an *Adventure*, a *Chance*, a *Speculation*, an *Enterprise* (*Onderneeming*). By chance (*Bijgeval*) it might be a lucky adventure (*L' Heureuse Adventure*), a *Lucky Hit* on a *Lucky Spot*. Perhaps the *Bachelor's Adventure* was to gain a *Lovely Lass*, if *La Jalousie* were absent.

He had a good intention (*La Bonne Intention*) and was therefore entitled to hope for *The Best*; hence *Hope*, *Good Hope*, *Better Hope*, *Pleasing Hope*, *New Hope*, *Fitz's Hope*, *Baillie's Hope* and *Sophia's Hope*; *Hope and Experiment* probably *represents an amalgamation*. Emblems of hope are *Sheet Anchor*, *Aurora*, *Rising Sun* and the dawn (*Dageraad*). It might be a mere bagatelle (*La Bagatelle*), of little consideration (*Kortberaad*), a *Cottage*, still it was a *Prospect*, a resource (*La Resource*), an *Expectation*, it might prove a *Mainstay*, a benefit (*Le Bienfait*) and furnish a *Supply*. Faith was wanted and we have *De Ridder's Faith*. *Profit* must be gained *Now or Never*.

Some were probably refugees, perhaps they had suffered for conscience' sake or left Europe to get more freedom Guiana was to them a refuge (*Toevlugt*) a retreat *La Reduit* and *La* or *Ma Retraite*, the desired haven (*Le Desir*), a resting-place (*Mon Repos*). One had gained freedom (*Vryheid*), another enjoyed freedom's delight (*Vryheid's Lust*), peace and hope *Vreed-en-hoop*, peace and friendship (*Vreed-en-Vriendschap*), or peace and rest *Vreed- en Rust*; at last he was safe at liberty (*Wel te Vrede*) and in a *Sanctuary*. The other side is perhaps hinted by the name *Sibcria* (a banishment).

The grant might be a treasure (*Mon Bijou*), unrivalled (*Nonpareil*), a *Diamond*, a pearl (*De Parel*), a *Ruby*, or a chalcedony (*Calcedon'e*). Possibly the bush would turn out to be a *Golden Grove*, an *El Dorado*, a new *Potosi*. It would be a beautiful abode (*Beau Sejour*), an *Arcadia* ; it might bear *The Bell*. One pioneer was in search of the *Golden Fleece* and another of a *Silver Fleece*.

True it was now hardly worth considering (*Kortberaad*), however it was useful and quiet (*Utile et Paisible*),—small and clean (*Klyn en Rhyn*), it was bought in *Good Faith*.

Of course there must be uncertainty (*L'Incertitude*), it would be good or better for waiting (*Goedverwagting* and *Beterverwagting*), it was only tolerable (*La Raisonable*), it required Patience (*Patientia*). However there was a good intention (*La Bonne Intention*) and *Good Intent*, although perhaps it had not been a good choice ; the unexpected (*L'Inattendu* and *Onverwagt*) might happen and *Expectation* be justified. It was a thorntree (*Doornboom*), but there were roses (*Doorn en Roos*), and it might become *Rose Hall;* a spoonful of courage was necessary (*Schepmoed*). A *Solitude* where the occupier would be a hermit (*Kluzenaar*) it was nevertheless a resource (*La Resource*).

Hard work was necessary and the pioneer was prepared for this. Time and diligence (*Tijd en Vlyt*), diligence (*Naarstigheid*) *Vigilance*, constancy (*Standvastigheid*), little rest (*Zelden Rust*) were required, but he must *Endeavour* and *Fear Not*. In spite of everything (*Malgre Tout*) rest would come after work (*Werk-en-Rust*) ; labour and land were there (*Hand en Veldt*), the place was suitable (*Bestandigheid*), soon it would be like a *Beehive*. Going ahead (*Vilvcorden*) and holding hard (*Tenez Ferme*) with *Reliance* he would ultimately overcome (*Overwinning*) ; then he might cry Hurrah for strength (*Vive la Force !*). Of course health (*Hygœa*) was of great importance. The eye of the master is suggested by *Keekhoven* (spelt with Q).

In spite of *Perseverance* there would be vicissitudes (*Wissel Valligheid*), even a downfall that required restoration (*Herstelling*) and *Retreeve*. Everything was uncertain (*L' Incertitude*), but rest after unrest (*Rust en Onrust*) would perhaps ensue. A downfall is also suggested by *Nog Eens*, once more, "try again" ; *Remonecour* appears to mean a lifting up of the heart and *Phœnix* a rising from ashes.

Care, trouble and sorrow were sure to come ; possibly the name *Mara* commemorated a bitter experience. Sorrow, with sorrow, more sorrows and with more and more sorrow or care (*Zorg, Metzorg, Meerzorg, Met-en-Meerzorg*) are pathetic utterances ; one had a lesson in trouble (*Leertzorg*). However in spite of trouble, by diligence (*Zorg en Vliet*) he gained hope (*Zorg en Hoop*) and when successful tempered pain with pleasure (*Zorg en Lust*). Never mind ! (*Nooitgedacht*) : was not only the cry of the Dutchman but of the Irishman as well when he said in Gaelic nabocklish (*Nabaclis*) ; this is the only distinctly Irish name I can find. Do not mourn ! (*Treurniet*) : precaution or foresight (*Voorzorg*), *Patience and Fortitude* will win, and content (*Vergenoegen*) follow.

The man who was too *Free* and *Easy*, who wanted only pleasure (*Lust tot Lust*) would probably, especially if he treated his business as a pastime (*Tijdverdr.ijf*), end with an empty house and a bare cupboard (*Tout y Manque*), a *Hog Stye* or a

Broke Pot. Such a result is possibly indicated by John *Trewern's Folly.* A place of beasts (*Huis't Dieren*) at first suggests something of the sort, but as it is the name of a place in Holland it probably means a good cattle farm.

Success rewarded *Industry*, even *Good* and *Better Success ;* and in the end came benefit (*Weldaad*), *Profit*, *Prosperity*, *Triumph*, with *Felicitie.* After all the outcome or result (*Uitkomst*) was of the greatest importance.

From these few notes something may be gathered by which a peep into the thoughts of the early planter can be made. He had long and hard struggles with bush and swamp, but there is no name for despair however painful the experience. Sickness was rampant when the long line of coast was reclaimed from Courida swamp and savannah. A planter some eighty years ago said that the white man was up to his eyes in mud and slush every day. Of the many he had known in those days only himself was left. No doubt the negroes also suffered to some extent, but it was the white overseer who died ; he took risks from which the valuable chattel must be preserved. I may note in this connection that when the Stabroek Canals required cleaning, owners of negroes often refused to hire their people on account of the risk from broken bottles.

OLD TIME INDIANS.

THEIR MANNERS AND CUSTOMS.

By Dr. W. E. Roth, Medical-Magistrate of the Pomeroon District.

In the absence of sufficient anatomical, especially osteological, data, one of the next best bases for the ethnic classification of the South American races is that of linguistics. Where sufficient coincidences of words and grammar in two languages are wanted, they are classed as independent stocks or families. There are some of these in South America. The most widely disseminated of these in the area drained by the Orinoco and Amazon—an area which chiefly concerns the student of the old-time British Guiana Indian—were the Tupis, the Tapuya, the Arawak and the Carib. The Tupi—from whose language the more or less corrupted native tongue, the so-called "lingua geral," has been derived,—were found by the first discoverers along the seaboard from La Plata to the Amazon, and far up the stream of the latter. As these Tupi migrated from South to North over the Brazils, they replaced the Tapuya, whose stock is at once the most ancient and the most extensive now living on the soil of Brazil. The Arawak stock of languages, on the other hand, is the most widely disseminated of any in South America. It begins at the South with the Guianas, on the head-water of the Paraguay, and with the Baures and Moxos on the high-lands of Southern Bolivia, and thence extends almost in continuity to the most northern land of the Southern Continent, and originally went through the Antilles, Greater and Lesser, into the Bahamas, while there is historical evidence that about the period of the discovery of America, there was an Arawakan colony in Florida. Furthermore, the Arawakan tribes probably at one time occupied most of the lowlands of Venezuela, whence they were driven by the Caribs not long before the discovery of America, as they also were from many of the Southern Islands of the West Indian Archipelago. The latter event was then of such recent occurrence that the women of the island Caribs, most of whom had been captured from the Arawaks, still spoke that tongue. They were thus the first of the natives of the New World to receive the visitors from European climes.

This same Arawak Linguistic stock comprised the Atorais, Tarumas, and Wapisianas. At the actual time of the conquest, the Carib dialects were found in the Lesser Antilles, the Caribbee islands, and on the mainland from the mouth of the Essequebo to the Gulf of Maracaybo. West of the latter, it did not reach the coast, nor has any positive traces of its introduction above the Straits of Panama, earlier than the conquest, been found, in spite of frequent assertions to the contrary. Into the Guianas, the Caribs wandered from the Orinoco districts, some inland, some along the coast, and some probably from the large island adjacent to the coast. To this Carib stock belong the Akawois, the Arecunas, Macusis, etc. The affinities of the Warraus are uncertain—they appear to have a lineage quite other than any of the above; they would seem to have

come from Trinidad, and the delta of the Orinoco. From this rough survey, it will be easily recognised that a satisfactory enquiry into the life-history of the British Guiana Indians, entails the study of many tribes, occupying originally large areas of country, miles and miles beyond the present day boundary limits of this colony. To put the matter shortly, it would be just as ridiculous to arrive at a proper ethnographical survey of the whole African race by a study limited to the members met with in Georgetown.

Of course, I am well aware that the manners and customs of our native Indians are matters in which the majority of you are well versed. I only propose to bring before your notice a few notes concerning certain manners and customs of the old-time Indians which may be regarded as not generally known.

My investigations have been limited to the study of the old-time Indians occupying the triangle formed by the Orinoco, the Amazon and the Atlantic seaboard.

When the Guiana Indians were first visited by Europeans, they were still in what is known as the stone-age, although the Indians living along the Cordillera of the Andes, from Chili to the Caribbean sea, already knew how to extract and work various metals. For a long time, we have been sure of the presence among these metals of gold, silver, and copper, but we have been much less certain with regard to the use of bronze. It is also within the last few years, however, that some 50 analyses dealing with specimens as different in their nature as in their origin, furnish us with decisive proofs of an actual alloy of copper and tin. Such bronze objects have come from Lake Titicaca, north of the high Bolivian plateau from the vicinity of Yura, between Uyuni and Potosi, from the Republic of Ecuador, and from general localities north of the Argentine Republic, between Salta and the Bolivian frontier. It is quite possible, therefore, that a systematic search for examples of bronze work in the Guianas may ultimately be successfully rewarded.

Now because in those times our Indians lived in a so-called stone-age, it must not be concluded that they necessarily used only stone-axes or stone hatchets. Either before, or simultaneously, as we know to have been the case with other savage races, fire and water, bone and shell, each had its use and importance in the domestic arts and handicrafts. We have historical evidence that the Indians of the Western Guianas could manufacture their weapons, drums, and canoes with fire and water only, though at the cost of much time and tediousness. An old Jesuit tells us that by means of fire, blowing on the cinders, they remove and destroy so much of the timber as is not required ; with water, which is always at hand, they quench the fire so as not to render waste more than is necessary. So slow is this labour that its advance could be almost compared with the rate at which plants grow. After having removed sufficient of the timber, to take the shape of a spear, club or arrowpoint more tedium presents itself, no less wearisome and troublesome. They seek or already possess a quantity of snails of extra large size which are met with in areas subject to inundation : they break the shell in pieces, these having a cutting edge just like we find in a glass jug when broken. With these chips, coupled with time and determination, they give the last finishing touches and gloss to their bows, and in credible fineness to their spears and arrows.

I have come across another very interesting extract from the Southern Guianas. Father d'Acugna, in 1639, tells us that all the tools which the Indians have, either to make their canoes, to build their huts, or to do other necessary jobs are axes and hatchets made of tortoise-shell. They cut the hardest part of the shell (which is that under the belly of the animal) into laminae (plates) of about a hand's breadth ; and not quite so thick as one's hand. After having dried it in the smoke, they whet it upon a stone, then fasten it into a wooden ' helve ' and make use of this tool to cut everything they fancy, as well as if it were the best axe that can be, but with little more pains. They make their hatchets of the same matter, and the handle they put to them is a manatee jaw-bone, which nature seems to have purposely fitted for this use. With these instruments, they finish all their works, not only their canoes, but their tables, their cupboards, their seats and their other household goods, and that as completely as if they had the best joiners' tools—their chisels, planes, and wimbles—are made of wild hog's teeth, and of the horns of other animals, which they graft into wooden handles. There are some among the nations who make their axes of stones they grind to an edge with main strength ; these are much stronger than those of tortoise-shell, so that they will cut down any green tree which they have a mind to fell, with the less fear of breaking them, and with much more speed.

Father Gumilla, another of the old authors, tells us that it took the Indians —the Orinoco ones are referred to—two months to cut down a tree with their axes, which were made of a double-edged flint fixed midway in a suitable wooden handle. To make their flints, the same missionary says, they told me that they used to break them with other stones and then, by grinding them on very smooth ones with the assistance of water, they gave then the required shape and edge.

We have the trustworthy statements of Stedman, Pinckard and Fermin that scalping was practised in the Guianas. The first mentioned tells us how the Indians scalp their male prisoners ; bring home their hair, and even their bones as trophies of war and presents to their wives : on another occasion he speaks of scalping as never being practised by the negroes. Fermin, writing at about the same period, confirms this view for the Indians of Surinam. Pinckard, about two decades later, however, opposed their statement (of the negroes not indulging in this custom) for the Demerara, and in referring to the military being surprised and defeated by the blacks, he specially mentions that very few of the soldiers escaped, most of them being killed, and their scalps or bodies fixed against the trees. This charge of Pinckard's would not seem to tally with the view held by Frederici, who distinctly expresses himself to the effect that it was not introduced by the negroes, for, as he says, with the exception of its occurrence in the 19th century in Dahomey, it was not known on the Dark Continent. The question arises as to how the occurrence of scalping in the Guiana is to be explained. The custom was highly developed among the Timucua people in Florida, yet the theory that it may hence have been transmitted to Guiana finds no substantial support. In a similar way there is no evidence that it was introduced by the whites. On the other hand it does not seem improbable that it was brought in through the slave trade ; that is, through enslaved Indians. Indian slaves from Carolina, Georgia and Forida, were far dispersed by the whites, and a portion of them were brought to the mouth of the Orinoco and the shores of South America

for pearl-fishing. It is quite possible that some individuals or parties from among these Indians, most of whom belonged to scalping tribes, given their liberty, and joining some of the natives, introduced the custom of scalping among them.

When the Spaniards landed in the West Indian Islands, they gazed with astonishment and horror on what they were pleased to call fantastic diabolical images of demons tattooed on the naked bodies of the natives. And early Spanish historians speak of it as a common practice all over Spanish America. Oviedo, the first, and perhaps the best of the early Spanish historians, in several places speaks of Nicaragua, Venezuela and the mainland generally and asserts that tattooing was practised everywhere in Spanish America. Even in the Pomeroon District I have seen old Indians, both male and female, other than Arawak, tattooed on the forehead, cheeks, lips and chin. (It is a singular thing that vertical lines on the chin which indicated a married woman among the Eskimo and the Indians of the Pacific Coast are found with the same meaning in Syria, Egypt, Tunis, in New Zealand, etc.) Among the ancient natives in the West Indies, tattooing was general, if not almost, universal; many things point to this conclusion. The Indian did not look upon tattooing as a disfigurement as do so many civilised people. They took pride in enduring the pain. They regarded it as enhancing the beauty of the fair sex, and the good looks of the braves, just as they did their body-painting, to us so hideous. Certain devices could be worn only for valiant deeds, other designs marked all slaves or subjects. A long study of the subject in other parts of the world discloses the fact that tattooing was and is in so many countries much more common than is supposed; it may be said that boys and girls, too, for themselves and for one another prick in little dots and patterns for "beauty," to "show nerve" and to imitate. It must have been so among the Indians. The slightest mark is tattooing. It is a subject which many writers did not care for or notice, and it was only the striking, extensive, startling figures that usually attracted their attention and were recorded.

Deformations of the human head have been known since the writings of Herodotus. One or other of the varieties of mechanical deformation has been found among numerous primitive peoples, as the ancient Avars and Krimeans, some Turkomans, Malays, Africans, etc., as well as among some civilised peoples (as the French and Wends) in different parts of the old world. It also existed from pre-historic, though historic time to the present, among a number of Indian tribes throughout the Western Hemisphere.

Such artificial "flat-heads," so to speak, once extended over most of the United States, and it having been pointed out that their geographical distribution suggested a comparatively late introduction from more southerly peoples, I have made a search of all available literature for records of its presence in the Guianas, but so far without success. On the other hand, in the account of Father d'Acugna's travels on the Amazon, during the early part of the 17th century, I came across the following description of the custom as practised by the Anoguas:—"As soon as their children are born, they put them in a kind of press; forcing Nature after this manner with one little board which they hold upon the forehead, and another much larger which they put behind the head; and which serves them for a cradle; and all the rest of the body of the new-born infant is as

it were enclosed with this piece of wood : they lay the child upon his back and this board being bound fast to that which is upon the forehead, they make the head of the child almost as flat as one's hand." Hence though not recorded for the Guianas there is good reason for supposing that it had existence here previous to the conquest, but this is now a question that can only be determined by a systematic search in the old-time graves.

Infanticide appears to have been very prevalent in the Western Guianas. Father Gumilla tells us how girls when they are born may be killed by their mothers, survivors owing their preservation to the entreaties, threats, even chastisements of their mothers by the husbands. The so-called crime was effected immediately after birth, by breaking the neck, by forcible pressure on the breast-bone or wilfully letting it bleed to death by cutting the string too short. In some cases the child was even buried alive. If any child were born with any defect or monstrosity, minus a hand or foot or with a hare-lip as was commonly the case, the child, male or female, was put to death without any objections being made by either parent. So also if twins were born, one of them had to be immediately buried, either at the direction or at the hands of the mother herself. As a matter of fact, twins (as was the case throughout the Western Hemisphere and in many portions of the Eastern) were considered uncanny and regarded as a sign of dishonour. The husband's view was that only one of those could be his : the presence of the other was a sure sign of his wife's disloyalty, with the result that the poor mother was often made the scapegoat The women who practised infanticide defended it—I am still quoting the Jesuit missionary—: on the score of love and affection they recognised the hardship of their own lot, as compared with the opposite sex, and maintained that they only treated their little babies as they wished their own mothers had treated them. The practice it is true was not universal amongst all the Guiana nations, but though it dominated in them they were many exceptions especially where the husband treated their wives decently and kindly.

It is certain that the system of enslaving each other existed, though in varying degrees, among Aborigines of Guiana from the earliest times their discoverers found it in full force. The treatment of a slave varied a good deal with the tribe, with the object of the raid, and with the sex and youth of the captive. As a marked contrast to those who ate their male prisoners, or emasculated the youths for fattening purposes, to those who employed their female captives as boat-women and paddlers on their predatory expeditions, it is indeed pleasant to record the following account of the Aquas or Buaguas in the Southern Guianas :—

" They make slaves of all the prisoners they take in war, and use them for all kinds of service. However, they treat them with so much love and kindness that they make them eat with themselves, and there's nothing in the world displeases them more than to desire them to sell them, as we found by experience on several occasions. In a word, they gave us signs enough to convince us that they had a greater esteem for their slaves than for all the rest of their goods, and they had rather part with all they possessed besides than part with them.

In silence and in shame, I pass over the story of the slavery of the Indians and of its encouragement by the English, Dutch, Spanish, and Portuguese, and

would only just mention the fact that, according to Roman Catholic accounts, certain European Protestants, in full Indian war-paint, and attire, used to accompany the Caribs on their slave-raiding expeditions.

In one form or another, cannibalism has been practised among probably all peoples at some period of their tribal life. In America, there are numerous recorded references to its occurrence within historic times amog the Brazilians, Carib of Northern South America, the Aztec, and other Mexican tribes, and among many of the Indians north of Mexico. The word itself, cannibal, now more commonly used than the older term anthropophagy, is derived from Carib through Spanish corruption. Indian mythology and beliefs are replete with references to man-eating monsters and deities, which point to the possibility that anthropophagy in some form was a practice with which the Aborigines have long been acquainted. I myself have come across an Arawak folk-story wherein a man in order to revenge himself on his mother-in-law kills his wife and deceives the old lady into eating the liver. One of the chief forms of cannibalism may be spoken of as accidental, from necessity, as a result of famine, though the more prevalent form was a part of war Custom and was based principally on the belief that bravery and other desirable qualities of an enemy would pass, through actual ingestion of a part of the body, into that of the consumer. The eating of human flesh may also be considered as a religious duty, even almost as one of sentiment, of which I have had experience in certain parts of North Queensland. By the Caribs out here, however, man-eating, though still with captives as the victims, was practised on a larger scale, and with the acquired taste for human flesh as one, if not the chief incentive. It is curious to learn the views of two Jesuit Fathers (Grillet and Bechamel) with regard to cannibalism in connection with the Acoguas of French Guiana. Writing some 250 years ago, they say :—

> " If one may judge of that nation, by near 200 of them whom we have seen, they are an honest, affable, pleasant people, and are very attentive and ready to receive what is said to them. 'Tis true they not long since exterminated a small nation, and ate several of them, but I attribute this barbarity to the ill-custom of the country, rather than to the disposition of the people ! "

The rules of hospitality were strongly observed amongst the old-time Indians. Before reaching a house, the visitor would give signs of his approach usually by striking with a heavy stick or paddle upon one of the fluted projections of a tree trunk : in other cases, by blowing a sort of tune upon the bone-flutes. The visitor would not dare to come in without being asked and according as he were older or younger would say : " Older or younger, brother ; I am come." The house master would then ask him where he came from, what his business was, and whither he was going. Having given satisfactory replies, the visitor would then be provided with food and drink,—in most cases by the women-folk. I say in most cases, because certainly amongst some of the French Guiana Carib tribes (the Roucouyennes and Oyampi) it was the women who would lie in their hammocks while he men attended to the visitors. This over, the house master would give *his* congratulatory address—in some cases of a very complicated nature. Thus a Cacique would, if special occasion ordered, utter an address (learnt when a child so as to be rattled off without a hitch) shortly detailing the various accidents and incidents which had befallen his ancestors ; adding by way

of prologue or epilogue certain circumstances suitable to the welcome—for instance that the day before he had seen a bird with peculiar feathers and colours passing over his house ; or that he had dreamed that his lands sown with seed were very dry, and that the rain had fallen just in the nick of time : that all these things and others gave notice of the visitor's approach. It is said of the Arawaks on the Corentyne by a traveller of over a century ago, that before distrust and suspicion were introduced by the conduct of the Europeans amongst these innocent people, strangers on their arrival amongst them were surrounded by the women who washed their feet and welcomed them with expressions of the greatest kindness.

Amongst some of the nations of Guiana it was customary, when a boy was born, to have a look round and wait for the first little girl to appear, and then to ask the parents for her, alleging that they ought to be helpmates through having come into the world one in pursuit of the other—the same old story of the girl coming after the boy ? On that very day the marriage would be decided. And as the youngster grew, and began to use his bow and arrow, everything that came to his hands would be taken to the little girl, were it fish, birds, or fruits ; a tribute which he would recognise and pay until the time arrived for her to be given to him actually as wife. It is also reported that marriage was frequently contracted by parents for their children when infants, and that trees were planted by the respective parties in witness thereof. It was considered a bad omen if either tree should happen to wither, as in that case the party it was symbolic of would be sure to die.

When a girl was obtained by sale from the parents, the bridegroom did not as a rule pay for her in kind, but more generally in labour. Furthermore, he had to do certain doughty deeds before he was allowed to take delivery of her. In certain nations, he had first to kill a bush-hog, all by himself, and bring it to her future father-in-law's house to show that he was indeed a man ; and then to cut a field, after the style of the married men, in proof that he would henceforth be able to support a family. In other nations, the payment or the proof was more irksome, it being customary for he would-be bridegroom, in addition to cutting the field, and building a new house, to arrange his father-in-law's field, and make a new house for him, if the one he had already had was dilapidated. Amongst the old-time Arawaks of the Pomeroon the following were the conditions only under which the young man could get lawful possession of his future help-meet, and I believe that they are now for the first time recorded.

When the youth went to his future father-in-law and asked for the girl the old man would consult his wife and daughter, as a rule, and if everything were satisfactory would say " yes, " but would not give him actual possession of her until he had performed certain duties. The first and foremost of these were to shoot into the woodpecker's nest. He would accordingly ask the suitor whether he were ready or whether he wished to wait a few days. The latter would of course say he was quite ready, so impetuous is youth, and would give a minute description of the situation of the particular tree, usually one close to the water-side, into which he proposed shooting the arrow. The girl's father, however, would invariably plead some excuse to put him off, say to the next day, and in the meantime would get ready a big corial—big enough to carry 10 or 12 men—and

engage his crew. When next morning the young man turned up again the old man had everything ready and would get them all into the boat, he himself steering. The girl herself had to sit on the left of her would-be husband in the bow. When within a comparatively short distance from the tree wherein the woodpecker's nest lay concealed, the old man would call upon the crew to pull with all their strength—and the young man to draw his bow. Before, however, the arrow had sped, and while yet the bow was fully stretched, the woman had to touch his left side with her hand signifying that if his arrow reached its mark she agreed to be his. If he missed the performance had to be postponed to another occasion, he having the right to try as many times as he liked until he succeeded and in the meantime he might continue practising on his own account. Luck might assist him on the first occasion, sometimes on the second, third or fourth or he might have to make the attempt so many times that he would give it up as well as all thoughts for the girl and proceed to some other settlement where the woodpecker's nests were situated to better advantage. Without hitting his arrow into the nest, the wooer would certainly never get possession of the girl—neither father nor mother would give way on that particular point. On the other hand, supposing his aim to have been finally successful, the girl would be as wife to him, and he would take up residence in his father-in-law's house. The next thing was fo the old man to take him with him and mark out a piece of ground which, within so many days, he had to clear for a field, at the same time presenting him with an axe for the purpose. The time specified was usually short, the young man having to work with might and main, starting early and returning late, and finally get it finished. During the time occupied in cutting the field, however, the old man had busied himself in making, crab quakes —some 40 of them are said to have been usually made. On completing the cutting of the field, the old man would then take the lad out to sea ; he accompanied him to make sure that within the one day he really filled all these quakes through his own exertions, and did not obtain the assistance of friends. This completed, the youth became henceforth one of the legal heirs of the house. Should, however, the lad not have cut the field nor filled the requisite number of quakes within the allotted period, he would have been laughed and jeered at, at subsequent paiwarris. These two ordeals, however, were never so essential as that of the shooting the arrow into the woodpecker's nest

With one exception certainly, the Otomacs, polygamy would appear to have been practised among *all* the Guiana tribes—arising *chiefly* from the advantages accruing from the women's field-work, *partly* from feelings of pride and snobbery on the part of the husband to be considered a wealthy man. As a rule, on the Orinoco, each woman used to have her separate habitation together with her children, and a separate fire-place. The game or fish which the husband got, was divided proportionately according to the number of children each wife had. At meal time, each woman would stretch a mat for him on the ground, place on it the meat and cassava, and retire. Whether he ate or not, no one spoke to him After a sufficient time had elapsed, each would bring him his drink, place it in front of him, and retire to her habitation. Thus strife was avoided. In the field the same separation took place, the husband dividing it into as many portions as he had wives, each woman sowing, cultivating

and looking after her own piece of land without meddling with that of another. As already mentioned, the Otomacs did not practise polygamy. When their young men arrived at a marriageable age, the oldest widows in the place were handed over to them. The reason given for this handing over of such old women, was that to marry a boy and girl together was to join a pair of fools who didn't know how to conduct themselves; whereas, by marrying a young man to an old woman, she would instruct him how the house was to be managed, and how he must work to live. Furthermore, when the time arrived and he found himself a widower, the young girl whom he would then take to wife, would benefit by the instructions which he had received from her predecessor.

The proverbial mother-in-law, even in the days of long ago, often proved a source of anxiety to the swain. In most cases, he was not allowed to approach or to converse with her. The Arawak dames were provided with a specially made basket, under which, turned upside down—the basket I mean—they would crouch on the advent of the son-in-law. An uncivilised Warrau at the present day does not talk with his mother-in-law; she turns her face away when he passes anywhere near. Amongst all the tribes it was considered incestuous for cousins to marry.

In the case of a Carib captain being called to his last long rest, his wives would watch the body for a space of thirty days, each taking turn and turn about in their duty, and wondering to herself all the time whether she would be the one chosen to accompany her lord and master to the Inscrutable Beyond. When the time for burying the corpse arrived, and the grave was completed, one of these poor wretches would be buried alive with it. The eldest son inherited and took possession of his father's wives except the one who bore him, and it was she who was usually the one chosen to accompany the dead. In other tribes, the widows became the property of the next surviving brother; in others again, they were apparently free to pick and choose for themselves. With the old-time Arawaks it was a matter of choice with the next surviving brother whether he took her or not, his acceptance or repudiation of her being publicly procalimed during the course of the Makwarri or so-called Whip-dance, really a ceremonial festival in connection with deceased males,—a festival which corresponded with the Hau-yari dance for deceased females.

Thus, in the maquarri, just before the dancing took place, the widow got her hair cut by the male members of the man's family and paiwarri poured over her head; this was symbolic that she was done with, and was free to return to her people, unless of course, the next elder brother wanted to take her to wife. So in the course of the Hau-yari festival the deceased woman's relatives cut the widower's hair and washed him with paiwarri. If a well behaved man or woman, only a little of the hair would be cut, and the paiwarri poured through a sifter; if, on the other hand, he or she had been badly behaved and ill-tempered in their respective domestic lives revenge would now be taken by the cutting off of all the hair, and dashing the liquor over the body—as roughly as possible.

The Guiana Indians, like many other present-day savages, believe that they are peculiarly favoured by an exemption from death except by old age, and that

any other cause is but the work of some spirit perpetrated either judicially or of mere malice, as some affirm, or through the importunity of a votary. An evil spirit, one who causes an evil, might send an animal to bite and sting a person, or cause a tree to fall on him, his axe to cut him, water to drown him, or he might send the mysterious Yawahu-shimara or spirit's arrow which has the quality of inflicting any of all the ills that flesh is heir to. Some of the Indians in addition ascribed damage to their fields and the cause of their strifes and disputes to these evil spirits. All Indians understood somewhat the application of the means of combating disease, etc.—fasting, bleeding, water-baths, mud-baths, sweating, decoctions of various plants. I myself in the Pomeroon District have met with certain surgical appliances, of undoubted Indian origin and excellent value. It was only in the more serious cases that they called in the medicine man, to exorcise these spirits. As doctors, augurs, rain-makers, spell-binders, leaders of secret societies and depositories of the tribal traditions and wisdom, the influence of the medicine man throughout the Western Hemisphere was generally powerful. Of course it was adverse to the Europeans, especially the missionaries, and also of course it was generally directed to their own interest or to that of their class. But this is true of priestly power wherever it gains the ascendency, and the injurious effect of the Indian piaimen on their nations was not greater than has been, in many instances, that of the Christian priesthood on European communities.

The apprenticeship of the piai-man in the olden days was very far from being the proverbial bed of roses. Amongst other tests, he had for many months to practise self-denial, and submit under a stinted diet to the prohibition of what were to him accustomed luxuries. He had to satisfy his elders in his knowledge of the instincts and habits of animals, in the properties of plants, and the seasons for flowering and bearing, for the piai-man was often consulted as to when and where game was to be found, and he was more than often correct in his advice. He also had to know of the grouping of the stars into constellations, and the legends not only connected with them but with his own tribe. Finally he had to submit to a chance of death by drinking a decoction of tobacco in repeated and increasing doses; in the French Guianas, amongst the Roucouyennes—a Carib tribe—mixed with this decoction were the drippings from a dead body. Tobacco smoke was believed to have a peculiar attraction for the evil spirits, and hence so commonly employed in their invocation. The peculiar feathered rattle of the piai-man had an esoteric symbolism, the history of which has been well traced, but of this, as well as of the subject of sickmen and medicine generally, I cannot speak here. It is a curious fact that so many people in British Guiana as distinguished from those in Surinam and Cayenne regard the business of the piai-man with such unkindly feelings. To know the traditions of his tribe to have the requisite skill in the tracking and capture of game, and to cure disease by means of the many medicinal plants to which he has free access, can surely be no crime; even if he makes use of a procedure of exorcism, we can find his methods paralleled in the Mother Country by the Church but a little more than a century ago, and by certain of the peasantry even in the present day. Is not, after all, Mr. Stead's present relations with Julia's spooks but another instance of a "tribute to the modern babbling"?

It is only ignorance that identifies the Kanaima business, *i.e.*, blood-revenge, with that of the medicine man. A medicine man may have cause to practise Kanaima, but every person who practises Kanaima need not be a medicine man. The distinction was patent to the first Europeans who visited the Guianas.

In a general way the Island Indians, like all primitive peoples, recognized the existence of a power inherent in all things, and, in order to influence that power so far as they needed its aid, they personated it in symbols. Being agriculturists, the most powerful gods to them were naturally those earth deities and sky deities that watered their fields and made their crops grow. Every Cacique relied on supernatural beings called *zemis*. In Cuba, Columbus tells us that in each village there is a house apart in which there is nothing except some wooden images carved in relief which are called *Cemis;* nor is there anything done in such a house for any other subject or service except for these *Cemis* by means of a kind of ceremony and prayer which they go to make just as we go to churches. It is an interesting fact that at the present time the B. G. Arawaks speak both of the medicine men and of their Kick-shaws by the same name as zemi-tchichi.

Amongst the Warraus there was the Aru-hoho festival held at the time of the ripening of the cassava, as a thank-offering to the good-spirits for what they had given, and as a douceur to prevent the evil ones from doing them harm. From the description of Warraus I have been able to reproduce an almost complete picture of such a festival and dance. In the same way that many Christian Church festivals have supplanted respective Pagan ones, so has that of the present St. John's Day replaced that of the ripening of the cassava.

Every foot-print in the human path along which Indian life trod, was made the occasion of a festival, and dance. Births, deaths, and the various physiological stages through which men and women passed, the building of a house, the call to arms, a successful slave raid, or hunting expedition, the initiation of a captain, the installation of a Cacique, the arrival of distinguished visitors, were all thus celebrated.

Even at the present time in the Pomeroon District with the building of a house or rather at its completion a party is given, and when all the guests are arrived, some of the cassiri, before its distribution among the guests, is thrown by the house mistress on to the uprights, who also places pieces of cassava at the four corners under the eaves. This ceremony is but a development of the same idea which underlies the mind of the New Guinea savage, when he sacrifices a victim under the first post of his new house, and that of the civilised dignitary who buries certain coins with an effigy of the King's head within the foundation stone.

The initiation of a captain, outside of the drinking and the dancing, was a pretty serious concern.

The candidate had first of all to gather round him all his kinsfolk and then othe s, either attracted by his valour or else influenced by him, his relatives, and friends. When he had, say, 100 men in his retinue, he provided drink, and inviting the Caciques and other captains of his nation, told them of his brave deeds, and sought admission into the ranks of captains. The judges being convened,

the applicant was placed naked in the centre of the house, while the oldest captain, with a whip made of krowa fibre, lashed him unmercifully from top to toe : the thong was then handed to the next oldest captain, who repeated the flagellation and so on with the remaining ones. The Caciques and the large audience which were present kept strict silence : if they heard the slightest groan or observed the least sign of pain they cancelled the application, and stopped him from undergoing the two remaining ordeals. Granted, however, that he passed the test successfully, he was greeted with shouting, applause and congratulations, and then everybody got drunk.

The necessary time having elapsed for his wounds to become cured and healed, the candidate's next step was to procure another large quantity of drink, when a day would be appointed for the meeting of the Chapter so to speak. Slung up in a cotton hammock and completely covered in its folds, the aspirant for captain's honours was tied up in it with three cords—one at his head, a second at his feet, and a third round his middle. Each captain then raised the folds of the hammock from the sides, and dropped within it a cancful of vicious ants. If the candidate heaved so much as a sigh. or made the slightest involuntary movement (though the ants bit his eyelashes or other equally delicate areas) he was considered to have failed. Otherwise, he was correspondingly congratulated on having passed the test.

The third ordeal which might be described as something infernal was carried out as follows. The judges and people generally having been assembled, a hurdle woven of small canes—large enough for the candidate to rest on,—and covered with a varying number of plantain leaves was slung about a yard from the ground. Lying upon his back upon this rack or scaffold, a hollow cane stem, about a yard in length, was put into the candidate's mouth for him to breathe through. He was then covered from head to foot, both on top and at the sides, with plantain leaves, care being taken that those covering the head and chest were broken through to make room for,and to beattached to, thecane which was fixed vertically. When completely covered and enveloped in this mass of leaves, a fire was lighted below. This was what might be called a mild slow fire because although the flames only just licked the hurdle, they in reality caused very great heat to the unlucky sufferer. In the meantime certain of the leaders busied themselves in stirring up the fire, others in limiting it, some would watch very intently to see if the victim moved or not while others would strain every nerve to tell by the breathing, whether the candidate was weak or strong. After a certain time, the scorched leaves were removed. If the candidate were found dead, the ceremony was brought to a close with mournful lamentation. But if still alive, everybody would be jubilant, there would be a lot of shouting, all ending with drinks to the health of the new Captain.

All the tribes had their sports, games and amusements, the Otomacs being specially singled out by the fact that the suffragettes were in full force, so far as the equality of the sexes in the public games were concerned.

The study of linguistics offers a wide field to any enquirer who undertakes to work it. I myself am two far advanced in years to do it. In the course of my own reading of the old literature I have, however, noted many an interesting word although I have only concerned myself with those which have been intro-

duced from the Indian into European languages. Hammock has nothing whatever to do with the "hange-matte" of Surinam, the "hang-mae" of French Guiana. The first mention in history of a hammock is in the letter of Dr. Diego Alvarez Chanca, relating to the second voyage of Columbus, dated 1494. It refers to Guacamari, one of the San Domingo chiefs who is described as being "stretched upon his bed," which was made of cotton net-work, and according to their custom, suspended. It was called "hamaca" by those San Domingo Arawak Indians, and is still so named in Spanish.

Jaguar comes to us by medium of the French, from the Oyambi term "yaouar" of the Oyapock River in Cayenne.

Mat ipi, amongst the same people, means a camudi, an animal to whose muscular constructions the action of this important domestic article has been likened by many an old author. Fermin, in his history of Surinam, calls it couleuvre caraibe, *i.e.*, the Carib snake.

Kui-yu, the Indian woman's apron of this colony, is really the name for the lap of the male uniform in French Guiana, as it also was on the Orinoco. The word itself is met with, more or less distorted, throughout the Guianas.

Achi, is a common term for capsicums amongst the Indians within very wide limits from Cayenne to the foot of the Andes. It is also mentioned in the great Admiral's history written by the younger Columbus in connection with the Antillean Islands.

In conclusion, I propose giving a few notes concerning agriculture in the old days.

The Guajivas and Chiricoas were the only old-time tribes in the Western Guianas who did not cultivate their lands—they accordingly were always travelling from river to river, collecting wild fruits, and hunting game; they never built houses and had no artificial shelters from sun or rain. The other Indians used to say that these people had learnt their manner of life from monkeys and other animals: on the other hand, it was this very manner of life—the nomadic habit—that saved them from extinction. The Guajivas are still the same wandering gipsies of a couple of centuries ago.

Those who did cultivate their lands set about their work as follows, an interesting account of which has been recorded by one of the old Jesuit Fathers.—"With their axes made of a double-edged flint fixed midway in a suitable wooden handle, they used to cut the green stems of the brambles and briars after having broken them down with their hard-wood clubs: the women subsequently burnt the dry timbers. It took them two months to cut down a tree . . . . To start, throw up, and form furrows, after burning the undergrowth, they make use of shovels formed of very hard wood. . . They manufacture these shovels with fire, burning some portions, and leaving others free, not without skill, symmetry, and the expenditure of much time. . . . . They heap up the earth on either side of the furrow, and with it cover the straw and dried grass: they then sow their maize, yams, and other roots, etc., and in all parts a large quantity of capsicums."

The clearing of the fields then, as now, invariably proved irksome and toilsome to the men. The Salivas would appear to have practised a good treatment for this complaint, because when the time arrived for the clearing, the young men were placed in lines, one individual separate from another, a certain number of the older men providing themselves with whips and thongs. As soon as intimation was given that it was time to begin work the whipping of these young men commenced, and notwithstanding the cuts and marks which their bodies received, neither groan nor complaint escaped them. It was said that the object of the whipping was to prevent laziness.

Amongst the many economic plants, other than those found wild, which were cultivated by practically all the Guiana Indians, may be mentioned maize, cassava, yams, plantains, pine-apples, paw-paws, and water-melons, various palm fruits (jigirri, camuirri, veserri, etc., which so far I have been unable to identify) and several dyes. On the authority of Gumilla, sugar-cane appears also to have been cultivated previous to the advent of the Europeans. The same missionary also tells how he, the first European visitor to the Orinoco district, obsreved wild rice growing, increasing, and ripening, throughout the moist soil subject to inundation, without anyone sowing or cultivating it, but that the inexperienced Indians did not recognise the use of the precious grain, although the little birds did. It is this same authority who speaks of a particular kind of maize, which might probably be searched for now with profit. In his own words, he says that "the Otomacs, Guamos, Raos, and Saruros, sowed a peculiar kind of maize which has not spread, nor have I seen it amongst other nations; in their own language, they call it onona or 2-month maize, because in two months from sowing, it grows, throws out ears of corn, and ripens, with the result that, in the cycle of the year, they collect six harvests of it.

In the old days also, as now, the women planted in the fields, a sight which excited the compassion of one of the first Missionaries in Western Guiana. This dear old Spaniard tells us in his quaint way, the explanation which he received for this. "Brothers," I said to them—"Why don't you help your poor women to plant? They are tired with the heat, working with their babies at the breast. Don't you recognise that it is making both them and your children sick?" "You, father," they replied, "don't understand these matters, and so they accordingly worry you. You have yet to learn that women know how to bring forth, and that we men don't. If the women plant, the maize stem gives 2 or 3 ears of corn; the cassava bush gives 2 or 3 baskets full of roots, and similarly everything is multiplied. The women know how to induce the grain to grow, but we men don't."

At the close of the lecture, an Aboriginal Indian brought to the meeting for the purpose of Dr. Roth, gave an exhibition of how to make fire with two sticks.

PROCEEDINGS OF THE SOCIETY.

Meeting, January 13th, 1910. *Elections.*—Member—Mr. P. A. Farrer Manby. Associate—Mr. Chas. R. Keyte.

Mr. T. A. Pope was elected President for the current year.

The Hon. Treasurer's statement for 1909 was laid over to be audited; it showed a balance to credit of $14.27.

A letter and resolution from the West India Committee in favour of preferential trade with Canada was referred to the Commercial Committee.

A series of drawings of Indian basket work by Dr. W. E. Roth was exhibited and the Hon. B. Howell Jones spoke of the value of this and other work being done by this noted anthropologist.

Donation to Library.—Prof. Eigenmann's Pamphlets on Guiana's fishes from Mr. B. S. Conrad.

Meeting, February 10th, 1910. *Elections.*—Associates—Messrs. R. R. McKay, W. N. R. W. Smith, Alex. McCowan and H. W. Edghill.

The Hon. Treasurer's statement was adopted on the motion of Mr. Luke M. Hill. A resolution in favour of increased trade relations with Canada was passed.

Donation to Library.—Report of Isthmian Canal Commissioners 1908; to *Museum*, Mrs. Harry Garnett—Collection of Birds' eggs.

Dr. W. E. Roth gave a lecture "Some Notes on the Manners and Customs of the Old-time Guiana Indians" (see p. 62) for which an enthusiastic vote of thanks was accorded.

Meeting, March 24th, 1910. *Elections.*—Associates—Messrs. Courtney Harewood and Frank Drayton.

The President spoke of the loss sustained by the Society owing to the death of the Hon. Secretary, Mr. P. P. Fairbairn, and it was agreed that:—"The members of the Royal Agricultural and Commercial Society desire to place on record their deep regret at the death of Mr. P. P. Fairbairn, their late Honorary Secretary, and their appreciation of his services as an active member of the Society for many years, having been a Director for several years and Honorary Secretary for about six months.

"The Members further direct that a copy of this Resolution be sent to Mrs. Fairbairn with an expression of condolence with her and the family in their recent bereavement."

Donation to the Library—Jones' and Scard's "Cane Sugar" from the authors; to the *Museum*, 3 micro-photos of Cane Sections from Mr. Geo. Hughes; and 7 concrete blocks from Sprostons, Ltd.

Meeting, April 28th, 1910. The President reported that Mr. Joseph J. Nunan had been elected Honorary Secretary and Dr. Francis Watts, C.M.G., Imperial Commissioner of Agriculture for the West Indies, an Honorary Member.

The Hon. B. Howell Jones called attention to a kind of timber known in Trinidad as " Pois dous " (Inga vera), which was considered suitable for puncheon staves. The tree is known here and it would be of great advantage to replace the costly oak staves by a local wood. Mr. Jones also exhibited an intestinal worm which caused the death of a parrot.

Donation to the Library—Isthmian Commission Reports 1907 and 1909 from Mr. A. J. Clare; Petrie, The Palace of Apries from Dr. F. H. Anderson; photo of Mr. Thomas Daniells, from Hon. B. Howell Jones.

Mr. Luke M. Hill read a paper on " The Nomenclature of Georgetown, its Streets and Districts." (See page 42)

In moving a vote of thanks which was warmly accorded, the President spoke of Mr. Hill's impending retirement and the value of such a paper being read before they had lost the opportunity of getting Mr. Hill's special knowledge. The President also spoke of the desirability of having the names of our plantations dealt with in a similar way.

Meeting, June 16th, 1910. *Elections.*—Associates—Messrs. F. H. Dupré, William A. Boyd, T. Callender, E. D. Chatterton and V. C. Rogers.

The President spoke of the lamented death of His Majesty King Edward VII, Patron of the Society. The Directors had prepared a letter of Condolence to His Majesty King George V. which was copied in an artistic manner by Lieut. Carroll and was shown to the meeting.

Lieut. Carroll received the thanks of the meeting for his kindness in preparing the letter.

The President also reported that Mr. James Gillespie had been chosen to represent the Society on the Board of Agriculture and that Dr. Francis Watts had written to thank the Society for electing him an Honorary Member.

In connection with the parasite shown by the Hon. B. Howell Jones at the previous meeting, Dr. Wise wrote that it was similar to a Brazilian fowl pest.

The Honorary Secretary called attention to the fact that many of the most influential colonists did not belong to the Society; he proposed a Committee to enquire what steps might be taken to make known the advantages of membership. The President, Honorary Secretary, Messrs. Franks and Mackenzie, and Miss Murray were appointed to make the proposed enquiry.

The President reported that an Agricultural Conference was to be held in the colony in January, and that His Excellency the Governor proposed to nominate the President of the Society as Vice-President of the Conference.

Donation to Museum—Two numbers of the " Royal Gazette," 1802 and 1830, and a Murderer's knife, from Hon. B. Howell Jones; 11 silver and copper coins from Mr. Jas. Frankland.

To the Library—Map of Brazil and Pamphlet from Mr. Claudino D'Abreu ; two Journals from Department of Agriculture for Ireland.

Mr. Jones spoke of the interest of the old number of the " Royal Gazette," November 6th, 1802.

Mr. Franks laid over a letter from the Imperial Institute in reference to Tobacco grown on the Brazilian frontier which was said to be of fairly promising quality.

Mr. J. Rodway read a paper on the " Names of Our Plantations " (see page 57) for which the thanks of the meeting were accorded.

Meeting, July 14th, 1910. *Elections.*—Members—Right Rev. Dr. Galton, Hon. Francis Dias, Messrs. Fred May, J. B. Cassels, Lionel Hawtayne, Percy Wight, Hugh Norton and Dr. Minett. Associates—Messrs. S. P. Jones, Dennis Gonsalves, J. G. Litterick, E. D. Bayne, J. F. Smith, T. Massett, Frank Mackey, and R. O. Spence and Rev. Fathers Dawson, Hornyold and Besant.

The Hon. Secretary reported that the Committee to enquire how the advantages of the Society might be brought to the notice of the public had met and prepared a pamphlet which was being distributed. As a result of their work about twenty additional members were coming in and this would increase the income, with which something might be done to improve the Reading Room.

Donations to the Library—9 vols. Books and 20 Periodicals from Mr. J. J. Nunan ; to the *Museum*, Pottery, etc., from kitchen-middens in the North-West, from Mr. J. E. Hewick.

Mr. J. Rodway read a paper on " Our River Names " (see page 53) for which thanks were accorded.

Meeting, August 11th, 1910. *Elections.*—Members—Dr. Craigen and Mr. J. Lamming. Associates—Messrs. W. de Souza, J. T. I. Crooks, G. F. King, J. C. Brumell, J. H. S. McCowan, Russell Gill, C. B. Field and Rev. G. V. Salmon. Lady Subscribers—Mrs. Macquaide and Mrs. Stephenson.

The Chairman reported on behalf of the Directors that in reply to a petition to open the Reading Room at night the signers were informed that in view of former experiments which failed and in view of the lending of periodicals for the evening they could not see their way to comply.

A Government letter asking a report on the proposed Polders Bill was referred to the Agricultural Committee.

On the motion of Mr. Nunan By-law 5, chap. 5, was rescinded and Rule 15, Schedule C, altered to three days instead of seven.

Donations to Library—Catalogue from Free Library Committee ; Map of Halifax, N.S., from Messrs. Sandbach, Parker & Co.

Dr. Minett read a paper on " Tropical Ailments from a Public Health point of View," for which a vote of thanks was warmly accorded.

Meeting, September 22nd, 1910. *Elections.*—Members—Mr. A. G. Monagas, Drs. Ozzard and Rowland, Captain Brickhill, Mr. E. V. Ellis and Hon. P. N. Browne. Associates—Dr. Duncan, Messrs. Albert Mendonça, W. E. Davis, T. E. Canniegieter, Hector McLean, C. J. Maggs and W. Lowton.

The Chairman reported that the Conversazione and Lecture of the 31st August was a pronounced success and it was hoped that they might be able to repeat it annually.

The Chairman also reported on behalf of the Directors that the Hon. B. Howell Jones had been elected to represent the Society at the coming Agricultural Conference; that the Museum had been exempted from town taxes; that a Ladies' Dressing Room was being provided; that an electric light installation was being made in the Museum; that "Timehri" was being revived; and that the Government application for a grant was considered inopportune.

The Chairman also reported that Mr. Jas. Gillespie had been elected Chairman and Mr. Richard Lloyd Vice-Chairman of the Agricultural Committee, and that his Committee was considering the proposed Polders Bill.

The Curator of the Museum exhibited a hatchet-shaped stone implement from Barima and a Patamona Indian tally to reckon the days as they elapsed. He exhibited a few of the 150 specimens of Guiana fishes sent by Dr. Eigenmann.

Donations to Library—Bacon is Shakespeare from Mr. Frank J. Burgoyne, a Journal from the Agricultural Department of Ireland; to the *Museum*—Maté and Quinoa from Mr. Franklin Adams; Seeds of Quina from Mr. F. S. Chapman; Album of Messina Earthquake results from Mr. A. W. Swain.

Meeting, November 3rd, 1910. *Elections.*—Members—Mr. H. Daley and Captain O'Kelly. Associates—Messrs. C. K. Osborne and C. W. Collier.

The President reported that the Society's Letter of Condolence on the death of His late Majesty had been acknowledged and accepted and that His Majesty King George V. had consented to become Patron of the Society.

Government papers in connection with the Mail Service were taken for notification.

Donations to the Library—9 vols. Books, 24 pamphlets and 5 plans from Mr. Luke M. Hill; 6 numbers Humboldt Library from Mr. W. B. Gray; Jamaica Place-Names from Mr. J. G. Cruickshank; and Joseph Cowen's Speeches from Miss Cowen.

Mr. J. D. Lawrence gave an interesting account of an out-of-the-way colony under the title "Reminiscences of the Falkland Islands," for which a vote of thanks was accorded.

Meeting, December 8th, 1910. *Elections.*—Members—Mr. R. M. Parker, Captain R. Gibson, Messrs. L. Dalton, G. Withers, W. Stuart Cameron, M. McTurk, Dr. P. E. W. MacAdam, Dr. E. S. Massiah, Messrs Arthur Clare and J. Mittelholzer. Associates—Rev. W. G. Kimber, Messrs. G. P. Jorge, N. Chap-

man, L. H. J. Tinney, W. Cunningham, Jas. Winter, L Buxton, J. Raleigh and R. Humphrey.

The President reported that His Excellency the Governor had appointed the Hon. B. Howell Jones to represent the Society at the Agricultural Conference, and that Mr. Jones promised to do all he could to make the Conference a success. He also reported that "Timehri" was being put in the hands of the printers.

The Office-Bearers for 1911 were elected, Mr. J. J. Nunan being chosen President.

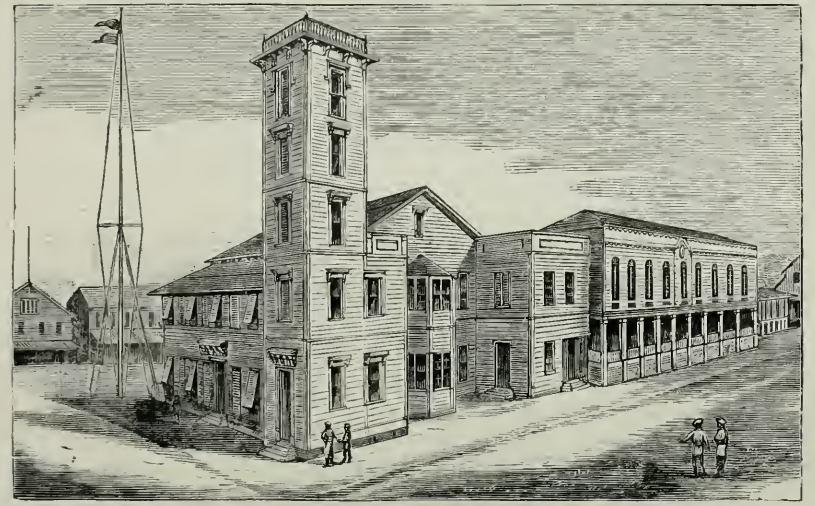
The Curator of the Museum exhibited specimens of Silk Moths from India and China which had been partly bred from cocoons in England and one species here; he also exhibited Trinidad and British Guiana froghoppers, the former a great pest to canes in that island.

Donations to Library—From the Government: Sir Rubert Boyce's "Mosquito or Man? and Health, Progress and Administration in the West Indies"; from Mr. Luke M. Hilll, 30 Pamphlets on Agriculture.

For the Museum—From Father Cooksey, 14 pieces Pottery and 1 Stone Implement; from Mr. Luke M. Hill, an old Dutch Bottle found in excavating the Market Stelling. In connection with the pottery the Curator spoke of its resemblance to Mexican relics.

The President gave a short account of the work of the Society during the year. They had to deplore the death of their Patron, King Edward VII, the Honorary Secretary, Mr. P.P. Fairbairn, a Director, Mr. A.P.P. Mackey, and an old member, Mr. Saltus Jones. They must, however, congratulate themselves on the election of Mr. J. J. Nunan as Honorary Secretary, through whose influence the cloud which seemed to impend over the Society was brightening to a considerable extent. There were large additions to the membership and increasing interest in the work of the Society. Papers had been read at the meetings by Dr. W. E. Roth, Mr. Luke M. Hill, Mr. J. Rodway, Dr. Minett and Mr. J. D. Lawrence. There had also been evening lectures by Sir Crossley Rayner and Mr. T. A. Pope as well as a Conversazione, all of which had been pronounced successes. He hoped the Society would be even more successful with Mr. Nunan as President.

Mr. Hill hoped that the new President would succeed in getting larger attendances at the meetings; on his motion a hearty vote of thanks was warmly accorded to the retiring President and other office-bearers.



R. A. & C. SOCIETY'S PREMISES, 1870.

TIMEHRI:

THE JOURNAL OF

THE ROYAL AGRICULTURAL AND COMMERCIAL SOCIETY OF BRITISH GUIANA.

VOL I. JULY, 1911. No. 2.

FOREWORD.

The cordial reception given by the reading public of the colony and by our correspondents abroad to the revival of *Timehri*, the historic magazine published by the Royal Agricultural and Commercial Society, enables the editors to face the task of publishing the second number with equanimity. The supply of suitable matter has been so great that we have had to hold over many interesting and valuable articles until our third number which will appear in time for the Christmas mail. Notwithstanding this, the present issue is nearly double the size of the original venture and we have reduced the price from sixty to thirty-six cents (1s. 6d) in expectation of a greatly increased circulation.

In the first number I referred to the inexplicable pessimism of the colony which distinguishes it so curiously from all the other possessions of the British Crown —the settled hopeless expectation of failure for any British Guiana enterprise, and I indicated the creation of a tendency to greet the unseen with a cheer as the most suitable task of the Royal Agricultural and Commercial Society. Whether any marked success is likely to attend such an effort to further the welfare of the colony it would be premature to say. In the words of Edmund Burke, one cannot argue with a prophet : one can only disbelieve him. At all events the Editors of *Timehri* are glad to be in a position to mention that the results of the first publication left a considerable balance on the right side of the account, and the enterprise of the merchants of the colony in providing us with advertisements justifies the expectation of a substantial increase of this sum, which will be used as a reserve to ensure the continued publication of the magazine even during any temporary recurrence of those days of financial stress which caused it to disappear in 1899. The Directors, moreover, see no reason to anticipate anything but a career of increasing usefulness, activity and prosperity for the Society. Its total membership is now about 535 and at the date of writing some eighty more persons have paid up their subscriptions than there were members, associates and lady subscribers at the beginning of the year. Its various Committees are active and the Museum authorities are contributing materially to the study of our economic pests. Mr. Harold Moore's work in this direction has been recognized by an enterprising planting house and he has entered its

service, but we are glad to say that like Mr. Quelch he remains in touch with the Museum. The Society is expending some fifteen hundred dollars in improvements and has engaged a Lady Assistant Librarian. It looks confidently forward to the inauguration of a substantial reserve fund within the present year. In the Society at least pessimism has no place.

The Directors have asked Rev. Mr. Aiken and Mr. George Mackenzie to assist he Editors in the preparation of this and future numbers, acting as Scientific and Literary Assistant Editors respectively. Both gentlemen are very busy men but have readily placed their services at the disposal of the magazine, thus enabling us to form an editorial committee which should be in touch with every phase of scientific, economic and literary activity in the colony. Mr. Mackenzie is at present one of the editorial staff of the *Daily Chronicle* and is the cadet of a Scottish family which seems destined to leave its mark on the modern literature of Scotland, notably in the line of historical research. He has shown particular interest in economic questions in the colony. Rev. Mr. Aiken's scientific attainments are well known in the West Indies, and New Amsterdam has reason to lament the disappearance of his able pen from the journalism of the Ancient County. Its loss, however, means the gain of the colony as a whole. He has even managed to find time for a valuable article on British Guiana mosquitoes in the present number. Readers of Sir Rubert Boyce's *Health and Administration in the West Indies* will remember the tribute paid by that great authority to the worth of Rev. Mr. Aiken's studies on this subject.

The scientific side of the magazine is the especial province of my learned colleague, Mr. J. Rodway, F.L.S., Librarian and Assistant Secretary, who is also Curator of the Society's Museum. The enlarged membership and widened activities of the Society have imposed a considerable increase of work upon Mr. Rodway but he has faced the task of editing *Timehri* with the same energy with which his other duties are performed, and in addition contributes to this issue an article on his own pet subject. Scientific articles are also contributed by Dr. Ozzard, (Government Medical Officer and for some time Resident Surgeon, Georgetown Public Hospital), Mr. Edgar Beckett and Mr. Cameron which should attract widespread attention. The absence of Mr. Stockdale in London and the recent pressure of special work in preparing pamphlets on our local industries have deprived us of contributions from the department so ably presided over by Professor Harrison but they have been promised for the Christmas number.

Amongst articles of more general interest are those of Mr. George Bayley (Census Commissioner) on the lighter side of the recent census of the colony; of Mr. Cruickshank on the interesting subject of Negro Dialects; and of Messrs. Cole and Humphrys on their respective hunting experiences. Mr. Humphrys is a very young contributor but his article reveals powers of observation which it is an object of this publication to encourage among the rising generation in the colony and which should be especially useful in Mr. Humphrys' work as an Officer of the Lands and Mines Department. We trust that he will have many emulators among those of his own age and that

articles by our younger citizens will form a prominent feature of coming numbers of the magazine. Mr. A. A. Thorne, F.R., has been kind enough to give us his views on the subject of Education on which he is an undoubted authority. It is hardly necessary to say that the object of the editors is to encourage full and intelligent discussion and that they take no responsibility for controversial opinions expressed in signed articles. Mr. E. A. V. Abraham, one of our leading philatelists and connoisseurs, has given us an article and has promised contributions for future issues. We publish Mr. McTurk's account of his captivity in Venezuela at the time of the Boundary dispute which has already been read before the Society. His Honour Mr. Justice Hewick relates an incident in his earlier career in the Straits Settlements, where he took part in the Perak War. The learned Judge will read a paper on the Straits Settlements at the next General Meeting which we hope to publish in our Christmas issue along with some local sketches from his clever pen. Dr. Wallbridge's Reminiscences will appear in that number along with contributions from the Brazilian and Venezuelan Consuls (Senhor Alves and Colonel Monagas) on the subject of possible trade relations and communications of the colony with their respective countries. A narrative of the history of the Boundary dispute has been promised by Mr. Rodway for the next issue. Dr. Cramer, of Surinam, has promised a lecture on rubber illustrated by slides. This also will be included. We are also glad to announce a promise of contributions from our learned visitors Professor Crampton of Columbia University and Dr. Lutz of the American Museum who are at present in the colony *en route* for Kaieteur and Roraima. Their researches should result in valuable additions to the zoology, entomology and botany of the colony.

The Presidential address of this year has been included in the number, partly on the ground that the remarks it contains as to the continued retention of Roman Dutch Law may prove of more than ephemeral interest. Discussions in the Press and elsewhere followed the delivery of the address which revealed the fact that all the leading solicitors and nearly all the leading barristers were in favour of the introduction of English law with such statutory reservations from the Roman Dutch system as might be found advisable. The mercantile community appears in favour of a change. The Commercial Committee is about to consider it, and it will probably come before the Chamber of Commerce. The question will no doubt be dealt with in some practical fo m by the Legislature at an early date when he attitude of th community as a whole will be finally determined towards this important subject.

JOSEPH J. NUNAN.

BY THE MAZARUNI RIVER.

A SKIRL ON THE PIPES OF PAN.

I.

Oh for the freedom of the hills—
The strong breeze blowing;
Oh for the music of the rills
In sinuous channels flowing;
Oh for the great broad River,
Beneath the cloud-deck'd sky;
And the forests that sway and quiver,
When the waves on the shore beat high!

II.

And the air is fill'd with odours
From the delicately scented flowers;
And the little fish dart in the trenches
That feed on the frequent showers;
And the humming-birds dart 'mid the bushes,
And the bigger birds call from the trees;
And the snake glides soft in the rushes,
And the vulture floats on the breeze.

III.

And the green lizard basks in the sunshine;
And the blue-bird flits to its tree;
And the cicada screams on the woodbine,
That I brought from my home o'er the sea.
And my bungalow stands on the hill-top,
That commands all the scene from the height;
And I stand in the door-way at sun-drop,
And drink in the air with delight!

IV.

But the parrots through the open fly screeching
To their roost on the tamarind tree;
And the frogs' merry chirrup, far-reaching,
Is borne up the hill-side to me.

And the fire-fly its night-light is trimming,
And the bat lurches down from the eaves;
And the swallow no longer is skimming,
And the sensitive plant droops its leaves.
So I know that night's dark sable awning
Will soon be out-stretched like a pall—
Will descend with but little fore-warning,
And hold all my world in enthrall.—
But as sure as the night, so the morning
Will break, in its glory, o'er all!

V.

And the birds, and the beasts, fully rested,—
As the flowers raise their heads after rain—
Will awake with their powers re-invested,
To begin life's employment again.
And my soul shall arise from her dreaming,
Refresh'd by the air as with wine;
Ere the sun o'er the River is beaming,
While the stars in the firmament shine;
Shall arise to her prayer and her duty,—
And my Home, in an orderly way,
Shall salute the first dawn in its beauty—
The dawn of another fine day!

—*C.B.D.*

CENSUS COMICALITIES.

By G. D. Bayley, Census Commissioner.

Census-taking, like most other things, has its humorous side. That this should be so is not surprising when we remember that it is an undertaking in which every individual in every class of the community is called upon to contribute his quota.

Not a few of the absurdities perpetrated have their origin in the prejudice which is entertained by the lower classes against the numbering of the people. This prejudice, born of superstitious fear, is one which dates back to very early times and is by no means peculiar to the people of our colony. As a local writer has recently pointed out, when a Census was first mooted in England in 1753 it was stoutly resisted, one member of Parliament pronouncing it to be "totally subversive of the last remains of English liberty," while another expressed the fear that it would lead to some public misfortune and would be followed by "an epidemical disorder."

The old woman in one of our villages who resisted giving the required particulars for her census paper, declaring "dis same t'ing gwine bring trouble 'pon the lan' o' Demerara; yo' no read 'bout Moses when Moses count Israel," had, therefore, at least good precedent for her superstitious fears although she was very much behind the times in her ideas.

Decidedly more up to date, however, correspondingly in advance of the times, as foreshadowing the arrival of old-age pensions in the colony, was the old coolie woman who, thinking that she was to receive something, and more, according to age, told the Enumerator, "Me got am more 60 year, Sahib! me ole ole granny, put am ninety-eleben year."

Of another old lady of religious proclivities it is recorded that she preached the following homily to the Enumerator on his appearance before her: "Oh gentleman! dis Guvna bringing sin 'pon de country. He don' read he Bible? He ent know de punishment beh'n' dis t'ing! Ah read dat King David was a great King in de lan' an' dat he number Israel. God sen' one o' he chief men, a prophet, to David for he to choose one o' two troubles—wedda (whether) all he enemies should come an' overt'row de lan,' or wedda he should visit it with a sore disease. Ah relate it as ah read it. Den David say, befo' ah fall in de hands o' me enemies ah radder leave meself in de han's o' me Maker. And is so de pestilence come 'pon de lan'."

The following colloquy furnishes, *inter alia*, not a bad example of the old creole negro's faculty for simile:—*She* (expectantly):— "Ah hear say dat de New King wan' fo' know how much poo' people dem he got so as fo' sen' dem money?" —*Enumerator*: "Well not exactly so, old woman."—*She* (indignantly): "Well sah! ah tell yo' de trut', ef not so as ah hear, den me name not gwine 'pon dat paper (*shaking her head reflectively*). Sometimes goat a dance up and

same time he go a pound. (*Aside*). All dis d— foolish papah (paper) and not a d— t'ing behin' it." Thoroughly convinced now of sinister motive on the part of the Enumerator she turns away reflecting how nearly she had come to grief, like the foolish goat, alluded to in her simile, who, escaping from bounds, capers on to the public highway in jubilant freedom there to fall into the hands of the catcher of strays.

Perhaps, of all the questions to be answered in connection with the Census, that relating to age has proved the one most fruitful of incident and difficulty for the poor Enumerator. Certainly spinsters and other ladies o uncertain age would seem to regard the occasion as one on which they were privileged to prevaricate in a most unblushing manner. The astounding assertion made in all seriousness by a toothless old dame, that she was "20 years" of age, affords ground for the belief that the desire to misstate one's age is at least one form of mental aberration, for on recovery from his shock of surprise the Enumerator discovered that the ancient dame was 'touched' in her head. This should serve as a warning to all ladies possessed of the desire to suppress their real ages.

"Thirty years" was the surprising declaration of another old party. "Oh! no old woman," remonstrated the polite Enumerator, "I know your grand daughter well and she is older than that." "An' is wha' yo' and de King want wid me age, nigger man? Ah yo' go gie money 'cording to age? if so put am down 100, no so, go an ask de rat- dem fo- am, for is dey carry 'way me age paper."

Another instance in which a woman's age was lost is narrated of an African who when asked the age of his wife stated that he was not in a position to furnish the desired information because. "W'en a did marry to she she mudda did tek away she age an' gie it to she sister." In both these instances, it might be explained, what it was intended to convey was that the baptismal certificate was not available, having been taken away in the manner indicated.

"Me no got no age at all," was the answer given by an old son of the soil who, when it was explained that what was wanted was the time he was born, conveyed the required information in the following round about and somewhat indefinite fashion:—"Oh! lil' after the good old Lady Queen been mek Queen, so dem tell me; me t'ink me and she son a' mattie" (contemporaries).

Another answer in the form of a conundrum was that given by a coolie man, "Sammy" gravely inviting the Enumerator to fix the ages of his three children by three coconut trees planted to celebrate their births.

The Census synchronising with the approaching Coronation of His Majesty these two events have, by some curious process of reasoning, been connected.

"Is wha' yo bring dis papah to me fo'?" enquired a querulous old dame. "Is mo' tax yo' want for put 'pon me? Ah now understan' de t'ing. De King wan' fo' have a gran' Coronation to beat he fadda own an' so dem wan' to raise de taxes so as to make de Coronation a gran' t'ing."

While Quashie has been sorely perplexed at the various questions to be answered, Sammy has been puzzled at the method of distribution and collection

of the Schedules as witness this criticism of the procedure :—"Dis d—'tupid 'torey ; put um name paper, again bring um house lef um, again come house tek um, wha's matter no one time do um all wo'k."

He was blackand he was aggressive and he asserted that he was unable to fill up his schedule, so the Enumerator proceeded to do it for him but when the "*Read and Write*" column was reached and the obliging official proposed to fill in the answers in the negative, he stoutly protested :—"Read and write," quoth he, "mean fo' sign yo' name and read yo' Bible, but no' fo' full up papah lika dis ; put me down 'Reader and Writer.'"

That she was possessed of tact in no mean degree was revealed by the answer of an old floor-scrubber who "did mek she livin' by washin de white people houses." Asked to state her religion, she explained that it "depen' 'pon de white people dem. Ef a wo'k wid a Roman Cat'olic ah is Roman Chu'ch, ef a wo'k wid a Wesleen ah is Wesleen, an' if a wo'k wid a Scotchman a is Scotch Chu'ch. Yo' see in dese days yo' got fo' cut yo' clath wid de measure."

Yet another episode illustrative of the trials of the Enumerator. In his day he had been an industrious propagator of his species and he kept the Enumerator busy filling in the names and particulars of his reproductive excesses in the end to inform the perspiring penman with a bland smile, "Dey doesn't live home wid me doagh," and was proceeding to give their various addresses before the indignant Enumerator could recover his composure sufficiently to stop him.

When another Enumerator remonstrated with a woman for not having been at home on Sunday night to fill up her schedule she indignantly retorted, "An' why de Guvna didn't stan' home Sunday night ; ent he bin picnicing up de Lemonhall? He is de very body to show we good example, but because I black and po' you come wid yo' rudeness to me."

Various and instructive have been the particulars supplied under the heading of "Infirmities." "Sick with sore foot," "troubling with pain," "me no deaf, me eye good," are some of the picturesque and superfluous details furnished ; and one individual, a product of our expensive system of elementary education, described the "Race" to which the belonged as "mix bread" (mixed breed). In not a few instances the term "spinster" has been used to describe their "occupation" by ladies who are evidently in quest of husbands.

But it has not always been Quashie or Sammy who has been responsible for stating the required information in "unofficial" form. It is recorded of one Enumerator that, having described an individual on the Census paper as "half blind," and on being asked what he meant by the expression, he gave as an explanation that the man in question was possessed of only one eye!

M. McTURK, C.M.G

MY JOURNEY FROM KALACOON TO THE ORINOCO.

By M. McTurk, C.M.G.

On 19th December, 1887, I left my then residence Kalacoon on the Mazaruni River to ascend the Cuyuni and one of its principal tributaries the Uruan up to Callao. Allegations had been made of damage to life and property of British subjects residing in the Yuruari District, the ownership of a part of which was then in dispute between Her Majesty's Government and Venezuela. Mr. Hugh Watt, then a Member of Parliament, had made representation of these allegations to the Marquis of Salisbury, and acting on instructions received from him, I was ordered by the Governor Sir Henry Irving to proceed to the locality and make inquiry as to their validity.

I had been up the Uruan and its tributary the Yuruari in 1880. On that occasion I went in pursuit of some Venezuelans, who had raided an Indian Settlement on the Cuyuni and carried away all their cassava, and also their Canoes to avoid pursuit. I now think it is a lucky circumstance that I did not overtake these persons, as from what I have since learned of their character, I don't think I should have survived the meeting.

As from my former visit I knew of the difficulties to be met with in ascending the Uruan and Yuruari, where the falls and portages were numerous. Instead of one large boat that would accommodate my whole party I took two small ones; the boats were manned by Indians,—16 all told. It may not be so convenient to travel in small boats, but where Falls and portages are many and time an object, two or more small boats—according to the size of the party, are best. In difficult places by concentrating the crews the boats are got through or over quicker and easier. While paddling too, a certain amount of competition among the crews ensues; these circumstances, together with the fact, that in case of accident it is not likely that all the boats may be lost or seriously damaged, makes it, in my opinion always best for speed and safety to use small boats.

Rain fell daily after leaving Kalacoon. Christmas day was spent in Camp above the Wakuywang Falls. Game and Fish were plentiful, and whatever else may have been lacking there was no scarcity of food.

Beyond the usual difficulties of getting over Falls and Rapids no events of any importance occurred until the afternoon of 28th December when I met a coloured man, a native of Trinidad, who told me he had been at Callao ten or twelve days previous, and that there was great excitement there as the rumour was prevalent all over the Town that the English were coming to assume possession of that part of the Country.

At a little past midday on 5th January, 1888, I arrived at the mouth of the Uruan and camped there Lat. (6-42-48). Here I was informed by some Indians and half breeds that owing to the water being still very low in the Yuruari, my batteaux would not be able to go up it, and that I would have to get woodskins

for the purpose. Those who gave me the information had several but could not be induced to sell hire or lend them. The summary and arbitrary manner of dealing with any one who may give assistance to those suspected in any way to be opposed to the existing authorities, rendered those resident within Venezuelan influence at that time exceedingly careful in their dealings with travellers.

As a consequence of my being unable to procure woodskins on the spot, I had to send to another place one and a half day's journey further up the Cuyuni. A few hours after I had sent away the men for this purpose I met a man who had just come down the Yuruari. This man I had met and been friendly with on my former visit to these parts in 1880. He said there was water enough for the smaller batteaux to ascend the Yuruari to where we had met at the Savannah on the former occasion. As this was as far as I intended to go by water, I determined to start as soon as the men sent for the woodskin should return.

For those unacquainted I may state that a woodskin is simply a piece of bark stripped from a variety of the purple heart tree, known by the Indian name of Mowrawinaroo. The tree is felled and the requisite piece of bark wedged off. Short slits are made through the outer thickness of the bark perpendicular to the length at each side some distance from the ends. The ends are then lifted and the slits made to overlap and strongly tied. After being exposed to the sun for three or four days, the woodskin is then fit for use. In my perigrinations through the Colony I have made long journeys in these frail craft. To a novice they are most distressful to sit in, owing to their shallow depth and the seat generally consisting of a stick or piece of bark of limited size. They are essentially smooth water craft, and float in very shallow water. Their faults are in rough water, liability to break at joints and no self contained power of flotation.

Previous to the return of the men sent for the woodskins, I shot a Tapir. Although there was more meat than our party could consume, one of my crew (an Accowois Indian) would eat no part of the animal except its entrails. He became very ill after it, and was quite unable to proceed farther. I left him with some of his own tribe and he died there soon after my departure. A similar event though not so serious in its consequences happened to me after, while ascending the Mazaruni in pursuit of a murderer. One of the witnesses (an Accowois) ate the entrails of an acouri I shot; she became very ill, but a timely dose of medicine cured her.

The men I had sent away for the woodskins returned on the afternoon of the 9th January and at 5 o'clock on the following morning I resumed my journey up the Uruan. At about 9.30 a.m. this day there was an earthquake. The noise of its approach was very perceptible, but, perhaps it may have been owing to being on the water, the vibratory motion was hardly felt. I cannot say I felt it at all, but some of the men said they did. The quivering of the trees on the bank was plainly perceptible.

Entering the Yurnari this day I got both batteaux up at 9.30 a.m. on 11th to the Falls of Corewa. Here it was necessary to unload and haul the batteaux a considerable distance over the rocks. As this would entail both time and

labour, and there was no particular necessity for taking both batteaux further, I determined to send the larger one back with such things as I could do without. From hence I took with me only such necessaries as I should require for my return journey. The water was so low in the river that most of our impedimenta had to be put in the woodskins we had brought from the mouth of the Uruan. We camped early this afternoon at a Fall and portage called El Salto de la Muerte (death jump) as I had been suffering from fever all day.

A notable feature while ascending the Uruan and Yuruari was the number of hieroglyphics or Indian picture writings on the rocks. Such as were turned away from the direction of the prevailing winds and rain had a compartively new appearance, but like other markings of a similar character in other parts of the Colony, their age and meaning continue subjects of conjecture. Carib tradition asserts that at one time there was resident in these parts a tribe of Indians known as Carias and that the Caribs in one of their marauding excursions on the upper Cuyuni came into contact with this tribe by whom they were defeated. In the after cannibal feast that ensued the Carias placed a wounded Carib on a stump and bade him look on and go back to his tribe and tell them what would happen if they again came into the Caria Country. In Some way according to tradition, this man succeeded in getting back to his tribe and delivered his message ; the result of which was that at the next dry season there was a large gatherung of the Caribs who went up to the Cuyuni to the Caria Country. In the fight that ensued all the males of the Carias were killed.

It must be remembered that in remote days the Caribs were the dominant tribe and quite capable of having acted as their tradition asserts. It would appear however that after the fight all the Carib men did not leave but some of them remained taking to themselves Caria wives. This is confirmed by present conditions as there is now resident in the locality a people or tribe called Kamaracot and who speak the Carib language. It may be that as a record of their victory and to commemorate the event the conquering Caribs were the authors of the picture writing in the locality. Of course this is only conjecture.

Hieroglyphics of a like character are to be found in other parts of the Colony, at Waraputa on the Essequebo and on the Corentyne ; their similarity creates the impression that they are the work of one and the same people. It may be that they are the work of a people who at one time lived on the skirts of early Peruvian or Mexican civilization and by force of circumstances were driven from those countries and brought with them crude ideas of the picture writing then extant in those countries. We know that Cortes on his arrival at San Juan de Ulua on the coast of Mexico had his movements reported to Montezuma by a system of picture writing sent by that Monarch's officials to him from the coast by special messengers. This is I believe the first record we have of communication of this character on the American Continent. Probably some relics of this or of a similar correspondence may exist in Spanish Museums or Monasteries. It would be most interesting could we decipher these writings—not only those that exist in our near vicinity, but also on the isthmus and other parts of South America : but there is no bilingual language or contemporary writing, as in the case of the Rosetta stone, to help in their interpretation and beyond conjecture their meaning remains obscure.

On 12th January at 9 a.m. I arrived at the Savannah path where I had been on 5th November, 1880. From here there is a track over the Savannah from one cattle ranch or Estancia to another and on to Callao. The batteaux and woodskins were left here, and at 11.30 a.m. taking two of my Indians with me and a Venezuelan half breed, three days' provisions and our hammocks and blankets, each carrying his own load, we commenced our overland journey to Callao. At 2.30 p.m. we arrived at a cattle ranch or Estancia. Here by permission we remained until next morning when I hired a donkey to carry our luggage. We left this Estancia at 8 a.m. on 14th, all the harness for the donkey having to be made from a raw hide before we started.

Our feet having been almost constantly in the water from the time we left Kalacoon they had become soft and tender, and were in the very worst condition for a walk over the Savannah, covered as it is in many places with gravelly s ones. I became quite footsore as well as my men, and we were heartily glad when we arrived at the Estancia "Caiguao." We met with a rather ungracious reception on arrival at this place, and on asking to be allowed to remain there for the night, were directed to an empty stall in the stable. It was the only shelter we could get so we had to put up with it. Our inconvenience however did not last very long for in about an hour's time the major domo, one Senhor Truxillo arrived; he immediately removed us from the stable to comfortable quarters and treated myself and party with every kindness. The next morning he went with us to Callao. The Estancia belonged to a Corsican gentleman Mr. Figuerelo, who had an establishment at Callao.

On 14th January at 3 p.m. we arrived at Callao, all very footsore and myself suffering from fever. My arrival at Callao seemed to attract general attention and I was stared at apparently by every individual in the place as I passed along the street to the lodging I had been directed to. This was at the house of a German whose wife was an English woman. There was only a wall between their premises and the Callao Mine. Later I called on the manager of the Callao mine and at his request dined with him that evening. This gentleman (an American) gave me much information regarding Placer mining. As at that time mining operations in the Colony were under my supervision the information was both instructive and useful to me. I only slept one night in my lodgings. On the 15th accompanied by a M. Klimke, a mining Engineer employed in the locality I went to the Potose Mine, and had, owing to the heavy rain to sleep there, Mr. Brooks the Superintendent very kindly entertaining me. Here for the first time I heard of there being a Governor for this part of the territory and that he resided at Guacipate. Later in the evening some gentlemen connected with the Mines in the locality arrived at Potose and brought news to me of a more personal and serious character—namely that soldiers had arrived at Callao for my arrest and that I might expect their arrival at any moment and that I was to be shot at daylight next morning. This information proved to be untrue, however I had to be prepared for it, somehow it did not seem to affect me much; I had to accept it as part of the inevitable, and after handing over to Mr. Brooks my watch and money with instructions, which he kindly offered to carry out as to their disposal, I passed the night without any uneasiness for the morrow.

Early the next day (16th) while on my way to pay my respects to the Governor at Guacipati and passing through Callao, I was informed that my presence was required at the office of the Prefecto (Mayor). I went there and was served with a citation to appear that day at 3 p.m. before the Governor of the territorio, General Vincente Ybarra at Guacipati; I was not charged with any offence, so far as I could understand, against the laws of Venezuela. I was told to sign the citation which I did, it was then taken from me. I asked to be allowed to retain it, but was informed it was not allowed by law.

I continued my journey to Guacipati, kindly accompanied by Mr. Klimko. To this gentleman I am greatly indebted for the assistance he rendered me, both as regards his own efforts in my behalf and his introduction to others from whom I received much kindness and assistance. I particularly mention a Mr. Weil, a member of the firm of Messrs. Sprick Luis & Co. of Guacipati and Bolivar. Though totally unacquainted with these gentlemen (Messrs. Sprick Luis & Co.) I could not have received more kindness from them that I did had I been a member of their firm rather than a person with whom they were totally unacquainted. Mr. Weil, though a German by birth spoke English and Spanish fluently and very kindly offered me his services as interpreter in my interviews with the Governor. This may seem a light matter according to our ideas, but its real importance cannot be understood until one has lived a short time in Venezuela. I did not recognise it myself until I had to appear before General Ybarra.

Accompanied by Mr. Weil I appeared at 3 p.m. the time appointed at the office of the Governor. Here I met the Governor, his Secretary and several other high officials. The proceedings began at 3 p.m. and, through the Interpreter, I was questioned by the governor until a late hour in the evening. I was then told I must attend again at 8 the next morning and would not be allowed to leave Guacipati.

On 17th I attended again as desired accompanied by Mr. Weil. On the day previous Mr. Weil had been seated next to me, but to-day as he was explaining to me a question the Governor was in the course of asking, the Governor got annoyed at it and accused him of "falta de respecto" (want of respect) and removed him to the other end of the table putting the Government Interpreter next to me. This person a Mr. Romero was not particularly conversant with the English language, and I made objection, but was obliged to submit being told by the Governor that the Law did not permit my Interpreter to sit next to me. I then asked that some one of my own nationality might be allowed to be present, as I was the only Englishman in the room, mentioning at the same time a Mr. Aikman who had been present the day before. The Governor said it could not be permitted. I might dispense with Mr. Weil's services and substitute Mr. Aikman for him. Of course I explained that this was not my desire. After considerable disputation it was finally arranged that Messrs. Weil and Aikman should both act as my Interpreters. The examination then proceeded, and at its close I was informed that I must not leave Guacipati until the Governor decided what was to done with me. I might hear his decision next day or some day later. I asked to be allowed to go back on parole to Callao to pay such debts as I had incurred there and see my men

—this was refused, then I asked to be sent under Police escort; this was refused also, but I was told I might send for servants.

On the morning of 18th I wrote and sent a letter to the Governor, in which I respectfully stated that I had answered all the questions he had put to me plainly and without attempt at equivocation, that I do not and did not attempt to disguise my identity or the purpose of my visit, and since my arrival in the Country had done nothing against its Laws, that if he desired to detain me longer it must be on some specific charge and in due legal form and not by arbitrary force which was against the Laws of all civilised nationalities. I pointed out to him that I did not visit the territory as a private individual, but as an official from the neighbouring Colony of British Guiana and that I had given him a copy of my instructions. I further begged to remind him of the present strained relations existing between Her Majesty's Government and that of Venezuela and any aggressive act on the part of the Officers of either Government might lead to consequences which both Governments would regret and find difficult to amend, and that if after consideration of what I had written he still detained me the responsibility would rest on him and have to be explained to the satisfaction of Her Majesty's Government. Shortly after delivery of this letter the Prefecto brought me another citation to attend before the Governor at 3 that afternoon. This document he wanted me to sign and allow him to take away. As he would not give me the document I would not sign it. I explained to him that I did not wish to be in any way disrespectful to His Excellency the Governor, but if the document was a citation and directed to me it must be mine, as also if it was a letter, it became the property of the person to whom it was addressed, and I would not sign any document in a foreign language of which I could not have a copy. I further said that I would attend on the Governor at any time he might desire, as by his own command I could not leave the Town. The Prefecto went away and returned a second time with a like result. I received no answer to my letter that day or since.

At 3 p. m. the time appointed, accompanied by Mr. Weil I went to the Governor's Office. There I met the same officials as on the former occasion. After all were seated I asked that I might be allowed to speak. Permission being granted, in a few words I asked the Governor that if I had been guilty of any offence against the laws of the country, I might be punished for it, and if I had not I might be allowed to go where I desired, that was to complete my return journey by the way I had come. I reminded him that I was an official of Her Majesty's Colony of British Guiana and had entered the country as such, and was there not as a private individual but in the execution of certain duties assigned to me by the Governor of the Colony. The Governor then accused me of threatening him, and treating him with no more respect than if he was an Indian Captain, and referred to my letter of the morning as a threat also. I replied that it was not so intended, and considered it my duty to do all that lay in my power to prevent a further widening of the breach that existed between Her Majesty's Government and that of Venezuela, and that I was accountable to my Government for my proceedings, and I did not wish it to appear that I had been negligent in accurately bringing to his notice conditions for his consideration which if neglected might eventually lead to serious consequences.

After reading some formal preliminary, I was informed that my presence was an attempt on the dignity of the Venezuelan Government, or words to that effect and that I was not allowed to carry out the instructions given me by the Governor of British Guiana and I must leave the country by way of Las Tablas and Bolivar, and that I might go whenever I pleased but only in that direction.

I informed the Governor that I had not come prepared to leave the Country by the way he desired, and had not the necessary funds for the purpose. He replied that he would be willing to advance me any sum I required, and I afterwards received £50 from the Treasurer, and which amount was repaid to him after my arrival at Bolivar. A copy of the proceedings before the Governor (which I asked for) was given to me and on my return to Georgetown, with other papers connected with my journey were handed to the Government Secretary.

After the examination and previous to my departure, the Governor invited me to s residence, and as a private gentleman was both courteous and agreeable, introducing me to many Officials and others I met at his house.

I had now to make my arrangements to leave Guacipati by the way directed by the Governor. On enquiry I found it could not be before the 22nd on which day the Correo o: Mail left for Las Tablas. For the purpose of my journey I had to hire a mule and a man to bring it back. I was advised by those acquainted with the customs of the locality to have this mule brought and stabled at my lodgings the night before starting, or, after paying for it, and when ready to leave, I would likely find the animal wanting, and some excuse as to its having got away would be my only redress unless I wasted an indefinite time until it could be recovered. I did as advised, and in company with some German gentlemen left Guacipati for Las Tablas at 3 a. m.on 22nd of January, 1888. The members of the Cavalcade with which I travelled advised this early start to enable us to keep ahead of the party travelling with the Correo that would leave later the same morning. This was done with the object of getting food at the various halting places on the journey. If we let the party that travelled with the Correo precede us, or went with it, there was great liklihood that they would consume all the food to be had at the posadas or that we should get very little on our arrival after them. The mule provided for me unfortunately had some sort of skin disease. Whether from this cause or the fact of my being a bad horseman, I was always in the rear of the procession and the day before arriving at Las Tablas while trying to urge the mule on it ran me against a tree, my shin was bruised and some of the scurf from the mule got into it. I suffered for several years from the effects of this accident, and have been crippled in my movements ever since. On the 24th at midday I arrived at Las Tablas and left there in the evening of the same day for Bolivar in the steamer "Nutrius." On my arrival at Bolivar next day I was not allowed to land with the passengers and had to await the arrival of the British Consul. He arrived in a short time and took me to the Hotel Bolivar where I remained during my stay in the city. A shor ttime after my arrival I went with the Consul to the office of the Delegado, Dr. Jesus Menoz Tebaar who read a document to me in Spanish, the substance of which was to inform me that the action o General Ybarra, the Governor of the Yuruari territorio in connection with myself was approved of. During my stay in

Bolivar I received every attention from the English Vice-Consul Mr. De Lemos who did all in his power to make my stay in the city as agreeable as possible.

On 2nd of February I left Bolivar in the Steamer "Bolivar" for Trinidad and arrived there early in the morning of 4th. From Trinidad I telegraphed to the Government Secretary informing him of my arrival. By way of Barbados I arrived in Georgetown on 10th February.

Callao the objective point of my journey is situate in 7.14 N. Lat. and about 61. 56 W. of Greenwich on the right bank of the Uruan a tributary of the Urnan falling into the Cuyuni on its left bank in lat. 6. 42 North. Callao takes its name from the Mine, round which after its discovery and development the town gradually grew and became the centre of the locality, many other mines more or less successful being worked in the surrounding country. The Country in the immediate neighbourhood of the town is undulating and in many parts covered with low forest locally called "Montana." This description will apply to all the country I travelled over from the time of my landing on the Yuruari. The population of the Town; if it may be so called, was at the time of my visit, according to Government Statstics 9,177 of which 6,000 were British subjects; the remainder being Venezuelans and Germans. The trade of Callao as well as of Guacipate is almost entirely absorbed by this latter nationality. They, so far as my experience extended through the parts I traversed, seemed to occupy the same position in Venezuela that the Portuguese do in British Guiana. I was treated with much kindness by the Germans, especially so by the members of the Firm of Sprick Lewis & Co. This in contradistinction to the persons connected with Mr. Hugh Watt, on whose representations I had been sent to Venezuela. Whether, instructed to do so or not, I am unable to say, but they carefully avoided me. The principal industry of the country through which I passed was cattle grazing, and for this the grass covered plains are specially adapted. The hinterland of this Colony is similar in its character, and suitable for the cultivation of Ceara Rubber. In isolatd instances there were Haciendas of Sugar or for the distillation of Rum. These places were very diminutive when compared with those in this Colony. The raw sugar was run into moulds, holding probably two or three pounds and is called papillon, and is entirely for local consumption. The stills were perfect of their kind, but toys compared with those in our local distilleries. An amusing incident occurred at one of our stoppages for food; I noticed that the patron seemed annoyed about something and that his remarks, though I did not undertand them, were directed at me. I asked those who accompanied me to apolgise on my behalf if I had inadvertantly done anything to give annoyance. Far from it I was told, and further, that the patron would not receive any recompense for my entertainment, but was annoyed at my entering the country without an army of at least 500 men when he along with many others would have joined with me in the overthrow of the then existing government and the absorbtion of the country by the British Government. This desire to come under British rule I found prevalent wherever I went East of the town of Upata, the reason assigned being that there would then be such protection for life and property as did not under present conditions exist. The person referred to by me in this particular instance, although apparently

but an ordinary peasant, was I heard incidentaily on the quiet, a wealthy man. He said that if I had brought 500 men, he would have given me cattle to supply them with beef, but there was one condition he insisted on that I should permit him to have the first shot at Guzman Blanco. I could relate much of what I heard, and my own experience of what I saw, but the former may be exaggerated; my stay in the country was of so short a duration that what little I saw may have been exceptional. There have been many changes in the Venezuelan Government since my visit, and I have no desire to relate circmstances that might give offence or disturb existing harmony, At the time of my stay the Government seemed to be a military despotism and though there may have been a written and perfect law, the Executive for the time being was dominant.

ALMOST A TRAGEDY.

By His Honour Mr. Justice Hewick.

Wan Mat, the Prime Minister of the Rajah of Kedah, accompanied me in the early 'seventies on an expedition into the interior of the Malay Peninsula. The expedition was organised for the purpose of heading off one of the Sultans of Perak who was retreating in the direction of the northern end of the Peninsula.

We formed rather an imposing spectacle as our flotilla of "dug-outs" proceeded up the river. Each boat was filled with Malays selected for their valour and reliability. The journey was a tedious one, entailing several days of poling against a rapid stream. After a time even the beauties of nature lose their charm, when one has to sit for hours day after day in a cramped position. A speedy arrival at the point where we had determined to land was our object and no time was wasted. When Wan Mat said to me, "Tuan, we are not far off now," I was not, as may be imagined, sorry. As he spoke he pointed to a bend in the river where there were half-a-dozen or so Malay houses. This indicated a place of more or less importance in these parts. It was, as a matter of fact, the campong of the Punghulu Besar, or chief of the headmen, appointed by the Rajah to supervise the district.

News of our coming had been sent and the Punghulu, with his immediate retinue, was at the waterside to meet us. In the background were the women and children, watching the arrival of the representative of their Rajah and of the "Orang Puteh," the latter being the first specimen they had ever seen.

The Punghulu and his followers formed a picturesque group, and well accustomed as I was to the Malay of every type, I could not help being struck by the appearance of this Punghulu.

Punghulu Ibrahim was above the average height of his race. His complexion, a clear brown, showed perfect health, while his countenance indicated strength of character in every detail. The large dark brown eyes, set well apart, looked you straight in the face, and the firm mouth and chin had no line of weakness. At the same time the expression was not harsh: it was that of a man to whom, whatever his colour or nationality, one could not help being drawn. On our landing the usual formalities were gone through and we were conducted to a house which had been specially prepared for us. As it was just on sunset there was the usual call for prayers, and everyone, like good Mahomedans, facing Mecca went through the customary devotions.

The day after our arrival at the campong of Ibrahim, other Malays from the jungle joined us, and we were busy in arranging the order of advance, which it was decided should begin on the next day. Towards the afternoon Wan Mat and I were told that a strolling band of players had put in an appearance and had asked permission to give a performance. The request was granted, the entertainment to be given in the evening. Our men were delighted at the prospect of such a good send-off, for the Malays dearly love theatricals, and, in an out-of-the-way

His Honour Mr. JUSTICE HEWICK.

place such as the one we were in, the presence of a troupe of "divarting vagabonds," as strolling players were called in the time of good Queen Bess, was always hailed with delight.

It does not take long in the jungle to erect a theatre—a few posts and rafters, tied with strips of bark, and a layer of nebong leaves, and there you are. We had plenty of willing hands, and soon the pliant Malay axe and the keen-edged parang were being busily used to supply the requirements. No stage or scenery is required. Under the roof the actors take their places at one end with the orchestra on either side. At the other end the *élite* are placed, while the general audience form a ring outside, sitting on their haunches after the style of Asiatics. Damar torches afford the necessary light, and the absence of scenery is not noticed. Dialogues and entries fully explain the progress of the play, and the imagination of each individual amongst the audience can fill in the needful accessories if required. It is all beautifully simple. As the attention is focussed on the actors, it is necessary for the ladies and gentlemen to engage and keep attention. To one possessed of histrionic talent, this is not difficult, but a halting actor has a bad time of it.

The prominent members of the troupe were received by us in audience. They had come with a great reputation and had a full repertoire. Before deciding on any particular play, it was as well to see the performers. The leading lady was much spoken of. She was quite a girl, not out of her teens; *petite* in figure and full of grace, much fairer than the ordinary run of Malays, she bore traces of Siamese blood. Art was not absent in her make-up; but it was artistically applied, and enhanced the lustre of her large dark eyes, the expression in which mirrored the passing thought and mood. Her features were not such as would fulfil perhaps the Western ideal of a perfect outline if studied in detail; but the *toute ensemble* was that of a little fairy full of life and feeling. No wonder she attracted the Malays! She was an adept in all the art of dressing effectively, and, while adopting the common custom of entwining the flower of the jessamine (bunga malor) round her hair at the back of her head, she added little touches here and there which brought out the sleek glossiness of her blue-black luxuriant tresses.

The leading gentleman was also young—a good specimen of his type, with a certain refinement, the result, no doubt, of constantly playing the parts of Princes and heroes. A certain swagger was inevitable, and I did not doubt his ability to represent, with credit, a lover. Another member of whom they were said to be justly proud was the comic man. This individual looked a jester. The merry twinkle in his eyes, the shrug of his shoulders and the expressive mouth, all betokened humour and the faculty of indicating unmistakably some subtle joke far beyond the mere uttered words. This always appeals to Malays, who are keen to grasp a hidden meaning and interpret an innuendo. Altogether I anticipated the performance with pleasure and looked forward to the evening for a real treat.

As we were preparing to proceed to the theatre, the manager, or proprietor properly speaking, came in great haste towards us, exclaiming, "Alas! Tuan, Sahit the jester is ill, and without him we cannot perform." Here was a fix

Sahit had no under-study. Wan Mat and I hurried to the house where he was, and found him evidently in great pain and unable to get up. I made an examination of him, and, from his symptoms and information I received of his doings, I came to the conclusion that he was merely suffering from a severe attack of indigestion. Being provided with a small travelling medicine-chest I administered the remedy I thought would meet the case, and in a short time was gratified to find he was free from pain. But it was of course impossible for him to take his part that night. Disappointment was universal ; Kismit however was the solace.

Just as everyone was leaving, Punghulu Ibrahim appeared on the scene, followed by one of his men. We were told that this man had agreed to take the place of Sahit, that he was given to acting, and, from frequently coming in contact with these wandering players, had learned most of the comic parts, a rôle he fancied. The likeness of Chat, as he was named, to Sahit, was remarkable, and as a solution of the difficulty all voted that the performance should proceed.

Torches were relit, the audience took their seats, and the orchestra played the "overture," a wild air, noisy, yet not unmelodious in some of the passages. Malay drums are demonstrative, and the vehemence of the beaters of them provided plenty of sound. The small-stringed instruments now and then were given a chance and their wailing notes were effective. At a specially crescendo passage the leading lady stepped forward, arrayed in all the glory of a most elaborate costume, and began a soliloquy in which she appealed to the fairies to help her in her trouble. Her father insisted on her marrying an ugly old man, whose appearance she detested. Of course, there was a young man who had gained her affections. Chat came in and offered help, stating that he was sent by the fairies to come to her rescue. The ancient suitor followed, and his actions afforded Chat full scope for making fun of him. This he did with such great effect that the ancient swain went off in a violent rage, uttering all sorts of threats. The heroine and Chat also left, and the hero entered, searching hither and thither for his lady love, who naturally soon appeared, chased by a male relative and the old lover, who was attacked by the hero. A desperate struggle ensued, and the combatants disappeared in company with the relatives, who were bent on seizing the hero. The heroine was left to herself, plunged in grief. Chat then appeared again, and tried to assuage her grief, approaching and taking her hand. Pity is akin to love, it is said, all the world over ; so our comic man, beginning with pity, ended by making violent love on his own account, and brought down the house by the vehemence of his wooing. He contrasted the mimicking airs of the one lover with his own manly bearing, and the swagger of the other with an upright honest attitude, at last exclaiming, "O ! fairest of the fair, who can compare with thee ? Come with me. I will leave all. I have a nice little nest for thee. My arms shall shield thee from all harm." He was proceeding in this strain, when a woman suddenly stood up at the side, bearing a child aloft in her arms. The next moment the unfortunate infant was flung at the feet of the heroine, the woman exclaiming, "Take him ; but you must take the child too," adding words of anything but a complimentary nature. This acting was to us delightful, so realistic, a triumph of emotion. The applause was universal, our followers shouting till they were hoarse.

Suddenly there was a cry of "Amok!" and I saw Chat start forward in the direction of the woman. His drawn kris was in his hand, and his eyes were rolling in frenzy. In a moment all was changed, and pandemonium reigned supreme. There was a general stampede, but Punghulu Ibrahim, bounding forward, seized Chat from behind, and a terrible struggle ensued. When a Malay is possessed of the Amok mania, he is imbued with abnormal strength; he cares for nothing; everything that comes in his way is attacked; he starts madly on a career of killing. Had Chat not been seized at the moment, there is no knowing how many victims would have been sacrificed. As it was, notwithstanding the assistance given, it was a long time before he was secured, for, in his mad struggles, he tossed his assailants hither and thither in his efforts to get free. When he was finally secured, he lay gasping on the ground, foaming at the mouth, and looking like a demon. The facts then leaked out. The woman with the child was his wife; she was overcome by the realistic acting of her spouse, and, losing all control of herself, had given way. The insults she had heaped on Chat were also too much for him.

In the morning, when we started, we thought discretion the better part of valour, and took him with us.

The troupe disappeared during the night, and I am inclined to think never visited that campong again. If they did, I did not hear of it. Of one thing I am quite sure, and that is, they fought very shy of local aid for an under-study. Their experience on this occasion was too near a tragedy to be repeated.

NEGRO ENGLISH, WITH REFERENCE PARTICULARLY TO BARBADOS.

By J. Graham Cruickshank.

> But, planter, from what coast soe'er they sail,
> Buy not the old ; they ever sullen prove ;
> With heartfelt anguish they lament their home ;
> They will not, cannot work ; they never learn
> Thy native language.
>
> —*The Sugar Cane* (1764).

An old planter, speaking of the empoldering of the Guiana coastland, said they had to teach the slaves not only how to work but how to talk. The remark bears out the poetic injunction of Dr. Grainger . To learn English was the first mental effort of the African transported to British America.

There were two causes at work. In the first place, on the slave-ship and afterwards on the plantation, everything was done to discourage the African dialects. The small number of Whites felt that they lived, as it were, in a powder magazine. If the preponderating Blacks spoke a language known only to themselves the risk of ignition was greater. Surgeon John Atkins points out in his "Voyage to Guinea, Brazil, and the West Indies" (1736) what extraordinary caution was necessary when the "lading" of a slaver "was of one language." Therefore he advises the mixture of dialects. And Richard Ligon—the delightful, humorous, yet faithful Ligon—in "A True and Exact History of the Island of Barbados" (1657) notes as one of the main reasons which "stop all designs of massacre by the Negroes upon the Christians" in that plantation, that the Negroes are "fetch'd from severall parts of Africa, who speake several languages, and by that means one of them understands not another."

Thus discouraged, the African dialects were bound to fall into decay. They had been kept alive not in books but orally. When they became unintelligible orally and fell into disuse there was nothing to keep them from being forgotten.

Nor did the Negroes apparently make any effort to remember them. Old books tell us that the "Creole" Negroes—those of the type neither Carib nor African but true Barbadian born—were amused at the rude jargon, eked out by intonation and gesticulation, of the "salt waters." 'Monk' Lewis, the quaint, kind-hearted Jamaica proprietor, distributing presents to his Negroes in January, 1816, noted how delighted beyond measure the "Creoles" were when some of the "African rude negroes" made a low curtsey in intimation of their gratitude, and exclaimed "T'ank massa!" Doubtless the "African rude negroes" were particularly pleased with themselves.

Even generally by the African himself, no effort was made to retain the African dialects. On the contrary the African, with his wonderful imitative and assimilative faculty, rapidly became philologically a Briton.

At the present day it is questionable whether a Congo native would find anybody to understand him connectedly if he visited Guiana. I have heard a little African spoken on an isolated plantation on the West Coast. I have heard verses sung in an African dialect. But they were only scraps—a phrase or two from an old song which had lingered in the memory. I doubt if the singer and his compatriots could have carried on a conversation or an argument satisfactorily in pure African.

How effectually the African dialects have been killed in the West Indies may be judged from the very few African words which survive in the talk of the ordinary Negro.

Anansi, the great spider, we hear about from the old people. But the old people are "deading out very well" (as one of them put it), and the young people can't or won't discuss Anansi. *Putta-putta*, meaning the black mud deposited upon the banks of rivers and pools, still bears its old African signification. *Koo-koo* and *foo-foo*, which from the repeated sound are probably African in origin, have "caught on." *Nyam* is dying out. *Zombis* (jumbies) may be seen by the believing at midnight, near a favourable graveyard. *Ba-kara*, meaning "white man," survives from the Bantu or semi-Bantu languages. *Mu-kara*, its plural form, has disappeared altogether.

Of all the islands in the West Indies (not barring Jamaica) Barbados is the most favourable hunting ground for the philologist. Barbados has been British,—aggressively British,—from the beginning. Barbados dates from 1627. My illustrations for the balance of this paper are drawn therefore from Barbados.

When the African dialects fell into disuse in 1627 and after, what took their place? Naturally the talk of the Ba-kara. What was that talk? Just the idiom of his own particular part of England, Scotland or Ireland. The early Barbados planter came from the middle and south of England principally. Hawtayne was an Oxfordshire man; Walrond hailed from Devon. In later days the new "salt water" would pick up a good deal from his master. There was a close bond between Planter and Slave in later days. Many of the slaves moved about the Great House. The later "salt water" however would absorb much of his English,—probably most of it,—from the Creole Negro himself. But the early Africans,—the few, for example, who were brought along with the first settlers in 1627,—from whom did they learn English? The reply must be—from the white bondservant.

White men were the first "field hands" Barbados knew. Whites felled the woods, burnt the clearings, and planted the first "staples,"—tobacco, cotton, ginger, aloes. White men made the bush paths which linked plantation with plantation and led to the Indian Bridge. Later on, White and Negro worked in the field together. Both were treated alike,—if anything the Negro was better treated. The White lived in a grass thatched hut—the "wattle and daub"—like the Negro.

These Whites came from all over the British Isles. Irishmen were in the island at an early date. A number of them were voluntary exiles from Ireland. Many had been deported under the baleful auspices of Cromwell. "When they submitted, their officers were knocked on the head," wrote Cromwell after the taking

of Drogheda, "and every tenth man of the soldiers killed, and the rest shipped for the Barbados. The soldiers in the other tower were all spared as to their lives only, and shipped likewise for the Barbados."

Englishmen similarly found their way to the island. Naseby, the Penruddocke rising, and notably the Monmouth rebellion, furnished the Barbados planter with many a field labourer.

And lastly the Scots—the Redshanks whose name survives in the *Red Legs* (Poor Whites). Broken soldiers from Dunbar, Covenanters from the tolbooths of Edinburgh, Highlanders from Culloden, they came, exiled

"from the lone shieling on the misty island."

From *these*, the first African learnt his broken English.

Between the Irishman and the Negro there existed intimate relations. The "wild Irish" of the day were hardly less barbarous probably than the Negroes; harsh terms, as "brutish" and "barbarously bred" are used of them by writers of the period. Certainly the Irishman had an extraordinary influence on the Negro; planters complained that he used the Negro as a tool and made him fit for nothing. With this turbulent Ba-kara the Negro had many opportunities for discourse. I note one of them. It is recorded in the Minutes of Council, Barbados, under date November 6, 1655:

Runaways.—Upon information by Captain Richard Goodall and Mr. John Jones, as also by a letter from Lieut.-Col. John Higginbotham, that there are several Irish servants and Negroes out in Rebellion in ye Thicketts and thereabouts, it is ordered, that Lieut. Col. John Higginbotham have power to raise any of the Companies of Col. Henry Hawley's Regiment, to follow ye said Servants, and Runaway Negroes; and if he shall meet with any of them, to cause them forthwith to be secured and to send them before the Governor, or some Justice of the Peace, to be dealt with according to Justice; but if the said Irish and runaway Negroes shall make any opposition, and resist his forces, and refuse to come in peaceably and submit themselves, then to use his utmost endeavour to suppress or destroy them.

I never hear a Barbados Negro say "Darling," or "Deed, faith!" ("Indeed and in faith"); I never think I see a resemblance to the Irishman in his wit and impulsiveness, his good-heartedness and sudden flare-up, his hospitality, his pig even and potato—but I recall that episode two hundred years ago, when certain rumbustical Irish Servants and Negroes went out in Rebellion "in ye Thicketts and thereabouts." *

* Tom Moore's "Satirical and Humorous Poems" include some verses called "Paddy's Metamorphosis." A second shipment of Irish is bound for a West Indian Island. Those in sight of the long-look'd for shore were

"Thinking of friends whom, but two years before,
They had sorrow'd to lose, but would soon meet again

"When hark! from the shore a glad welcome there came
'Arrah, Paddy from Cork, is it you my sweet boy?'
While Pat stood astounded to hear his own name
Thus hail'd by black devils who caper'd for joy!

"Can it possibly be? —half-amazement—half doubt,
Pat listens again—rubs his eyes and looks steady;
Then heaves a deep sigh, and in horror yells out,
'Good Lord! only think, black and curly already!'"

The West Indian island must have been Montserrat. Henry Nelson Coleridge visited Montserrat in 1825, and notes: —"The negroes here have an Irish accent, which, grafted on negro English, forms the most diverting jargon I ever heard."

Would-be purists sometimes affect to be ashamed of Negro English. There are those who say that to talk "Creolese" is "vulgar," to write it is "an insult to the Negro Race.' Hear Professor Max Müller on Dialect :—"It is a mistake to imagine that dialects are everywhere corruptions of the literary language. Even in England, the local patois have many forms which are more primitive than the language of Shakespeare."

It is hardly otherwise with Negro English. There has been phonetic decay. There has been even gross corruption. Some of that may be due—or may have been due originally—to inability to pronounce certain English words; Max Müller points out that the West African dialects are poor in labials and dentals, while rich in gutturals. Some of it may be due to laziness; it is really easier to say "De" than "The." Faulty imitation may account for it partly; I have a cook who is happy if she gets the "hang" of a word, without attending too minutely to details.†

Nevertheless, whatever phonetic decay or corruption there may have been, Negro English yet preserves almost or quite in their entirety many fragrant old English words and word-senses. You hear them for the first time with a start of pleasant surprise. It is as though one found a spray of hawthorn in a field of kalulu!

The word "Wullah" or "Wullay" may be heard in Barbados. As "Wullay! I hear the man dead!" This is genuine old English. Cf. "The Canterbury Tales": *Tale of the Man of Lawe*, line 711.—

> "And whan that he this pitous lettre sey,
> Ful ofte he seyde 'alas!' and 'weylawey!'"

The word occurs also in Ramsay's beautiful lines :—

> "O waly, waly up the bank
> And waly, waly down the brae."

It must have been brought to Barbados by exiled Scots.

A delightful employment for anyone who holidays for a month or two in Barbados is just to note the old words and word-senses which fall, naturally and unaffectedly, from the lips of old Negroes.

I was walking one day below Hackleton's Cliff—I had come down the cleft called "The Ladders"—and was hastening home before the rain should fall. We are very interested in each other in that part of the world, in a friendly, human way; and strangers are rare.

An old woman in an arrowroot field leant on her hoe, and said, "Master, yo' better make haste. We gwine get a set of rain." Further down the path sat a black boy on a huge boulder of volcanic rock. I hurried past him, but the boy was not perturbed. "Cap'n," said he, "I beg a pension."

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† An amusing instance of "phonetic decay" may be found in Barbados. A white man is employed as a cattle herd. He is known locally as McFashion. McFashion? Yes, McFashion. Enquiry elicits the fact that McFashion's great-grandfather was an exile from the ancient and honourable Clan McPherson! A strange and original "Scotch" patronymic may be heard in the West Indies, to wit, "McCurious." This is no other than "Mercurius," a favourite slave-name with many of the old Planters—now "Scottified"!

That night I consulted Webster. De Foe in 1705 wrote that he had passed through "a set of misfortunes." But *set*, in the sense of "a lot," Webster recorded as now obsolete. *Pension*, meaning "a payment, a tribute" was also "obsolete." Yet in far Barbados, here were both words-senses flourishing in all their original freshness.

An old man said his mind had never given him to try Demerara. He heard there were "a many varmints in that bush." He used vermin in the old sense, not limited to offensive animals of the *smaller* kind. Another spoke of his father as having lived to a "pretty" age. Cf. Carlyle's "Cromwell" (I. 158 Ed. 1870). "We disputed it with our swords and pistols a pretty time."

"Meat" in the old Biblical sense is common, although I think principally in the sense of food for animals. A woman gathers "meat" for her goat. That part of Bridgetown where bundles of fodder are sold is known among many of the black people as the "meat market."

I was puzzled in an interview with an old Negro. He had "seen slavery," but he told me that they had many a lively time, "even though was slavery." There was a fiddler who had jobs all over the island at Christmas time. Sometimes they had a touk dance.

"A what?"

"A touk dance—fiddle, drum and thing."

Looking through Jamieson's Dictionary of Scots Dialect some time afterwards, I discovered "*Touk*—a stroke or a blow. As *touk* of drum, beat of drum."

Apropos of the survival of old Scots words in Barbados, a correspondent writes: "You sometimes hear, even now-a-days, 'Boy! I'll gi'e you a jouk', or 'I'll jouk out you' eye.' When I was a child, I was told that this was a very vulgar expression. It is really a corruption of an heraldic term. The word was *jupe* to pierce. Hence *jupon*, a defensive coat of mail to prevent piercing. The Negroes probably got it from the Scots by whom French terms of Heraldry were frequently used."

But these old words,—even the quaint corruptions of old words,—are dying out. The "young generation them" are getting literary. "Education" has destroyed much that was valuable.

A TRIP UP THE ABARY CREEK.

By Claude W. E. Humphrys.

About the middle of November, 1910, I was detailed for survey work in the Abary Creek, so well known among sportsmen throughout the colony, and I looked forward with much interest to a pleasant and sporting time. I was absent about seven weeks in all, and shall try and recount some of the experiences I had during that period. It must be remembered, however, by my readers, that I mention only the sport obtained whilst travelling and whilst not engaged on work as time and opportunity did not allow me to hunt as much as I should like to have done, and on Sundays I felt too tired to go for long tramps through the savannahs, after having wo ked the whole week. The general landing places for boats going up the Abary are either the public road or railway bridges. Sometimes it is a little difficult to obtain boats in the creek, and often you have to hire them from Mahaicony, and let them be brought up the Abary by the waterway connecting the two creeks.

After passing the Railway bridge, you see some forest on the left bank, whilst there is savannah extending on the right. One may often see the "baboon" (*Mycetes seniculus*) on the left bank of forest whilst travelling. After about an hour's pull you meet open savannah extending for miles on either side of the creek. The vicissi duck (*Dendrocygna discolor*) is here often seen in flocks of thousands, and they are more plentiful in the rainy and heavy weather than in the dry season ; in the latter, the negro cop (*Mycteria americana*), Heri (*Eurenura maguari*), the blue and white cranes (*Ardea cocoi* and *Ardea egretta*) and the smaller species such as the curlew (*Numenius hudsonicus*), pika (*Totanus melanoleucus*) and long-leg (*Totanus flavipes*) are always met with in great quantities. There is therefore great variety of shooting which extends from the Railway bridge to the first stopping place, Tiger Island, whe:e the Abary Plantation Company have a nice house and one may rest comfortably. It is a good day's paddling by boat to the above place, but if you want to indulge more freely in shooting, and you have plenty of time to spare, it is best to make it a two days' journey. Continuing onwards from Tiger Island, you pass the pumping stations of Plns. Bath and Blairmont, the next day's camping place being at Manjapo creek, where you will get some of the best Lucannani (*Cichla ocellaris*) fishing you could wish for. I was able to land twenty-four nice ones here, in just over an hour. A little below here, at a place by the name of Copeman creek, there is plenty of Muscovy duck (*Cairina moschata*) and you are sure to get excellent shooting in this creek. The Manatee (*Manatus americanus*) is also frequently met with. The next day will bring you to the Andabo creek, a large tributary on the left bank. You do not as a rule obtain much shooting between Manjapo and Andabo creeks, but immediately after leaving the latter one must be prepared for anything. It was soon after leaving the creek mentioned that I killed my first Maipuri (*Tapirus americanus*). While going slowly up creek just at day-break the dogs gave tongue in a reef on the left bank about one hundred and fifty yards away, and immediately after I saw

a iMapuri making for the creek. I allowed him to get to it, and as soon as he had raised up, I fired and the bullet passed through the aw into the eye. The wounded animal then made for the bank, and, just as he scrambled up, another shot behind the shoulder finished him. He weighed just about 672 lbs.

After wo hours' pull from Andabo, you come to a place known as "Big Pond," where you can secure plenty of wate -haas (*Hydrochærus capybara*) Nigger Head (*Tantalus lo ulator*), Heri (*Euxanura maguari*) and birds of the larger species. The lapwing plover (*Hoploxypterus cajanus*) is also extremely plentiful here. Next day you will arrive at the mouth of Tauraculi creek, and you may either go up here or continue along the main creek. The latter is far the best course to pursue if you are hunting, for here indeed commences the "Paradise" of the sportsman. The scenery is unique in its own way and reminds one somewhat at first of an English park. One may walk along for miles without any trouble of cutting or passing through innumerable swamps, as it is all open savannah, with just enough trees and shrubs to make it an excellent stalking country. While walking through this part, you are sure to see several deer (*Cariacus savannarum*) at which you will be able to have some shots. My first walk through this part of country with one gun and no dogs gave me a mixed bag of two deer, one waterhaas, one Muscovy duck, one heri, and five iguana (*Iguana tuberculata*). With two or three guns and dogs, it would be hard to say what your bag might not contain.

You can now obtain as much shooting and fishing as you desire, until you meet the head waters of the creek, where you return and go up the Tauraculi creek, where you will get some good shooting at accourie (*Dasyprocta aguti*), powis (*Crax alector*), and maroodie (*Penelope marail*). You are also sure to bag an otter (*Lutra braziliensis*), a couple of "baboons" (*Mycetes seniculus*), and some other monkeys (*Cebus apella*) should you desire to shoot them. The peccary (*Dicotyles labiatus*) are sometimes seen higher up the creek; several braces of them were seen but the peccary themselves were never met with. The camping places up this creek are good, and the bathing is safe and excellent.

My most exciting time in the trip occurred one Sunday whilst I was returning down creek from Tauraculi. I was in the fore part of the corial, when I heard shouting behind. I turned round to see what was happening. Great was my surprise when my captain pointed out a large Maipurie (*Tapirus americanus*) climbing the bank about ninety yards away. I quickly seized my rifle and had a shot. The bullet must have just passed through a fleshy part of the hind leg, as he only fell for a moment, and was up again and off to a reef about quarter of a mile away. The dogs were put on the scent and, after a lapse of a few minutes, we heard them give tongue, and knew that they had found him. He made for the creek and came down the same track along which he had gone up to the reef. As he came down and fell in the creek, I was prepared for him. As he came to the surface I fired, hit him in the neck, and, as I thought, killed him. Much was my surprise, however, when I saw him climbing the opposite bank. I fired again, but was unable to see where he was hit as he only stumbled for a momen . I knew he was hard hit, and could not go very far, and as he was now bleeding freely it was easy to follow the trail, which we did. We found he had crossed the

creek round a sharp turn, and had most probably gone into a reef which was adjacent to his landing place. We followed his tracks through the reef, and found him lying down just under some brushwood at the end of the reef. As soon as he saw us, he made a last rush, and I fired. The bullet wounds were evidently fatal as he went only a few yards further on, and fell dead. I found afterwards that each shot I fired had hit him, and one had gone right through him. This Maipurie was the largest seen on the trip, weighed 733 lbs., and was quite as high as a medium-sized donkey.

I shall not attempt to describe all my little hunts and escapades, or give my total bag for the trip, as some of my sporting friends might feel inclined to doubt me. I may mention, however, that a shooting excursion in the Abary is not a very expensive item, and a party of two or three may have a fortnight's trip for about $15 to $20 per head including everything. I do not think any one spending that amount for the sport he will obtain will ever grudge having done so, or think he has wasted his time or money, but will always look back on it with pleasure.

Some people will ask why the Abary creek should be better than any other place in the colony. It may not have more game, but you are able to see plenty of what it has on account of three facts; namely, (1) it is scarcely populated—there is very little balata work being done in the district and the game is not shy; (2) it is ideal country for grazing; and (3) it has no Indian settlements, the last-named being the most important reason.

A DAY'S SPORT ON THE BACKDAM.

By Capt. H. J. Courtenay Coles.

Starting at the early hour of 2.30 a.m. on a bright moonlight morning, we set out to hunt down a drove of water-haas previously located in some canefields about four miles away. Armed with boar-spear, shot gun and butterfly net, we were prepared to add to our specimens, whether running, swimming or flying. Of the last variety we were soon made unpleasantly aware, but we, not they, were the victims, for we had hardly started when swarms of mosquitoes settled upon us, and took full toll of every exposed part of our persons. This fact, combined with the raw chilliness of the early morning dew, drove us to take up paddles and work for dear life, and as a consequence we rapidly out-distanced the other canoes containing the balance of our East Indian beaters.

As soon as all our corials had arrived as close as was prudent to the scene of operations, we unstowed our seine nets, placed them so as to cut off the escape of our anticipated quarry, got out our guns and spears, and saw to the dogs and beaters. Our method was as follows :—

A number of East Indians were placed as sentries over all possible places where the water-haas could break away, some were placed to watch the nets closing the main canal, and in a short space of time we had sixty acres of land safely surrounded, leaving only one side for the animals to come out, which was towards the main canal and middlewalk dam.

Here were stationed men in canoes, with spears ready for a dash up the cross-canals, whilst we waited on the dam, prepared to use either spear or gun as opportunity offered.

The dogs were put on the scent of the quarry from the side-line, and soon the crashing of the canes told us our game was on the move, whilst the pack of yelling curs loudly proclaimed the fact that they were not on the scent. A shout from the East Indians in the canoes, and in a moment these latter were flying up the cross canals, their spearmen plying their weapons busily amongst the hidden water-haas.

It might not be out of place to describe these spears carried by the Hindus. The shafts consisted of a stout bamboo about eight feet long, the spear head being an ordinary field cutlass ground to a broad point and barbed like an arrow-head to hold the animal when wounded. Some even had detachable spear heads which were left in the wounds, attached corks and strings showing the whereabouts of the water-haas. The latter by the way is often locally misnamed water-hog, though the word means water-hare, the animal in spite of its huge size being a rodent.

Meanwhile we remained on the dam watching the fun, and awaiting a possible shot in the event of the game leaving the water. Sure enough, a big fellow broke through the hunters, climbed up the dam and made off like the wind, with

a big bull terrier hard on his heels. We could not fire for fear of killing the dog, but nearly all the younger beaters left their posts, and excitedly started in pursuit, thus leaving the way open for the remaining game to get out of the enclosed fields. This they were not slow to avail themselves of, and soon they and the dogs and hunters were scattered everywhere.

The first big fellow was pulled down more than two miles away by his original pursuer, another was secured in the water by the East Indians, but the rest all got away, and we turned our attention to other game.

A good-sized lizard, or salempenta, disturbed by the commotion, was rapidly swimming across the main canal, making for the parapet of a newly-cropped field opposite to where we had been hunting the water-haas. Waiting until he was struggling up the bank, I broke his back with a charge of No. 4 shot. Into the water dashed a coolie shouting, "Black man go gimme two fowl chicken for 'am," amidst the laughter of his comrades.

A short distance along the dam a quiet touch on my elbow, with a whispered "Blue hen, boss," drew my attention to a heavy flighted bird within easy shot. I found it a kind of coot, or moorhen, as we call them in England, and she weighed nearly three pounds. Several more fell to my gun, as the East Indians assured me they were good to eat, and I thought a walk in the abandoned fields might prove productive.

I had previously noticed both grey plover and a species of snipe in these same fallow fields, and being especially anxious to secure specimens of the latter bird I loaded both barrels with No. 8 shot and walked slowly down a drain.

I had hardly walked twenty yards when up got a wisp of what looked uncommonly like jack snipe, though of course these latter are solitary birds. Away they went to windward rising against the breeze as snipe prefer to do the whole world over, whether you are shooting in Ireland or in the paddy fields of India and China. One fellow was a trifle slow in doubling to fly downward, and as the distance was rather far for my gun, I gave him the left barrel, a full choke bore. The right barrel accounted for what appeared to me to be a cross between a water wagtail and a small snipe. The flight was not unlike that of the true snipe, but the bird was hardly a quarter of the latter's size. I believe locally it is called a nit. I have since seen them in considerable flocks together, with occasionally a solitary snipe feeding amongst them.

No other game showing up, I handed the gun to my boy in exchange for a butterfly net, as numberless species of both moths and butterflies were dancing over the grass and flowers.

I was somewhat surprised to get a specimen of Castnia Licus, a male too, as I had never before seen this moth so far from growing cane in this country. It is, of course, known to the planters as the perfect insect of the Giant Moth-borer grubs that have played such havoc with the sugar plantations in this colony.

A few specimens of the transparent winged butterfly and also of the long-tailed butterflies peculiar to South America were caught after much labouring through the long grass and deep drains of the abandoned fields.

Beginning to feel a little tired and extremely hungry, I suggested breakfast and we adjourned to a neighbouring ranger's cottage where the blue-hens and snipe were soon transformed into an excellent curry with mangoes and rice.

After breakfast I wandered round with my pipe, and examined the creole coffee as I believe it is called although really the same as the Arabian or Mocha species, though I soon discovered that it was the Liberian variety.

Wild tobacco was growing in great profusion, and choosing a dozen ripe leaves I gathered them to cure at home. If you do not want your tobacco to turn mouldy, do not use any sugar in curing it. High wines and petrol are quite sufficient if your leaves are properly sweated before drying them.

Mountains palms and mangoes occupied the rest of my attention until an East Indian, coming up, announced that there were several alligators showing in the canals further down. In common with most of my race I have a healthy hatred of these antediluvian monsters, of whom I have read that they are in all probability the most ancient race of animals or rather reptiles on this globe.

So I opened the top wads of a couple of cartridges, and put a little lard on the No. 4 shot and forced the wads back again. Strolling down the side of the canal with the natives all clucking like so many baby alligators, I saw a mound-like object rise slowly about three inches out of the water. It was the comical brain-pan of a fair-sized alligator looking for her babies, luckily in the opposite direction, so that she showed me the back of her head only about fifteen yards from where I was standing. At the report of my gun it seemed as if the bottom of the canal had been blown out, so great was the commotion. I began to fear that I had only wounded her, but the swirl was so great and the water so muddy that I could not fire again.

Mrs. Alligator however made a rush for the opposite parapet and tried to struggle up, but the poor brute had had most of her brains blown out and could not make any further sustained effort, though the vitality of these reptiles is almost beyond belief. Another shot broke her back and put her out of her misery for she fell into the water and turned belly up whilst the coolies with great glee pierced her through and through with their boarspears. Her body was dragged on to the bank, where the turkey buzzards or carrion crows soon demolished her. She was nearly five and a half feet long from nose to tip of tail, a fair size for a canal alligator. I have heard a rumour that there is an old patriarch alligator not two miles from Georgetown thirteen feet long, and about a century old. I have often wondered how they measured either his inches or his age.

Being thoroughly tired out I welcomed the sight of a mule ridden by a black lad coming up the dam. Of course he is not saddled, but I want to get home, and Orphan Boy is an easy paced mule, so I mount and canter off. I have not travelled many yards before I begin to wonder whether the absence of parents makes the presence of Orphan Boy's back bone so conspicuous, but the mule knowing his stable is in view quickens to a gallop and my discomfort is soon ended in a Berbice chair.

I might add in closing that for a true all-round sportsman Demerara is perfect Paradise. A shot-gun is, however, of more use than a rifle.

EDUCATION IN BRITISH GUIANA.

By A. A. Thorne, M.A.

A close study of the history of education in the colony provides much interest and is of real value to all who are concerned with the solution of the difficult problems in our midst, whether they be concerned as preachers or philanthropists, planters or traders, capitalists or statesmen. Few colonies have been more dependent on the education furnished the natives than has our colony, with its population separated into groups in villages and districts that for decades were left unguided by a government which neglected its paternal duties, and indeed seemed to have had no sympathy with its "hewers of wood and drawers of water" when the masses had not the benefit of the examples of well-trained and well-ordered families settled in large numbers among them. The British Government had received from the Dutch "a slave colony," and consequently there was no State provision for the education of the masses. The very title of elementary education as we have it—"Grant-in-Aid System of Denominational Education"—reminds us that the philanthropist first undertook the difficult but ennobling task of enlightening the slave inhabitants; and our records show that the practical effect given to the Right Honourable George Canning's resolutions in the House of Commons, which were passed in 1824 "to ameliorate the condition of the slave population and to prepare them for freedom" in the West Indies and British Guiana, was the establishment in Georgetown of two free schools for boys and girls, supported by voluntary contributions. After that, in 1830, the first "grant-in-aid" of elementary education, a contribution of £130, was given by the Government of the colony.

In 1834, out of the funds of the Lady Mico legacy for the suppression of Algerian piracy and the release of Christian slaves, and out of the Parliamentary grants set aside at the instance of the great philanthropist Buxton for the "promotion of education of the black and coloured population of British Guiana and the West Indies," six *undenominational* schools were established in different parts of the colony; but these were eventually handed over to the clergy.

The emancipation of the slaves led to the establishment of 74 *denominational* schools by 1840, to the carrying on of which the Government of the colony contributed £3,159 as a grant-in-aid. The Blue Book for that year contains the very interesting statement that the working classes had a strong desire to have their children taught to read and write, and the number of children on the school registers was 4,919, while their average attendance was 3,609. Just here it is but fair to pause and note the golden opportunities that the Colonial Government and the leading colonists had of moulding the characters and shaping the destinies of the masses, and of laying the foundations for a thrifty population and a progressive colony. But could the average slave-owner and master be reasonably expected to be converted into a philanthropist in the short time it took to turn his slaves into freedmen without his willingness and co-operation?

The ex-slave-owners of this period in British Guiana could not have been very unlike the Southerners of the United States of later generations, and full allowance must be made for human nature under the circumstances. It is a matter of history that the masses were allowed to lose their interest in education, that the employers of labour failed to grasp the opportunities of endearing themselves to their labourers, and that the Government was not equal to its duties of converting a willing population of "freedmen" into useful inhabitants, getting an impetus to industry from enlightenment, which would have been far more effective than servile bonds and the cruel lash.

In 1850 the first Council of Education in the colony was established, and in the following year reported that the system of education was defective and ill-adapted to the peculiar wants of the people, and that the adult population was very indifferent towards education. The Commissioners, who constituted this Council, considered that the deplorable state of things was largely due to the depressed condition of the estates, for the successive abandonment of cultivation in whole districts of the colony had resulted in the withdrawal of large numbers up the rivers and creeks, where they became squatters and had their children growing up in a state of idleness out of the reach of the schoolmaster. But they had to qualify this latter statement, for they found the teachers "grievously deficient both in attainments and in educational training," and, we must conclude, incapable of training the young, even if they had been all within easy reach. It is a matter of little surprise to find the Commissioners under these circumstances commenting strongly on the irregular attendance of the scholars. The Dutch language they found to be so prevalent among the Negroes that it acted as a great impediment to the dissemination of instruction under the imperfect system of education that could not make use of it. At this time the Colony grant-in-aid to education amounted to nearly £5,000 per annum, and was disbursed as yearly grants to a few schools in Georgetown and New Amsterdam, and to Indian missionary settlements; a capitation allowance to schoolmasters in rural districts, and at times grants towards the erection and repairs of schoolhouses. This is a very important fact to be borne in mind by those who from time to time shall have to deal with the matter of elementary education in the colony; and it should never be lost sight of by the Government, whose responsibilities in the matter of the education of the masses, nearly one-half of whom are non-Christian East Indians, have not been well-deputed to various religious sects, and must be assumed sooner or later in the best interests of the community.

The efforts of the Commissioners to introduce a suitable system of education were frustrated by the various religious bodies, although the Court of Policy and the Secretary of State for the Colonies approved of the recommendations made by the Commissioners, who found it wise to record their regret at the prevalence among the upper classes of "prejudice and indifference" in educational affairs. The Court of Policy failed to confer by legislation the necessary powers on the Commissioners to put into effect their plans, and so they had only to their lasting credit the inauguration of a department for the training of teachers at the Bishop's College, which had been founded by the diocese in 1851 for preparing theological students for Holy Orders.

In 1852, on the suggestion of the Commissioners, Mr. George Dennis was appointed as the first Inspector of Schools for the colony. The three R's were now regularly taught in most of the 150 schools we find existing from the Inspector's first annual report, and in some schools grammar and geography also were taught, and successful attempts were made at industrial education on a small scale. There appear to have been no regular examinations of the schools, because in 1861 we find that recourse had to be made to a return sent in by the teachers to get details of what the children could do; and it is there stated that in the "opinion of the teachers" 1,142 children could work sums in the higher branches of elementary Arithmetic, 955 were able to point out the parts of speech, and 540 to parse simple sentences. Three years after Mr. Dennis' appointment as Inspector of Schools, in the year 1855, an Ordinance was passed wiping out the Commissioners, and placing the control of educational affairs in the hands of the Inspector of Schools, who became directly responsible to the Governor. By that same Ordinance the teachers received fixed salaries according to their classes after examination, supplemented by the school fees that were payable under the said Ordinance. Thus annual examinations of the schools were not required for determining the grants of the various schools, since the following provisions were made by the 1855 Ordinance:—The vote of the Combined Court was restricted to the payment of Teachers' salaries and grants-in-aid of the maintenance of school premises. The vote of the Combined Court in 1855 was $37,600 (nearly £8,000), of which $33,000 were to be paid as salaries, *on condition that a sum equal to one-third of this amount, raised by fees and other local contributions, was added.* The teachers fell into three classes with salaries attached as under:—

1st Class ..	Masters	$ 720
	Mistresses	540
2nd Class ..	Masters	480
	Mistresses	320
3rd Class ..	Masters	200
	Mistresses	160

In the third year of this Ordinance the system of Pupil Teachers was first introduced, 12 lads, selected by merit after examination, being appointed as pupil teachers with salaries of $4 a month.

Mr. Dennis must have been a man of great ability to have done as much as he did, when we find that the clergy were so powerful in the educational affairs of the colony as to get the Commissioners wiped out, though their recommendations met with the approval of the State authorities, and that the clergy were able to get special grants from the Combined Court for the purchase of school books and furniture, and to assist them in erecting school-houses.

In 1861 Estates' Schools for the education of the children of coolie and other immigrants were first started by certain philanthropists: and in the following year, in 1862, Mr. Dennis was succeeded by the Rev. W. G. G. Austin M.A.

A radical change was at once made, and a Board of Education was established to have complete control of educational affairs. Of this Board the Governor was President, the Inspector of Schools the Secretary, and the five members were nominated by the Governor, according to the Ordinance. Not only had the Governor a casting vote, but all acts done at any meeting of the Board in his absence required his sanction and approval in writing. The number of children on the registers in 1852 was 10,877 ; in 1862 the number was returned as 12,425. Mr. Austin's first report, showing what was the general standard of elementary education under his predecessor's regime, set forth that "the majority of children were able to read clearly and accurately, and with tolerable correctness of pronounciation ; as a rule the parts of speech were known and the children could parse a simple sentence fairly" ; "penmanship was generally good" ; "few could write an easy passage of dictation without blundering" ; "very little indeed was known about History, but more attention was paid to Geography" ; "more than one-half of the sums which were set on the day of examination were hopelessly wrong, and of the remainder many were carelessly done." The important subject of Needlework had received little or no attention in the majority of schools. Mr. Austin seems in consequence to have adopted the plan of inspecting every aided school twice a year, and the development of this was the change in 1870 to the present system of payments by results of examinations that caused the non-participation of from 20 to 30 per cent. of the schools in the grant, increased the public expenditure on education from $56,809 in 1862 to $93,724 in 1874, and lowered the average attendance to 9,885 of 20,000 names on the registers of the 170 State-aided schools. So great was the inefficiency of the schools that a Commission of Enquiry was decided upon. Let it be remembered that the Board of Education under which these things happened was composed entirely of Government officials, with the Governor as President.

Accordingly in 1874 Sir James Longden, the Governor of the colony, appointed a Commission of seventeen members to enquire into and report upon the condition of public education in the colony, and to make recommendations that would secure the youth of the colony a liberal education. This Commission, by a majority, decided that the system of voluntary schools aided by the Government, and superintended by local patrons or managers, best suited the needs of the colony ; they found that attendance should be made compulsory ; they decided that the Austin system of payment by examination results had lowered the standard of qualification of the teachers, and caused incompetency again to be prevalent in their ranks. They proposed that in future only certificated teachers should be employed ; that each class of certificate should have a money value attached, and that the grant for each class should be annually increased according to a fixed scale for a certain number of years on the report of the Inspector of Schools that the school was being successfully conducted ; that Bishop's College should be acquired by the Government to be turned altogether into a general Training Institution of an undenominational character under the immediate control of the Board of Education ; that the Board of Education should be made more representative ; that the Government should acquire Queen's College, and have a public institution for secondary education.

In 1877 effect was given to these recommendations by four Ordinances of 1873 : —

(i) An Ordinance to enforce Elementary Education in the Colony.

(ii) An Ordinance to establish a more representative Board of Education.

(iii) An Ordinance to establish and regulate an Institution for the Training of Teachers.

(iv) An Ordinance to vest in the Colony Queen's College and Bishop's College.

Attendance at school was made compulsory, and the first District Educational Officers were appointed to enforce the law by prosecuting parents and guardians of children who did not attend school before the Magistrate, whose duty it was to make an order, in the first instance, that each child attend school named in the order, and afterwards to inflict penalties of fine or imprisonment for non-compliance with the order. The employment of children under nine years of age was prohibited, and that of older children was regulated, requiring their attendance at school for 2½ hours each day.

Provision was made for the establishment of "Colonial Schools" by the Board of Education, the Combined Court to be asked for the necessary money for any Education District without adequate school accommodation within two years of the coming into operation of the Ordinance. Plantations in cultivation were required to provide and maintain schools for the children on them.

Religious instruction, which the clergy had got made a *sine qua non* in 1855 for a grant-in-aid, was now made optional. The payment of school fees was made compulsory.

The salaries attached to Teachers' Certificates were set down thus :

1st class Certificate	$ 480	a year.
2nd class	300	,,
3rd class	120	,,

To those fixed salaries were added portions of the grants earned by the schools as allotted by the managers with the approval of the Board. The grants were thus earned : Two dollars for each child passing in only one of the three R's ; four dollars for each child passing in any two of the three R's ; seven dollars for each child passing in all three R's ; one dollar additional for each child who in addition to passing in all three R's passed also in Grammar, Geography, Needlework or the special subject approved by the Board.

These useful measures were adopted to make the schools efficient as regards regular attendance and the payment of the teachers for carefully instructing the pupils ; and this system, known as the Longden system, has been undoubtedly the best the colony has had up to the present time, if we judge by the results and compare those who taught and were taught under it with the teachers and the scholars turned out under changes of this system. The status of the teachers was

duly regarded in the provision that while managers had the right of selection and appointment, they could only suspend teachers "for sufficient cause," each suspension to be subject to confirmation or cancellation by the Board of Education. The great misfortune in connection with this system was the constitution of the Board of Education, the ministers of religion who formed the majority wrecking not only the Board but the system by their ill-advised conduct. Indeed it was not statesmanlike to place the control of the education of the masses in the hands of men who were not sufficiently responsible on the one hand, or dignified on the other hand, to avoid wasting precious time and valuable opportunities in petty squabbling; and the experience of the Government of those days does not seem to have served subsequent administrations. All that the Longden system needed was a revision of the too liberal payments for passes; a remodelling of the personnel of the Board of Education, so as to have the representatives of the Government—the Combined Court—to form a distinct majority on it; and a gradual development of the school curriculum to suit the needs of an agricultural colony. However, the next Governor, Sir Henry Irving, rightly alarmed at the extravagance of the Board of Education as it existed, and at its incompetence, and duly observing the resolution of the Combined Court passed in June, 1881, declaring the amount spent on education as extravagant and without adequate results, set to work to remedy the evils. A drastic remedy was needed, but not the one Governor Irving applied, even though the expenditure on education exceeded $150,000 out of a revenue just above $2,000,000.

In 1882 the Board of Education was abolished, and the Inspector of Schools was charged with its functions. The Irving Code destroyed teachers' certificate salaries, the salaries of pupil teachers, and grants for building and furnishing schools; and substituted a capitation grant of $4, $5 or $6 on the estimated average attendance to be adjusted at the end of the school year, and a bonus varying from $1 to $4 for each child in average attendance according to the percentage of full passes in Reading, Writing, and Arithmetic. This Code continued with some minor modifications, and at first substantially reduced the colony's contribution to the cost of elementary education; but soon its defects led to a very substantial increase again without corresponding efficiency, and it was replaced in 1890 by that of Sir Charles Bruce, Lieutenant-Governor, who had had considerable experience in these matters as Director of Public Instruction in Ceylon. Once more Certificates Classes were paid for, the new rates being $240, $180, and $96 for 1st, 2nd and 3rd Class Certificates respectively. The rest of the State contribution was made to depend on the results of examinations—a most pernicious system, and more so, as the examiners have had also to administer the grants and to see that they have been kept within reasonable limits. This is the system, with some modifications it is true, obtaining up to the present time, and which is calling and has been calling, for all these years, for a most radical change. The Inspector of Schools is placed in a most odious position, and really can do no good for the colony under such a vicious system; the community does not get the class of individuals it requires to be the "makers of the rising generations"; the pupils are merely regarded by the average teachers from their monetary value on the days of examination; and the colony has not had reared for it inhabitants of good character, well-ordered minds, intelli-

gent, persevering, and industrious habits, out of its children who have been trained under these codes. The present Governor, Sir. F. M. Hodgson, has shown much sympathy with the teachers; but he too has feared to strike at the root of the evil, although his hands were strengthened by the elective section of the Combined Court which has had to wrench from the Secretary of State, against his advice, a Board of Education to advise what should be done to make the system of education in the colony of real service to it. The inhabitants are awakening to a definite interest in this matter of vital importance to them; and the Hodgson *regime* will undoubtedly be long remembered as the administration which first moved forward in educational affairs for the general good, although undue caution has been its watchword. When it is considered that the vast majority of respectable inhabitants believe in sending their sons and their daughters to be educated in these primary schools, and that they do not see the taint in morals their children must inevitably get by the contact with the children of the poor who have to reside in the "ranges," and there to see and to hear things that they should not know, all who are interested in the progress of this colony must be convinced that it is a first duty of the State to get teachers able to train the children and set them the needed examples, and to see that those teachers are the servants of the State and have a definite status. Sir Frederic Hodgson has done well in carrying through the scheme to have the teachers trained for their important duties; it is to be hoped that he will get for them that which they had under the Longden system,—security of tenure of office and greater fixity of salaries. The State must alone be responsible for the subjects to be taught under its Codes, and that will soon be.

(*To be Continued*).

AMONG MY CURIOS:

GLIMPSES INTO THE HISTORY OF BRITISH GUIANA.

By E. A. V. Abraham.

To the antiquarian a collection of curios is not gauged by its monetary value; he looks upon it as a link with the dead past, and wonders and ponders on the deeds of those to whom the gems of which he is the proud owner originally belonged. I therefore make no apology in bringing before my readers a part of my collection in order to reveal the history of some of those who made Guiana their home.

There before me is a case with mourning rings. Old John Murdoch looms in stern reality—a Scot of Scots, a man with the same grit and determination which ran in his son, John Alexander Murdoch, Solicitor, and for a number of years Mayor of the City of Georgetown. Old Murdoch came and saw and conquered. In 1821 Goed Fortuin was the property of his employer and then represented by Stephen Cramer, the grand-father of Mrs. Wallbridge, but Murdoch worked and plodded and became the owner of the estate. Never an inch would he sell, not for any money, nor his son; and the descendants to-day, the Tafares, carry out his theory that it is better to own land than money. A mourning ring of unique pattern, bulky in shape with an edge of pearls, enclosing a large silhouette of the man stern in appearance, is a relic of his past, whilst another shows his wife. These rings are the first of the kind I have ever seen. Then we have another ring, and I wonder to whom it belongs, to what noble man's memory it was made and fashioned to keep! Grief stands by a sun-dial with its work done—an exquisite bit of painting on ivory. Another brings to the fore a member of the family of the Coles who made their mark in West Indian history. It is a plain gold heavy ring with an inscription of the lady to whose memory it was dedicated and the date 1718 in white enamel. I am indebted for it to Mr. Cole, of the Department of Lands and Mines. One in blue with a diamond star, square shaped, taking up the whole of the last joint of the finger shows that Eliza Dey, who was the owner of De Kinderen in the early twenties, was not forgotten by her kith and kin. Here are some most intricately worked bits of miniature paintings of the old gallants who were in the army and navy, when Guiana was Guiana, and who whilst as ships passing in the night evidently thought remembrances of their visits in the shape of portraiture would solace the girls they left behind them. In the early part of the last century the hair of the dear departed as wonderfully wrought as keepsakes in landscapes and other designs and set in gold and rubies and pearls as mementoes. Alas! those days are gone and in the present day we never hear of any one in his or her last will and testament leaving twenty pounds or so for the purpose of purchasing a brooch or ring in memorium. He mourns the dead who lives as they desire. A former proprietor of Uitvlugt not only left his miniature, but took his hostage of fortune to Holland and sent to his mother his miniature in gold when he arrived to man's estate. These I got from his people who laid claim to the estate.

Who ever gives a thought to that prince of hosts—old John Alves? But, blessed man, he lived in India the lotus-eating life, and when he came to the colony what should he do but bring with him the reminiscences of that land of the breezy call of incense-breathing morn. It is to him we owe that luxury, the Berbice chair, and on the one he owned himself when a Magistrate here I now recline my weary limbs.

Did the Iron Duke ever smoke? I trow he did. If he was not an inveterate smoker he at least indulged in the smoke that gracefully curled. In the pipe case reposes a huge meerschaum bowl with silver top, long stem of albatross bone; ivory acorns suspended therefrom. This was once his property and was used in the Peninsular war. Did he indulge in private theatricals? Oh, yes! for a sketch by Hoyte with a letter addressed to His Grace on the back thereof relating to a scene from *The Moor of Venice* in satirical vein shows that he did and that not too well. He was a man to make friends and to keep them. One of his best friends was Sir Charles Flint who was Irish Secretary and whose sons came to this colony to die. To Sir Charles the Duke gave a number of keepsakes showing the generosity of his heart, and I flatter myself that there is no man more proud of the collection of the late Sir Charles than I am, the majority of which came from His Grace. The magnifying glass used by the Duke during the war, the pouncet box with the portrait in oils of the Czar of the Russias, given to the Duke by the Czar, the sketches made by the Duke for Sir Charles in his scrap album all lie in their honoured places in the collection.

The Napoleonic war is largely represented by pictures, paintings, etc., culled from different sources. A ducat which was in the pocket of the unfortunate Duc D'Englein when he was shot by the order of Napoleon is encased in a card on which is written a description of the coin and the way it got in the possession of the then owner. That the genuineness is beyond dispute is evidenced by a letter also in my possession from the Palais Bourbon, which enclosed the ducat. Along with this letter is a cast in plaster of the bust of the Duc D'Englein and a noble found on the field of Agincourt. Napoleon comes to mind in the number of steel engraved pictures, beautifully coloured by hand and marvels of colouring of that day. Two large volumes of the life history of Napoleon dictated by *le petit General* to his Secretary at St. Helena and corrected by Napoleon himself, printed by Medoc in 1827 and profusely illustrated with full page woodcuts, bring to memory that prince of Advocates, old Landry, to whom it originally belonged. He was a gentleman of the old school and an Advocate of Leyden, direct descendant of the Grotius of Roman Dutch law fame. He practised at the bar here and was of the family of the De Groots, one of whom is a Customs Officer, another an overseer at Pln. Bath, Berbice, and Sunny, of West Africa, late of the Registrar's Office of this colony. It was through Advocates like Landry, who would live out of the touch of the Law Courts, that the famous edict was issued by the Courts that Advocates must live or at least have an office at Fort Island where the Supreme Courts of the colony were held.

Everyone has heard or read of the celebrated artist Maud Goodman; but there are few persons who can tell you that she has ever painted a landscape. I am one of the very few persons who can boast of one of her landscape paintings

and it was got in this wise. The late B. V. Abraham, to whom she was related, passed a pleasant day at Mitcham and was so impressed with the scent of the lavender that he asked her to get a photograph of the old mill there. To his gratification she painted the old mill and to-day nothing will make me part with it. There are also in my family the only two attempts at portrait painting essayed by her.

Anthony Meertens was Raden here in the year 1795 and a fine bit of old Viennese gold work is the envy of all who see it. There it is, in its old case ; a large muff chain to which fashion is returning, with a clasp of birds and fruit and flowers, a brooch to match, and the long earrings of the period. This was a present to one of his relatives on her wedding day from the Governor of Surinam. A sampler with Adam and Eve and resplendant with flowers and birds and the forbidden fruit and letters of the alphabet made by his sister is in a picture frame near by. His family to-day is represented in the colony by Mr. Davis, of the Audit office, and one of his great grand-nieces married Schurer, late Accountant of Court of British Guiana. Schurer was a descendant of Oliver Cromwell and of the Turnbulls. But Meerteens' fame, in my opinion, was when he stood loyal to King and country in the troublous times. He was rightly afterwards appointed Governor. In the *publicatie* hanging on the wall you see the man. The *publicatie* was issued to the Chief Magistrates as follows :—

" Demerary, May 26, 1295."

" His Britannic Majesty having judged expedient to order a force to protect the " Settlement of *Demerary* and its dependencys from the French Arms (the ruling " Powers of France having taken possession of *Holland*) ·

" The undersigned officers commanding the British Naval and Militiary forces " before *Demerary* and its dependencys invite all persons in the above Colony " to place themselves under the mild protection of the British Nation. From each " of the European Powers the Settlement of *Demerary* and its dependencys shall " hereafter receive protection, must immediately in the present STATE of *Holland* " be left to be decided, when this great conflict so interesting to all mankind " shall be terminated by a peace among the Nations at war.

(Signed) HENRY WARRE,
Commanding the Naval Force of His Britannic Majesty.

(Signed) JOHN RITCHIE,
Commanding the Troops.

" To the magistrates and commanding officers of the Naval and Military Forces " at Demerary, etc., etc., etc. Accordeert metzyn Ovigt. in Denaar dan 27 May, " 1795."

ANTHONY BEAUJON.
Secretaris.

To the request came the following :

PUBLICATIE

WY. *Robert Neptlay Hall and Anthony Meerteen* Roden Van Politia der Colonie *Essequebo* en *Demerary,* Geromitteerd tot het waar neemen van het Gouvernement, doen alle en een iegelyk weeten dat one op heeden door twee Engelsebe Officierca is aangebrag de hier neevens-gaande Missive geaddoesseerdt *to the principal Magistrates and Council of Demerary.*

Dat wy nodig gevoideelt hebben zooveel mogelyk en de Kortheed des tyds toelaat daer van aan elk en een iegelyk communicatie te doen en veoders da Ingezetene deezer colonic informeeren, dat de presente Leeden van den Raad van Politie over deye Rivieren, aan gemelde Engelsede Officieren hebben geantwoord dat wy de aangebragga Depeches in iype overweeging zullen neemen en op morgen het antwoord van het Hoff met de Ebzullen aszender. Actum in t'Gouvernment in Stabroek, der 27 Mey. 1795.

(W.G.) ROBERT WESTLEY HALL.

(W. G.) A. MEERTENS.

Ter Ordonnantia van dezelve.

ANTHONY BEAUJON.
Secretaris.

The publication was placaaded by the Government Printer, J. C. Delacoste. Antony Beaujon was made Lieutenant-Governor of Demerara and Essequebo in 1804.

Near by the publicatie is a sword which belonged to Captain Outridge who did good service in that memorable naval fight between the *Hornet* and *Peacock* off the Courabanna point, East Coast, Mahaica. The old man was proud of that sword. His descendants in the colony were Outridge, one of the pioneers of the gold industry and the present Outridges, the pioneers of the timber industry. To Captain Drake, who was in command of the *Peacock*, stands a tablet in the Cathedral as follows : " Sacred to the memory of Captain William " Drake, the brave and highly respected Commander of His Majesty's brig *Peacock* " whose death was glorious as his life was honourable. Engaged in unequal " combat with the American ship of war *Hornet* a cannon shot in mercy terminated " his existence almost at the same moment that his gallant vessel consigned to " the deep watery sepulchre the remains of her lamented chief. To commemorate " this glorious but fatal engagement which took place on these shores on the 24th " February, 1813, to perpetuate the name of a distinguished officer His Excellency " General Carmichael, acting Governor, sympathising with the generous feeling " of the inhabitants of this United colony in the universal expression of sincere " regret was pleased to grant on their behalf this monument to his fame." Again is one of Guiana's heroes brought to the fore.

Whilst on the subject of naval valour we turn to a set of hand-painted Crown Derby, Rose du Barry bands which were on the *Saucy Aretheusa* at Trafalgar. Each piece represents a sea scape with the quaint old ships of the period. It was in the possession of the late Admiral Brisbane, Governor of St. Vincent, from whose family I obtained it. The Brisbanes are connected with this colony through the late Nassau William Orange Forster. Forster's family were intimate with the royalty of the day. Some of the Forsters are still in the colony. I also got from old Forster a large tortoise-shell comb made from the back of a turtle caught off their estate in St. Vincent. This was once used by the late Queen Victoria, who was a friend of the family. Her late Majesty wrote a letter during the Boer War to Mrs. Major Charley, one of the Forster family, commisserating with her on her loss when Major Charley was killed. I did what I could to get this letter but all the cajoling and entreaties I brought to bear on old Forster were of no avail. All the same I got from him a frame with scissors cut tissue paper of Gratton Hall, the Forster crest, basket of flowers, convolvula, all of so delicate a pattern that it would be thought impossible to make it on tissue. There were two of them made. One was given to Queen Victoria, then a child, and the other to old Forster when he came to the West Indies to test his fortune. They were made by a lady who was of the household.

An old two-shade wall candlestick on the gallery wall brings to memory the original owners, the Dalziell, of St. Vincent. Dalziell's family intermarried with the Forsters with whom they were related. One of the Dalziells was in the British Guiana bank here; the other married and went to Venezuela. The Dalziells came from a family of soldiers and the legend is that in the early days of trouble in England when the King was hanging out of sight all who were unfavourable to him there was one man who was a general favourite. A murmur went round as the rope was put round his neck, and the King in wroth swore that he would himself hang the man. "Who dares prevent me?" said he. Out stepped from the ranks a man who went up to the King and said "Dalziell," meaning "I dare." The King at once knighted the daring man and the life of the other was spared.

A jug which would not be worth a shilling otherwise has some claim to history. I received it from old Spencer Cambridge who cared for the jug as much as he did for his wife. It was only when the old man was on his last days that he parted with it and then he told me its history. During the troublous times with the slaves a meeting was called at which the slaves on the East Coast, Demerara, including old Cambridge, attended and swore for freedom offering to give their life-blood for the cause. Human blood was poured in the jug and each man put the jug to his lip and then swore to give his life for the cause. The result we all know. They were mown down like sheep. Those who survived bought Bachelor's Adventure which was near the scene of their Waterloo. The estate seemed to have been cursed for from the day of its purchase it was the subject of litigation down to the present time. One of Cambridge's son is now in a good position at Panama and has been for years respected there, and another is a Barrister-at-Law. Mrs. Cambridge is still alive and hearty.

With the fight for freedom there were some slaves loyal to their masters and Vigaro was one of them. The Bush Negroes, or runaway slaves, were continually giving trouble and Vigaro offered to lead an attack on the most turbulent. A saucer-like engraved silver medal records how he led an attack on the Bush Negroes on 10th May, 1810, under Von Cotter, Burgomaster Commander of Berbice, and it was presented to him for his valorous conduct therein. It is a forerunner of the Victoria Cross, for on the obverse is the word for valour.

The D'Urban Race Course is like a thing of the past, but the magnificent set of dinner ware of stone china now of 68 pieces used at the opening of the course testifies to the splendour of the good old days of the Sport of Kings. Governor D'Urban presided. This set was the cynosure of many eyes and it somehow got under the Vendue Master's hammer and was purchased by the proprietor of Vreed-en-Hoop. From his hands it got to Sir Frederick Haynes Smith and then to old D'Amil, the pioneer of the gold industry of the colony. D'Amil then sold it to Camacho, the Portuguese Consul, who wanted it for a dinner party and he repurchased it from the Consul. I bought it at D'Amil's sale when the splendour of his glory had departed. Governor D'Urban, who had the set originally, was a Major General and Lieutenant-Governor of the Colonies of Demerara and Essequebo, acting Governor in 1825 and Governor of the United Colony in July, 1831, on the union of the Colonies of Demerara and Essequebo and the Colony of Berbice.

Governor D'Urban's youngest son, Walter Robert, although only 20 years old when he died, was Governor's Secretary of the Colony. He was officially declared drowned on the 1st November, 1824, whilst bathing in the falls of Rio Essequebo, and his remains were interred in the Military Burial Ground at Eve Leary and a tablet stands as his memorial in the Cathedral. His body was brought to Georgetown by the Second Fiscal. The older inhabitants of Scapie were strong on the point that he was killed by Major Hay in a duel.

Old H. J. Parnell was the life and soul of the D'Urban Race Club and there was hardly a meeting where his colours did not catch the judge's eye. I can well remember the old man with his magnificent physique as he led the cavalry volunteers on the old Parade Ground. His name is perpetuated in the buildings used now as an auction mart. It was always known as Parnell's Building and Parnell's Building it will be until pulled down. I have a racing trophy, the cup presented by Governor Mundy in 1866, won by Parnell's mare *Brunette*. For years I was after it but it was not for sale. Then it was purchased by Sir Frederic Hodgson, Governor of the Colony. He heard that I had been after it for some time and, good sportsman as he is, he sent it on to me, so that I could have a trophy of the old man. Parnell's son is now a practising Solicitor.

Old Forrester was another popular man at the Sport of Kings when *Silvertail* and *Crackers* were *the* horses of the day. A racing trophy of Forreste is in the shape of an old wooden snuff-box with wood hinges. At the bottom of the box is the tartan of the Stuarts to which clan he was allied. On the lid is a fine oil painting of the old boy in white pants, silk hat and morning coat of the period with his bay mare *Platina* and black horse *Enterprise* with black jockeys up.

His colours as shown were white and red stripes. Forrester kept a large store in Stabroek and one of his descendants is now representing the colony at the Coronation.

Old Firebrace, a legal practitioner in 1821-1825, and afterwards Judge of the Roll Court, is in the flesh as I see the brass candlestick and mammoth engraved old barrel shade and I wonder how many judgments the worthy gentleman wrote under its dim lustre.

A richly gilt china cup and saucer and old English clock by Arnold and Dent of London bring us to the halcyon days when the Essequebo Coast was one vast sugar bearing country. They were presented to old Chapman for making top sugar in quantity and quality. He stipulated that the clock should have a string so that when he was in bed and awakened by the estate's watchman he could pull the string and see whether it was really time to get up, and his behest was carried out. He lived to a good old age. He leaves behind him the Stephensons of Essequebo as his descendants. The old man would sit by the clock a'l day when in the sere and yellow leaf, and he died with the companion of his youth and splendour by his bed.

John Daly, Administrator General of the colony, is represented by two Lowestoft cups with his monogram in gold showing that he had visited the celebrated Potteries whilst in England. His brother was a merchant here. One of his nephews is in the Post office and another in the Colonial Bank.

Old Thierens' grandfather speaks to me from an old Dutch teapot and spirit lamp and cup painted in the best Dutch style of the period. He was Commander *ad interim* of Essequebo in 1791-1793 and was beloved of all the people there. The older inhabitants of Scapie used to point with pride to the tablet on his grave and I remember old Schomburgk, a river captain, telling me that his father, the explorer, spoke highly of the Commander. He repeated himself in the history of the colony through J. T. Thierens, Provost Marshal, and J. H. Otherbien, First Marshal of the Colony. The people under Thierens' kept up the Dutch language at Agatash and Fort Island until recent times.

Some pieces of white and gold Spode raise a smile whenever I look on them for did they not belong to that eccentric Magistrate, old McNulty? He never looked to the right or the left when going to Court and he could give old Imlach some points in the language which is not fit for publication. Once he swore at his groom, old Firebrace, who had been lent to him by the Judge of that name. Firebrace knowing the peculiarity of the Beak drove him to the Board of Police and there laid a charge for abusive words.

Four pieces of white and gold stone ware recall the days of serfdom. They belonged to Miss Van Cooten who had an interest in Vryheid's Lust and were given by her to one of her old slaves, Simpson by name, from whom I got them. Simpson was called after the *q. q.* of Miss Van Cooten and he kept a store and was agent for several estates. The Van Cootens and Simpson were related. There is a Van Cooten, a painter to-day, an old man, and the Simpsons are represented by the Richardsons, one of whom is a Solicitor.

There is little to be said of the memory of William Russell. The cairn at the Lama stop-off, the Water Works, the Lamaha, the Water conservancy all speak of him. He was the foremost sugar planter in the colony and a leader of the Court of Policy. He is represented in the collection by a fine mother of pearl card case with richly silver saw cut patters, the same having been given to him by McNab of McNab, as he used to call him.

Two Davenport Toby jugs smile as the figure of Nathaniel Chapman flits by. Nat came here in charge of a trader regularly plying from the Mother Country, and made this place his home in 1813. He was Harbour-Master, the skipper of the Barbados shipping fleet and one of our leading merchants. His son George, now dead, carried on the Barbados trade and the business. George Chapman, the lighterman, J. I. Chapman, merchant, Frederick Chapman, weigher and gauger, and Nat Chapman, wharfinger, represent the old Harbour-Master.

Some Spode plates, a set of unmarked Spode and you see old Rose, the leader of the Court of Policy, a merchant in a large way and the hero of that celebrated bloodless duel, the duelling pistol, a huge thing, being near by me. Rose's name on the street was a household word.

Now here is painting for you !—a quaintly painted set of Dutch tea and coffee ware, 30 pieces. Ah ! there comes the stalwart figure of the owner, Colonel Thomas Dougan, who died honoured on 12th May, 1840. He owned Middlesex, Essequebo, raised a corps of Militia and was appointed Colonel thereof. A religious man, he supported all the churches and was appointed the first Vestryman of St. John's Parish, Essequebo. He was Deputy Fiscal for Essequebo, Police Magistrate of Georgetown, and a tablet was erected to his memory in the Cathedral.

Near by is a sword remindful also of the militia men of the past—a fine blade, richly chased and inscribed, "Demerara Estates Armed Force."

Davenport bowls, Hanley pottery mentioned in the *Art Journal*, cups and saucers, lustre ware, all pour forth the old-time glory of De Rooy, a Dutchman of fame in the colony, who settled here in 1796. To perpetuate his name we have De Rooy Street. His descendants are the Skekels, Lieutenant Pollard, and Pat Pollard.

The curing cup takes up its share of the history of the colony. In the Museum of the R. A. & C. Society a broken curing cup is labled as a cure for fever. Mrs. Bercheyck from whom I got mine said it was a cure for topers. You drank and then saw a frog jumping down your throat. You thought you "had them again" and were cured. The Bercheycks came from Laurens Lodevyck Van Bercheyck, a Commander in 1761 of the Demerara River. He died in 1764 and his descendants owned the Lodge and other river properties. The Van Bercheyck family is represented by Herman Vyfhuis, Thornhill, of the Public Works Department, and the Donnellys.

Here's to the King ! A huge drinking crystal glass richly cut with vine and grape pattern shows loyalty. Colonel Thomas Bunbury, in command of the Troops

here, pledged the health of Her Most Gracious Majesty Queen Victoria on her Accession, he being then acting Governor of the colony. He did the same on the occasion of her coronation. The Bunburies came from Devonshire and their estates here, Devonshire Castle, Walton Hall, Exemouth, and Dartmouth show the love for the Mother Country. A couple of dark blue Davenport dishes used at a dinner of the Colonel when freedom was proclaimed hang near by. The Bunbury family is represented here by Mrs. E. A. V. Abraham and Mr. Bunbury, of the Police Magistrate's Office.

Who were the Dutch roysters at *Fort Island?* They threw their "dead men" in the river and now and then one of those quaint bottles come up from the vasty deep. Sir Rubert Boyce to whom I gave one said he had been unable to trace the make or time of making.

To Colonel Francis I am indebted for a beautiful comb , the property of Adi (lady) Cakaban, grand-daughter of Cakaban Rex, the last King of Fiji, and to the late Montague Flint for two carved wood combs of Princess Iffia, daughter of the King of Appatan in Colia River, West Africa. A couple of blue and white Davenport plates and the Mayor and Town Council's poky offices in the Blacklock's house where the B. G. Mutual Buildings now stand in Robb Street vanish with the hand of time. Dr. Blacklock got them from his people who said they were used at Queen Victoria's coronation by the under servants.

George Hendrik Trotz, Director General in 1772-1781 of Essequebo and Demerara, stands responsible for a huge bowl which was dug up at Fort Island about 30 years ago. He was a lawyer and advocate and his descendants, Trotz by name, have spent their all in claims against the Government in fights for the paternal estates. They are still on the quest for the Holy Grail and who says the blood of the old Advocate Governor wont tell in the end.

An Auspach punch bowl and there you have Albertus Backer, Commander of Essequebo. The colony has never been without a Backer since and younger generations can remember Mrs. Backer of "the Saffon," Backer of the Audit Office. Mrs. Canon May was a De Backer and a Backer still haunts the solitary wastes of Groete Creek, the family estate. Mrs. May has some miniatures of the family. Mr. Fred May, of the Treasury, has a look of the old Governor from a plate I had and which has been, unfortunately, stolen.

A stone ware luncheon set of old Fiscal Heyleger, a man who loved law, shows how the law would run in families. Heyleger loved the law, and so did those he left behind him. Peter Heyleger Runnels Hill was a Magistrate, J. C. R. Hill, Town Clerk, and J. K. D. Hill, Police Magistrate. Heyleger came from St. Eustatius.

A fine set of Spode from the daughter of Major Abraham Jacob van Imbize van Battenburg, Governor of Berbice, under the Dutch 1789-1796, under the English 1796-1802, shows you how royal those Dutchmen lived. The descendants of the old boy are the Stuart Camerons, Van Battenburg Cameron of Versailles, Messrs. J. Bayne and the Joneses and the Bees. Mr. Wieting married "Cameron."

Who would have thought Freemasonry would in the old days have gone far, far up the Demerara River ? A huge white stone cup with Bath printing with all the attributes was found by Mr. Klautky and handed over to me. Under the lid is inscribed James Colson, Southampton.

Some more Bath printing, four fine hot water dishes and Mrs. Huntley, one of the first lady missionaries to the native Indians, speaks from the past. Dr. Barnardo's mother to whom they belonged gave them to Mr. Huntley.

A silver snuff box of Judge Bent, a fish slice of Governor Carmichael Smyth, who died in 1838 after completing the Lamaha, the Public Buildings, started the Bank, the Apprenticeship system and was the last of the military Governors; the silver and cornelian pancake slice of Governor Meertens; the clock of the Pattenburgs, spoken of by Kirke in "Thirty years in British Guiana," the silver playthings of Dr. Cramers' family and a host of treasures make one feel old, old, as one's inner self goes out to the old owners.

Letters from the Duc Bourbon, and the notabilities of the day all go to swell my collection. The halls of Buckingham Palace in 1840 heard Prince Albert, Signor Rubuni, Signar Costa and Signor La Blanche in a quartette, the Queen and Prince Albert in a duet, and Miss Anson, an aunt of our Magistrate of that name, also sang, as the programme of the concert testifies.

BUTTERFLIES AND MOTHS AS BOTANISTS.

By J. Rodway.

The close connection of plants and insects is nowhere so conspicuous as in the Lepidoptera. In some cases the whole life of a butterfly may be passed on and around a particular species. The males and females feed in the flowers, flit around in their love flights, then the female searches for a suitable place to lay her eggs, the larvæ come out to feed on the leaves and finally go into the pupa stage on or very near the branches. She knows the plant, probably by its odour, for it can scarcely be expected that she remembers what she fed upon in her immature stage, although I would not say that the memory is not unconsciously present.

It may be safely presumed that most of the secretions of plants are intended to keep off insect enemies, but in no case as far as can be gathered is the secretion perfectly successful. Every plant has its enemies, some more, some less, but it may be safely presumed that these foes are checked by the secretions. It is well known that under cultivation some plants are less immune than those of the same species found wild and this is due to the fact that they become more luxuriant and generally have less pungency. We take care of our economic and garden plants with certain objects which sometimes are not quite consistent with the protective measures adopted under natural conditions. Other protective measures, besides pungent and bitter tastes and smells, are taken, apart from man's influence, such as that of the trumpet tree which provides a garrison of one kind of ant to keep off the leaf-cutter.

Whatever may be the reason for these secretions, however, there is no doubt that the old saying, "What is one man's meat is another's poison," is applicable to butterflies and moths. Some of the most venomous plants have their special enemies which fatten upon what would kill man or any other mammal. They simply revel among the poisons.

Lepidoptera generally feed on leaves, but this is by no means universal. Some bore into living trees, even hard-wooded species, other into roots and more or less soft stems; they eat flowers, fruit, twigs, clothing, wax in the bee-hive and are even parasitic in a few cases. As a rule they confine themselves to a particular kind of food and cannot go far beyond their province. Some, however, range over a large number of plants and are practically able to assimilate anything. I may here mention that solitary wasps also bring particular classes of insects as food for their larvæ; they discriminate between flies, spiders, larvæ of moths, cockroaches and grasshoppers, every species having its own particular food. It is not suggested however that they confine themselves to one species.

When we come to the more specialised butterflies and moths we have some that are very dainty in their tastes. They go so far as to discriminate natural orders and their allies, genera and even species. Possibly the highest develop-

ment is in the genus Papilio which is so variable that the entomologist groups together a number of forms to make up the species. Sometimes as many as a dozen have been named as distinct which have now been brought together. One of them, *P. Anchisiades* is fairly common here and feeds on the orange, lime and lemon, in which we can hardly find two exactly alike, even when they come from one set of eggs. Several other Papilios confine themselves to the genus *Citrus*, which they appear to recognise as easily as the botanist. The genus *Aristolochia* is as well known to another set that are called the *Aristolochia Papilios*. Our representative is *P. polydamus*, with which I am quite familiar, as I have plants of *Aristolochia picta* in my garden and because the plant is there I can nearly always find specimens in all stages. The female can be seen on the look-out for a suitable spot on which to lay her eggs ; she hovers about from one plant to another evidently searching for the best location which may not be actually on the plant but always very close to it. When the larvæ have attained their full size they go wandering in search of a place where, under cover, they may safely pass through the pupa stage ; if this is among foliage the pupa case is green, but when on bark or the painted doorway it is a ruddy brown to harmonise with i s upport.

The white cabbage butterfly of Europe is represented here by *Pontia monuste*. The proper food plants of this genus are members of the order *Cruciferæ*, such as cabbage, turnip, mustard, rape, etc., but as there are no native plants of this order our white butterfly has taken the nearest ally the caper family, *Capparidaceæ* and feeds upon Cleome, a flowering plant common in our gardens. It is interesting to note, however, that I have found the larva upon some mustard plants which came up in a garden ; this goes to prove that it would take to the food of the genus if it were present.

One of our commonest butterflies is the *Danaus* (*Anosia*) *plexippus*, the food-plant of which here is *Asclepias curassavica*, milkweed or wild ipecacuanha. It is found all over America from Canada to the Argentine always feeding upon some species of Asclepias, a decidedly noxious if not poisonous genus to us. Where you find plants of this genus there the butterfly will be found, but nothing else will suit its taste.

The common yellow (*Callidryas eubule*) confines itself to Cassia ; like the Anosia it is found all over America. It is notable for its extensive flights ; for hours they have been seen passing the Demerara river going east, probably billions in number and all males. Whence they come and where they go is a mystery. Their food plants are common everywhere and there does not appear to be any scarcity of females.

The passion-flower family is well-known to several butterflies. Some of the species such as *Passiflora fatida* might be thought almost immune from their hairiness and evil smell. But it is quite evident that the butterflies are not entirely kept off by these qualities for they will feed on any species as long as it is a Passiflora. We have found two species of Agraulis, a Heliconius, and the beautiful green and black *Metamorpho dido* on this genus. The papaw is generally classed in this order and that is the food plant of *Gynacia dirce* and

probably other butterflies, as well as some moths. It is notable that some of the most lovely butterflies live on plants that are innocuous to man.

What we may call the poison-eaters are mainly hawk-moths. These gross feeders thrive on some of the most virulent plants in the world; a few only, including the vine moth living on harmless species. The natural order *Solanceæ* is most conspicuous; it is well-known to contain even among its economic species, acrid and poisonous juices. Yet certain species of hawk-moths appear to be acquainted with the whole order and to delight in its poisons. To the ordinary person the close affinity of such plants as tobacco and the tomato is hardly recognised but the moth knows them. I was somewhat puzzled myself in my first botanical studies to find out the order of *Lycium*, but in the United States one of the *Solanaceæ* feeders knows it as a member of that order.

Not alone do the hawk-moths feed on one poisonous order, they seem to be immune from all poisons. That beautiful tree the frangipanni (*Plumeria*) is ravaged by one species, *Allamanda* and *Echites* by others; these belong to the poisonous order *Apocynaceæ*. Then there is the *Euphorbiaceæ* with a pest to cassava. Other moths also feed on poisonous plants, notably *Glyphodes flejia* on the good-luck, *Cerbera thevetia*.

One of our most beautiful moths is *Attacus hesperus* which is similar to the atlas silk moth of India. Of a rosy violet colour it is notable for its transparent window-like spots. The larvæ are green, banded with orange and black. The food plant is generally Duranta, but we have found it also on courida and Laguncularia, near allied plants.

A fair number of moths are general feeders. The *Limacodidæ* especially are found on many species, generally trees or shrubs. When such is the case they do not become so dangerous as when only one plant is attacked. There are, however, many butterflies and moths the food plants of which have not yet been identified.

The few to which we have drawn attention feed on exogens and it is noticeable that hardly any genus and probably no species will go over the line which separates the two great divisions. Endogens have their own pests, the most notable being the *Brassolinæ* on palms and the *Castnia licus* on the sugar-cane. As far as we have seen the *Brassolis sophorœ* is new on our coco-nut plantations. Beetles have from very early times been noted, but not butterflies; no doubt the *Brassolis* has been feeding on native palms and has discovered that our cultivated species are nicer. This is something which we have to look for; the instinct which drives a butterfly or moth to find its own particular food plant is not so fixed as was once supposed. Discoveries are made and will probably continue to be made, always however on lines that may be indicated by the botanist. A palm pest may go from one palm to another but hardly to an exogen. How far it may go outside the palms or if it can live on other natural orders remains to be seen. The *Brassolis* however is not very difficult to detect and can be destroyed on the least sign of damage to the palm fronds.

The *Castnia licus* is now of the utmost importance to the sugar planter. Its tastes are more general than particular; but it does not appear to go outside the

endogens. Its recorded food plants include wild pines, orchids and *Musaceæ*, the banana family. Whether it bores into any of the larger grasses is unknown, at present, but as many of the cane-pests come from the *Graminaceæ* this is quite possible. Being a stem borer it may have been overlooked in the forest region. It is not unlikely to become a dangerous pest to bananas and plantains which makes it all the more necessary to find out how to deal with its ravages and prevent it from becoming a greater danger. It must be considered possible that as this has discovered the cane other insects may do the same. For, there is no doubt that instinct is not quite such a uniform matter as was once supposed.

Some of the cane-pests come from grasses. The small borer-moth *Diatræa* is a grass borer and will attack several grasses including Paspalums which are so common on estates' dams. Possibly it would be well to have the dams mown at regular intervals. Other possible cane-pests that do not bore are *Remigia repanda* which a few years ago came from the grasses to the canes and ravaged the leaves in such a manner that the plants must have been much weakened. There is a pretty white moth (*Carama*) common also on grasses that may become a cane-pest. Several skipper butterflies (*Hesperidæ*) are also found on the leaves. They fold the leaves together and lie hidden during the day ; when such folds are seen they should be always pinched. Their more common food plants are the arrowroots and Cannas, which they often eat down to bare stems. A rather pretty butterfly, *Cærois chorinæus*, has been reported on canes ; it is known to feed on palms and may at any time find out our cane-fields. At present it appears to be rare. There is also the genus *Euptychia*, those dull coloured butterflies with eye-spots underneath, which are grass feeders and may be looked for as a probable danger. Several cut-worm moths are also suspicious.

This long string of possibly dangerous insects to the planter will no doubt make him wince, but the matter must be faced. Some twenty-five years ago I saw the necessity for a proper study of the pests of our economic plants, but only during the last five years have I been able to work at it in a systematic manner. A little has been done but we are only on the threshold of our work. Every planter must assist so that the dangers may be anticipated and, if possible, nipped in the bud.

Other economic plants have not been so well investigated as the sugar-cane, but enough has been done to show that all have their pests. Cacao has the butterfly, *Callizona aceste* ; coffee, species of *Pyrrhogyra* and *Adelpha* ; cassava, a hawk-moth, *Dilophonota ello*, rice, some skipper butterflies, and maize, several moths. Our pigeon-peas have borers, in stem and pod, beans are ravaged by moths, sweet potatoes have stem borers and a rapacious hawk-moth, *Protoparce cingulata*, tobacco has *Protoparce paphus* and several smaller moths and our tomatoes and capsicums also quite a host. These it must be remembered are butterflies and moths, were we to deal with beetles, bugs, grasshoppers, etc., we should hardly have room for an enumeration. Then there are fungoid pests which often attack plants that have been weakened by the insect ravages ; the rind-fungus is one of these and the mango blight another.

Returning to our subject we have so much to say that the limits of this article will only permit of a skimming. The banana and plantain diseases are generally

considered as fungoid but possibly there may be insect pests as primary causes. The beautiful owl butterflies (*Caligo*) and at least one of those moths which have the pretty moss-like larvæ, *Hyperchiria liberia*, have been found on the banana. As they can be seen and picked off they are not so dangerous as the *Castnia*, which we have already mentioned as a possible pest. Pumpkins and cucumbers have their stem borer, *Melittia*, which can easily become very dangerous if it increases in number. The pests on fruit trees are not as a rule virulent but the Anonas or Custard apple family are subject to the ruthless attacks of the hawk-moth, *Protoparce rustica*. We have already mentioned the Papilios on Citrus; the mango and bread-fruit are only attacked by the hairy worm (*Megalopyge*) and the bag-worm (*Oiketicus*). I have seen a guava tree entirely denuded by a fire-tail skipper.

Possibly the most virulent pest in our gardens is the lily worm *Xanthopastis timais*, which wrecks the finest bed of Eucharis or Hippeastrum in a night; as far as we are aware it only eats *Amaryllidaceæ*, for the only true lily, *Gloriosa superba*, has always been left untouched in my garden. The skipper butterflies often make havoc of our Cannas and Marantas but they do not touch the gingers, *Zingiberaceæ* Only the more delicate ferns are attacked by cut-worms, *Plusia verruca* and *Eriopus floridensis*; when these get among the maidenhairs the beauty of the ferns is soon wrecked. I believe these pests are more generally feeders on grasses. Nothing appears to touch the Selaginellas.

One of our most desirable street trees is the fiddle-wood, but unfortunately it is almost always unsightly from the attacks of the moth, *Pyrausta mellinalis*. Rarely however is the tree actually killed even when denuded of every leaf.

I have made out a list of the natural orders of plants with their pests, and it is notable that no one is entirely immune. The acrid poisonous secretions appear to have little if any effect, for even the moka-moka (*Montrichardia arborescens*) is fed upon by a butterfly (*Helicopis cupido*) and a moth (*Ecpantheria eridanus*). The fiery secretions of the ginger family however, and the strong essential oils of the Labiatæ appear to be deterrent for hardly any insect is found on their leaves. A pretty green moth (*Aplodes frondaria*) feeds upon the flowers of Hyptis as well as those of some others as Clibadium and Eupatorium of the Composite order. This moth is one of the *Geometers*, several of which feed on buds and flowers.

From the evidence we may safely conclude that butterflies and moths know the plants on which their young will have to feed. They do not go blindly to work although they sometimes make mistakes as in a case where a clutch of eggs was laid on a man's hat when he was wearing it. They seem to know not alone a single species but its allies as well and in some cases confirm our classification. The more dainty keep to a particular species or genus, others range over a natural order or even a great class. Few however step over the bounds from exogen to endogen or *vice versa* but there are such exceptions. The more specialised butterflies do not feed on poisonous plants, but the higher moths revel in them. Certain families are more varied in their tastes and assimilate quite a large number of diverse species of plants not always closely allied. These are mostly to be feared, being possibly often led to make trial as it were of a new plant, perhaps

one just imported. Whether we call it chance or accident the result is the same; the discovery has been made and a new pest has to be recorded.

That such has been the case in the past is quite certain. Our canes, coffee, cotton and a host of other economic plants have been imported from distant countries. In a very few cases the native pest has also been introduced; perhaps the small moth-borer was distributed with the canes. Such is not however common, for example, a hawk-moth is said to feed on the mango in India, but it has not yet appeared in America. Our economic pests have mainly come from forest and savannah, leaving their original food plants to at least partially live on the new-comers. We may safely state that they discove ed them, and finding them more juicy and luscious than the wildings became more or less dangerous pests.

What has happened once may happen again. Other moths and butterflies may at any time discover our canes and bananas and become as much pests as the *Castnia*. What then can we do? The only course is to study carefully the habits of all insects so that if such an inroad takes place we may be fitted to deal with it at once. No cane planter of to-day can afford to talk of "the blast" as the Barbadian did a hundred and fifty years ago or to wonder why his canes fail. He should know why and if possible how to fight the plague.

SOME OF THE PREVENTABLE DISEASES OF BRITISH GUIANA AND WHAT WE CAN DO TO PREVENT THEM.

BY

DR. A. T. OZZARD,

Fellow (and Local Secretary), Society of Tropical Medicine and Hygiene, London.

Of a set purpose I use the words " What we can do to prevent them " : because we so commonly are told that, when the question of adopting up-to-date methods of sanitation is raised, " we have not the money to carry them out ! " It is unfortunately fully to be admitted that we do not possess the funds necessary to carry out well-equipped means of dealing with sanitary problems, such as have been so successfully accomplished in Panama, Ismaila, and other tropical countries ; but I maintain that we are able to do a very great deal without an extraordinary amount of expenditure. The argument that we have not the funds available is the favourite one on the part of the scoffers at recent successes of tropical research, or of those who take little or no interest in such matters and think it too much trouble to undertake anything out of the ordinary run.

His late Majesty King Edward the Seventh asked at a meeting composed mainly of well-known medical authorities, in reference to a certain disease " if preventable why not prevented ? " The tendency of modern medicine undoubtedly lies in the prevention of disease : and the object of this paper is to endeavour to point out how certain common but widespread diseases of this colony may be to a great extent prevented, and at a no very alarming amount of expenditure.

I will roughly divide these diseases of the colony into :—

(a) Those mainly conveyed by water ;

(b) those conveyed by insects ;

(c) those conveyed by dirty and insanitary habits generally.

Under (a) will come, of course, most bowel complaints such as Dysentery, Diarrhœa, Enteric Fever.

The two most crying needs of the colony at the present day, so far as sanitation is concerned, are the need of a pure water supply, and an efficient method for the disposal of fæcal matter.

Dysentery, Diarrhœa, and Enteric Fever, are universally recognised nowadays to be caused in most cases by the use of impure water. With the exception of our two chief towns, Georgetown and New Amsterdam, the colony may be said to be absolutely without an adequate supply of pure water for drinking purposes ! Even some of the best managed sugar estates do not possess a sufficient supply of pure water for their coolie labourers : and the majority of the villages throughout the colony are practically without a proper supply. I maintain that this should not be the case ; for there is no reason with our annual rainfall why there

should not be an ample supply of pure water for everyone. It is quite true that our laws provide for such a supply all over the colony. But it is equally true that these same laws are never attempted to be put into execution, and I believe the majority of the inhabitants are absolutely unaware that such laws do exist!

Sections 179 to 187 of the Local Government Ordinance, 1907, give ample power for all Local Authorities to insist on ample means being taken to provide pure water for everyone.

I will therefore now deal with the question of water supply on estates, and then with that of the villages.

Water Supply on Estates.

Par. I of section 179 of the Local Government Board Ordinance reads: . . . "the owner of every plantation shall erect and maintain in good order a tank or tanks for the storage of rain water and capable of storing the quantity of water prescribed under the provisions of this Ordinance and in this Ordinance referred to as the prescribed quantity."

This quantity is prescribed under Table III. of the 4th Schedule:—

"Each plantation on which any quantity of sugar exceeding fifty tons in weight and not exceeding five hundred tons has been made during the preceding year. . . 25,000 Imperial gallons of water.

"Each plantation on which any quantity of sugar of or exceeding five hundred tons has been so made, then for every additional quantity of one hundred tons of sugar or less so made, an additional 2,500.

"Provided that, where two licensed medical practitioners certify in writing that there is a supply of wholesome fresh water on the plantation sufficient for the wants of all the persons residing on the plantation, the quantity hereinbefore prescribed in addition to the first 25,000 gallons shall be reduced to 1,250 gallons."

As a matter of fact, however, the question of water supply on all estates which employ indentured immigrants, comes under the control of the Medical Department.

I purposely quote the words of the various sections of the Ordinance, as by only referring readers to the numbers of the sections, in all probability they will not be referred to.

The usual conditions of water supply on estates, in my experience, consist of possibly a concrete tank capable of holding a large number of gallons, but not usually containing anything like a sufficiency for the labourers employed. The chief source of water supply is usually water obtained from some conservancy aback of the estate and conveyed to the various yards in open trenches. No doubt many of these trenches are wired off; but beyond keeping cattle away the wire fencing is of no earthly use in preventing all kinds of fouling not only by cattle and other animals, but also by the labourers themselves. You will frequently see small platforms erected along the sides of some of these trenches, and coolie women cheerfully washing their dirty clothes in the same water which they will later on drink! I have even seen a coolieman performing the toilet of his perineum in a drinking water trench !!!

Obviously, therefore, the first thing to do on estates is to abolish all open trenches for drinking purposes.

What then are we to substitute for these same trenches? Concrete tanks undoubtedly meet the difficulty so far as a fairly pure supply of water is concerned; but then these tanks must be within a convenient distance of the various dwellings. Tanks or vats placed at the ends of every range in the yards would also answer the purpose admirably.

But, of course, these suggestions will be at once met with a howl of disapproval on the ground of expense! It would be well worth while for the authorities of some of these estates to work out the actual cost caused by loss of labour, in dollars and cents, incurred by estates with a defective water supply and consequent high sickness and mortality rate from water-borne diseases. The initial cost of supplying proper receptacles for drinking water would no doubt in the first instance appear to be excessive; but then it must be borne in mind that it would only be an initial expense, whereas without it, there is every year the same heavy death-and-sickness-toll to place against the one initial outlay.

I believe that on Pln. Blairmont, Berbice. where at one time there was an excessive amount of bowel diseases, a large concrete tank was erected, and water therefrom led by pipes to the various ranges: so that a pure supply of drinking water was within the reach of all. Since that time I am told there has been a notable reduction in the number of bowel complaints.

If one estate can do this, why not others?

Some years ago I was connected with an estate on which there was also a large percentage of bowel complaints. As the result of investigations I made, I found that a very large proportion of these cases came from a series of ranges the occupants of which obtained their drinking water from an open trench, one side of which was used as the public latrine, of which fact there was no mistake, as it was perfectly evident both to sight and smell! So that, practically, these people were drinking the water from their own cesspool! The reason for the large incidence of bowel complaints amongst the occupants of these ranges then became perfectly obvious.

Surely, therefore, it would be well worth a large initial outlay to remedy this state of affairs, and save many thousands of dollars by a diminished sickness-and-death-rate!

Where it would be difficult to erect large concrete tanks, a series of smaller ones in close proximity to the various dwellings might be put up. Or even vats or tanks in connection with the dwelling ranges themselves would be preferable to the antiquated open trench system.

Dr. Ferguson suggested to me that large reservoirs some distance away from the estates might be dug, and if possible the bottom and sides concreted, or well puddled. These, of course, would have to be properly protected from all human and animal contact, and would need to have the water led to the various yards by a system of pipes, as the labourers would not go any great distance for

their water, but would pounce on the nearest available trench. On the Essequebo Coast all the estates have large lakes aback from which they could obtain the necessary water ; but pipe borne, and not by open trenches.

It is a little disheartening to read of two Magistrates' decisions recently in which an attempt was made to convict persons of fouling a drinking water trench. In these cases, no conviction was obtainable because the Magistrates held that it was a navigation trench in addition to being the drinking water trench of the village concerned. Obviously of course no drinking water trench should be used for navigation purposes as well, on account of the certain fouling of the water by the navigators. But one would have thought that if the fouling was satisfactorily proved, the question of its being used as a navigation trench should not have had any weight. I base my facts solely on the newspaper reports. Possibly evidence not given in the papers led to the prosecutions being quashed.

In the report of the Surgeon General (just issued) for the year 1909-1910 under the heading " Drinking Water, " he states :—" As I have said before the storing of drinking water in open trenches and ponds is indefensible. I have advocated and I still advocate the adoption of the system in use at Pln. Blairmont, that is, the erection of tanks for storing the water."

Speaking subject to correction, I believe that Pln. Blairmont is by no means the wealthiest of sugar estates in the colony. If, therefore, Pln. Blairmont can afford to erect tanks for the storing of drinking water for their labourers, surely most of the other estates in the colony could do the same !

Many people seem to think with regard to the open trenches and ponds, that it is quite sufficient to fence these in and possibly also, as is done in some cases, to raise the sides of the dams bordering these trenches, etc., so that no dirt will be washed into them from the roadsides or pastures. With regard to fencing, most animals will manage to circumvent this, and with regard to the raising of the dams, I would like to draw attention to the following facts taken from Professor Simpson's " Principles of Hygiene as applied to Tropical and Sub-tropical Climates " :—" In 1905 Dr. Copeman made use of fluorescin to test whether a sewage farm belonging to the County Asylum of Cambridge, and on which the sewage of the Asylum was treated by broad irrigation, could possibly contaminate the two wells supplying the Asylum with drinking water. The wells were 1,200 and 2,500 feet, respectively, distant from the sewage farm. The reason of the investigation was a series of typhoid fever cases at the Asylum. The geological stratum of the district consisted of chalk underlying a thin stratum of loam. By digging through the loam on the sewage farm down to the chalk, and pouring five pounds of flourescin dissolved in water and caustic soda into the hole or trench, a positive result was given. In less than five days the fluorescin was found in the first well, and in nine days in the more distant wells. "

If soakage can take place through such soil and at such distances, it is obvious that these reservoirs should be made impervious to such soakage, if we wish to avoid the dangers thereof.

Another method of purification often suggested, is that by precipitation by chemical methods One method acts by precipitating the suspended matters it contains, and another aims at the destruction of the organic matter and bacteria in the water. But as Professor Simpson points out, "no precipitation method sterilises the water so far as pathogenic micro-organisms are concerned, and to that extent every such method is unsatisfactory, but while it does not kill the bacteria of disease it certainly lessens the chances of contracting disease in drinking water infected by such bacteria." And as our sources of contamination with regard to our open trenches, etc., are continually exposed to various kinds of pollution a correspondingly continuous application of precipitation methods would have to be kept up.

Water Supply in the Villages.

If the drinking water supply on estates is unsatisfactory, that of the villages is very much worse. At the present day there is not a village in the colony which possesses a decent supply of water for drinking purposes. I have referred to this serious state of affairs at other times and in other places ; but I hold that when there is a danger in our midst, there can be no possible harm in continually drawing attention to it, so I offer no excuse for repeating oft-told tales.

The usual state of affairs with regard to this matter in the villages takes the form of an open trench some little distance from the village, and of course liable to all kinds of pollution, not only from the fouling by various kinds of animals, but perhaps just as frequently and possibly in an even more disgusting fashion by the villagers themselves who drink the water they themselves have just been fouling !

Or the somewhat better class of villagers will have those objectionable receptacles in the form of barrels or jars, objectionable chiefly on account of their dangerous liability of affording breeding places for mosquitos ; but being usually very filthy inside they must soon contaminate the rain-water they contain. The still more prosperous class will have something in the form of a vat or old boiler, either totally unscreened or only partially so, and which are never cleaned out from the day they were first erected.

I maintain that it is not an impossible task to remedy this state of affairs. By raising the village rates, and with the help of a grant-in-aid from the Government, or by loans from the Government, one or more large vats or tanks could be erected and obtain their catchment area from the largest buildings in the village. Or concrete tanks might be built.

The raising of the rates, Government loans, or grants-in-aid, have to be resorted to by those villages which are unfortunate enough to suffer from troubles of defective drainage. Why should not the same methods be adopted to improve the conditions of the water supply, and so at least lessen one of the many causes of the heavy mortality-rate of the colony.

However hard up we may be as a colony, I maintain that we are not so badly off but that we can do a great deal along the lines I have indicated to improve

matters. It must be either our doing so, or being content to remain as we are and rest satisfied with a high death-rate, and larger sickness-rate, and consequent loss of labour.

Professor Ross in his recent work "The Prevention of Malaria," under section 38 gives what he calls some "General Sanitary Axioms": and number 3 of these axioms reads:—

"For economic reasons alone, Governments are justified in spending for the prevention of such diseases a sum of money equal to the loss which the diseases inflict upon the people." After the word "Governments" we here could very well add "or proprietors of labour," and in place of the words "are justified" we might read "would be well-advised in."

As I have already mentioned, sections 179 to 187 give all Local Authorities power to insist on a sufficient water-supply for their districts, and explicitly state how such a supply is to be obtained and the penalties incurred by those who wilfully neglect to comply with the law.

Diseases Conveyed by Insects.

The ones that concern us chiefly here are: Malarial Fevers, Yellow Fever and Filariasis

Malarial Fevers:—Everyone knows nowadays that the kind of mosquito which conveys these fevers, is the Anopheles. In British Guiana, the chief carriers are the *Cellia albipes* and *argyrotarsis*, of the Anopheline family.

Everyone has heard of the huge campaigns which have been so successfully carried out in certain other countries, and most people here seem to be quite satisfied that any such campaign in this Magnificent colony, would be quite out of the question. Being so satisfied, they seem to think that there is nothing further to be done, beyond telling everybody else that we have no money to spend on "these wild-cat schemes of a few cranks." If my memory serves me aright, these very words were used by one of the leading papers of the colony only a short time ago!

I will deal with the preventive measures on estates and villages separately.

Estates:—Within the last year or so, undoubtedly a great deal had been done on estates generally, through the instigation of the Medical Department. A lot more remains to be accomplished however.

The chief prophylactic measure which is at present in force is the administration of quinine. This in conjunction with the other recognized anti-malarial measures is no doubt admirable. But when depended upon alone, to the exclusion of other methods, it can hardly be expected to do more than help to check a noticeable increase in the malarial rate.

Prof. Ross in his "Prevention of Malaria" quotes several interesting conclusions given by Dr. Malcolm Watson on the result of his work in the Malay States. Some of these are well worth drawing attention to:— "... ... ...while

keeping the malaria in check, so that the coolies can carry on their work, three years' administration of the drug (quinine) had entirely failed to eradicate the disease." This in spite of the fact that the drug was given in 10-grain doses on six days out of seven, or in 20-grain doses when a coolie had fever, or was in such bad health that he did not feel inclined to work. He goes on to say that " If, as has been shown, the immunity from malaria produced by quinine leaves the patient infective while he is acquiring the immunity, then it will be impossible in the presence of many Anophelines, and in the presence of many new arrivals (such as newly-born children), ever to eradicate malaria by quinine." " It follows too, that if drainage be an alternative, even though much more expensive, drainage must be the method which should be adopted."

Prof. Ross goes on to say : " The author carefully compares the conditions in Italy with those in his country. The reason for the freedom of the hills in Italy from malaria is that the principal carrier there is s pool breeder and not a stream breeder. The attitude of the Italians to quinine is due to local conditions, drainage being difficult in many malarious localities there, especially along the coast. But as regards the tropics, the author adds : " To me it seems only the vision of a dreamer that any organisation will ever induce a whole tropical population to take quinine in the doses required by the Italians. And when it is further considered that the population even when taking this quinine, would still be infectious, the policy of spending money on quinine for an indigenous population, where drainage is possible, appears to me indefensible either on medical or financial grounds." I need hardly add that I am in thorough accord with Dr. Malcolm Watson's conclusions so far as British Guiana is concerned. It seems to me that everybody out here has come to the conclusion, quite premature I believe, that quinine administration is the only method to be adopted, with perhaps, a little playing about with such additional means as drainage and the clearing of bush. Soon after Sir Rubert Boyce's visit to the colony, a fair amount of clearing of bush and trees was accomplished about Georgetown and a few other places, so that the doing of this came to be known by the name of " Boycing." Nowadays, however, to mention a suggestion of " Boycing " to many individuals, is like holding out a red rag to a bull. And some of these individuals include those who ought to know better, I have even seen it stated that Sir Rubert Boyce, when advocating the cutting down of bush, was only referring to the bush about Georgetown, and not to that about the dwellings of people in the country ! ! The want of money is by no means the only difficulty in the way of our carrying out anti-malarial measures in British Guiana : almost if not quite as great a drawback is the opposition one meets with from people in the most influential quarters.

What therefore can be done on estates with regard to anti-malarial measures other than the free use of quinine ? Obviously drainage comes first in importance. Most estates are or should be well-drained. But good drainage is not always an adjunct of the yards where the labourers dwell. Now there can be no possible reason for not having all the yards on estates kept in thorough order so far as drainage is concerned. And yet I have found it extremely difficult to get this done at times. Certain people seem to think that as soon as a few drains have been dug, nothing further is required. All drains should be kept thoroughly

cleared of grass and weeds, and also the banks well-weeded. As often as not this appears to be attended to only when the Medical Inspector is expected on one of his half-yearly visits. Next to drainage comes the clearing of bush, etc. around the dwellings. Here again one is met with an extraordinary amount of opposition. There is no difficulty in the way of expense, and the authorities have it entirely in their power to make the labourers themselves attend to this detail.

The total abolition of all barrels, and such like receptacles, or the insistence on their being thoroughly screened, is also mere child's play. As a matter of fact, I believe that most estates have now effectively dealt with this evil.

With regard to mechanical means such as protecting the numerous dwellings with wire-gauze, I fully admit a difficulty steps in. The expense would be considerable, and there would be a need of continual repairs to be carried out.

Certainly, however, the quarters of overseers on estates could be efficiently screened. And surely the staff of overseers is well worth an extra amount of expenditure, that is if it is considered worth while looking after their health.

Another matter quite easy of accomplishment, would be the establishment of Mosquito Brigades. A creole gang with the dispenser of the estate, and driver in charge, should make a weekly tour of all the yards, and see that no tins, calabashes, etc., are left about, and that any barrels there may be are kept efficiently screened. I am of opinion that such a gang could do an enormous amount of good anti-malarial work, and every estate could well afford the upkeep of such a gang.

I am aware that a great deal is being done by some estates in the Colony but I am also painfully aware that there are others which if they take up such matters at all, do so only in a very half-hearted manner. In fact so far as I am able to judge at present, half-hearted measures appear likely to mar the success of anti-malarial methods in British Guiana !

VILLAGES:—With a very few exceptions, next to nothing is being done in any of the Villages with regard to anti-malarial measures. People seem to have made up their minds that to attempt a serious campaign against mosquitos in British Guiana is but a fool's dream ! No one would be foolhardy enough to say that he could exterminate all the mosquitos in British Guiana. But I maintain that the cost of a malarial campaign in this colony would be nothing like the amount of that incurred in certain other countries. With the exception of the towns of Georgetown and New Amsterdam the population in British Guiana is very scattered, many of the villages indeed consisting of a few houses only, in single rows on either side of the public roads. An anti-malarial campaign, therefore, would be confined to Estates, which I maintain could do a very great deal more than has yet been attempted, and the Villages which would require but a comparatively little outlay.

Let me again quote Dr. Malcolm Watson with regard to rural communities :— " In the case of many small villages, it would probably be possible to eradicate

the breeding-places of Anophelines, where they are in the midst of the community, at a mere fraction of the money which would be required to dose the population effectively with quinine even for a year."

Quinine is being supplied at a very cheap rate to our villagers through the Post Offices. But can anyone reasonably expect every villager to effectively dose himself and all the members of his family with quinine so as to merely check an increase in the malarial rate. To expect this is very much more out of the question than to attempt a properly conducted campaign against the Anophelines.

Every village community in the colony has the means at its disposal to insist on all members of a village to prevent the wilful breeding of mosquitoes on their own properties.

The Mosquito Ordinance No. 19 of 1910, gives the necessary machinery for dealing with all offenders. But it must be made use of and not allowed to remain in abeyance like so many of the Ordinances in this colony. In addition to this Ordinance every Village and Country District, under the provisions of the Local Government Ordinance, is entitled to make its own by-laws for the cleansing and rendering mosquito-proof of tanks, vats and other receptacles for the storage of water and in such by-laws may prescribe the means by which such tanks, vats and receptacles shall be made and kept mosquito-proof. Section 179, par. 4, Local Government Ordinance, 1907.

With regard to the making of By-laws, however, Prof. Ross points out :— "Such regulations should, if possible, be included in the General Health Act, and not be left to the by-laws of local bodies, which are often very incompetent. In my opinion British administration is generally much wanting in discipline, and tends to neglect the health and lives of the people for the sake of antiquated notions about the liberty of the subject."

The Mosquito Ordinance does away with the necessity of making by-laws with regard to the screening of vats, etc.

In addition, however, to the help which this Ordinance gives to every village, we can do a great deal more in the nature of an anti-malarial campaign in our villages.

Every Village and Country District consists of a Chairman a few Councillors and a Village Overseer.

It should be one of the most important duties of such bodies to see that the Mosquito Ordinance is strictly carried out, and they also should personally conduct anti-malarial campaigns in their respective districts. I am convinced that in such bodies we have a very effectual machinery for exterminating the Anophelines in Country Districts. And if only the members of these Districts would act accordingly instead of wasting valuable time in the many petty quarrels and bickerings which take place at too many of their meetings, an enormous amount of excellent work could be accomplished.

Mosquito brigades could be easily formed, consisting of the Chairman, Overseer, and one or two members of the Council, whose duty it would be to make a tour of the District once a week or oftener in the case of the larger Districts. At these visits they would personally inspect all the yards and properties, insist on the owners carrying out the necessary precautions, and attend to the oiling of ponds or larger collections of water, and also insist on all the various yards being kept in the pink of condition with regard to cleanliness. In such a way the dangers of all objectionable water receptacles would be entirely done away with. No amount of making of laws will do a tenth part of such work, as will personally-conducted tours on the lines I have suggested.

There can be no objections to such a method of procedure, and it is undoubtedly the best method of dealing with the many who are ever ready to raise objections to anything partaking of the nature of sanitary improvements.]

The time for talking and arguing over the merits or demerits of recent advances in sanitary science, has gone by. This is the time for action, action, action! And if ever there was a colony in need of sanitary waking up, that colony's name is British Guiana.

Every Village District has a Government Medical Officer within easy reach so that there can be no excuse for doing nothing on account of ignorance of the best way in which to act.

It has been argued that our Mosquito Ordinance is directed against the destruction of the Stegomyia only and not the Anophelines. This argument is based on the fact that it is frequently asserted that the Anopheline is a marsh breeder solely and simply, and not a breeder in water receptacles. This statement, true in a certain general sort of way, is however very misleading. The Anophelines as a family whole, do not affect the marshes only as breeding places. Certain species of them will prefer artificial collections of water such as the common water barrels so much in evidence here. And the smallest collection of water in close proximity to dwelling-houses will be quite a suitable place for breeding to attract a good many different kinds of Anophelines. It may be taken for granted that where a number of Anophelines are found in a house, the breeding place is usually within the precincts of that house, or at any rate not many yards away from it. The first procedure, therefore, when Anophelines are found in dwelling houses, is to make a thorough search of the premises before going afield to find their breeding places.

In addition to attending to the abolition of all mosquito breeding-grounds the Mosquito Brigade would, of course, attend to such important matters as drainage, and the clearing of bush, or "Boycing," as it has come to be called out here, a delicate compliment to an enthusiastic worker on Prof. Ross's lines.

Hear yet again what Dr. Watson has to say with regard to these points:— That hundreds of square miles of the flat land in Malaya have been freed from "malaria simply by draining, and by felling the jungle." Just think how many hundreds of square miles of the very flat land in British Guiana are crying out for similar common-sense treatment?

Yellow Fever :—By the brilliant discovery of the fact that this fever is conveyed solely by the bite of the Stegomyia mosquito, Yellow Fever to-day ranks as an absolutely preventable disease.

So easily indeed can it be prevented that given a single case, diagnosed from the onset, there should be no further cases taking place, if the proper preventive measures have been thoroughly carried out.

As most people know, these measures consist in proper isolation of the patient in a mosquito-proof room, or even under a netting, and the thorough fumigation of the premises so as to destroy all Stegomyia mosquitos which may happen to be about.

The great drawback to a sufficiently thorough treatment of the patient and his surroundings, is the fact of the very great difficulty in an early diagnosis of the first case.

Strange as it may appear to be, it is a fact that contrary to what obtains in most other preventable diseases, we know much more about the prevention of this disease than we do of the disease itself, at any rate so far as the earliest clinical symptoms are concerned.

At the present time, a very interesting discussion at the Society of Tropical Medicine and Hygiene in London, is taking place. The discussion was opened by our old friend Sir Rubert Boyce , who maintains that Yellow Fever is endemic in West Africa. Similarly a French Commission sent out to Martinique, last year or the year before, came to a like conclusion with regard to this island. They held that mild cases were occurring there the greater part of each year, but they were only called Yellow Fever when pronounced symptoms, such as black vomit, etc., were present.

All the speakers at the discussion on Sir Rubert Boyce's paper were agreed as to the very great difficulty in diagnosing between Bilious Remittent Fever and mild cases of Yellow Fever. Sir Rubert inclined to the view that the majority of cases diagnosed as Bilious Remittent or "Inflammatory" Fever were really cases of Yellow Fever, but they were only styled so when the pronounced symptoms were present. And it is just these mild or quite unrecognised cases which start an epidemic.

I have been told that given a doubtful case, the diagnosis will be established in the course of a few days or weeks, according as to whether pronounced cases will follow or not. This is quite a fallacious argument. As I have said before a recognised case should not nowadays be followed by others. Furthermore the great difficulty of diagnosis between Bilious Remittent Fever and Yellow Fever being well established ; I maintain that it is the duty of every medical man nowadays to treat any suspicious or doubtful case as though it were a genuine case of Yellow Fever. The reason is obvious, because it is the first few days which are so dangerous in a case of Yellow Fever, these being the days when the Stegomyia mosquito becomes infected and so capable of spreading the disease : and therefore no time should be lost in making up one's mind as to whether the

case is one of Bilious Remittent Fever, Malignant Malarial Fever, or Yellow Fever; but if there be a reasonable suspicion of its being the latter, the precautions in the way of isolating the patient, fumigation, etc., should be at once taken in hand.

No medical man cares to take the responsibility of declaring a first case, on account of the opprobium he is sure to incur; but it is infinitely preferable to take early precautions than to run the risk of being the means of allowing an epidemic to run riot.

Until the specific germ of this disease has been discovered beyond doubt, there will always be endless disputes as to the identity of mild cases.

Filariasis:—Most people are well acquainted with the various phenomena of this disease, as it occurs in this colony.

Unlike Malarial and Yellow Fever, however, it is capable of being transmitted by several different kinds of mosquitos. Surely another additional reason why one should do every possible thing one can to exterminate mosquitos from human habitations and their surroundings. What has always been said before with regard to the keeping of towns and villages free from Anophelines and Stegomyias, applies equally with regard to Filariasis.

Diseases Conveyed by Dirty and Unsanitary Habits.

Under this heading I will only deal with two very prevalent diseases in this colony—Ankylostomiasis and Tuberculosis. *Ankylostomiasis*:—It is with a sigh of relief that one can speak of the preventive measures which are being carried out in this colony with regard to this disease. And yet one's feeling of relief is abruptly brought to an end because although we may pride ourselves on what is being done on estates with regard to the prevention of this disease, it is a very different matter so far as the numerous villages in the colony are concerned. I suppose every one is familiar with the system of latrines in use on the majority of the estates in the colony. But there is hardly a village in British Guiana which possesses proper methods for the disposal of fæcal matter.

As it has been dealt with on the Estates, so can it be as effectually dealt with in our villages. Almost all these villages have trenches opening into main drains over which a few latrines could be erected and at a not over ruinous cost. This is a matter which ought to be taken in hand by every Village Authority in the Colony, either out of the rates, by means of loans, or by out-and-out grants-in-aid. The Government, I am sure, is willing to help to their utmost—judging at any rate from the manner in which they take pride unto themselves on account of what has already been accomplished on the sugar estates. It must, however, never be lost sight of, that these same sugar estates are always open to infection from the labourers of their neighbouring villages, and until these latter are taken in hand, a good deal of their efforts will be more or less wasted.

Tuberculosis:—The town of Georgetown at least may congratulate itself that it is rising to the occasion, since it has opened a Tuberculosis Dispensary.

A small beginning and worked under great disadvantages, but at least a beginning in a right direction, and with, it is to be hoped, better prospects in the near future.

The rest of the colony, however, is nowhere so far as the prevention of Tuberculosis is concerned. Most of the villagers' houses are more or less surrounded by thick bush, which effectually excludes all sunlight and most of the fresh air, the deadliest enemies of Tuberculosis, as well as adding to the excessive amount of moisture usually present here.

The distribution of the so-called "Fresh-air" pamphlets issued by the Surgeon General, and occasional lectures by Medical Officers help no doubt to a certain extent to a better knowledge by the people of the way in which they ought to live. The mosquito brigades referred to might do a great deal more by talking to and instructing the villagers on their anti-malarial tours round the villages, pointing out the necessity of efficient ventilation of their dwelling-rooms, and the advantages of fresh air, lack of moisture and good drainage.

SAPIUM JENMANNI.

SOME STRAY NOTES ON SAPIUM.

By Edgar Beckett.

There is not much doubt but that there is yet a great amount of information to be gained concerning this genus of our indigenous rubber plants.

That there are large numbers of Sapiums to be found growing in our forests, at scattered intervals, is well-known, that this tree is also to be found growing vigorously along the Coast lands is also a fact, but that we know the nomenclature correctly is probably open to doubt, whilst as to the behaviour of the tree under tapping operations and of its merits as compared with *Hevea brasiliensis* we may quote from Prof. Harrison's and Mr. Stockdale's interesting article inthe October issue, 1910, of the *Journal* of the Board of Agriculture. "Without therefore pledging ourselves to any definite statement," they write, "in regard to the relative merits of the Para rubber tree and the indigenous Sapium, we are inclined to the opinion that, whereas the value of *Hevea brasiliensis* as a rubber-producing tree under cultivation is known in many countries and under different conditions, that of *Sapium Jenmani* has yet to be definitely ascertained; and whereas the growth of Para rubber has been satisfactory in a very large number of different localities in the Colony cultivators would be wise to choose this variety and to consider Sapium as still being in the experimental stage —worthy of trial only on a small scale until more definite information is available in regard to the yields of rubber that can be obtained from it." In the April number for this year, the *Journal* contains the following: "Mr. Stockdale reported on the experimental tappings of *Sapium Jenmani* at Bonasika. The experiments were not complete, but the result showed that the planting of *Sapium* could not be recommended if Para rubber was available."

But apart from these considerations, mention of a few of the characteristics of the plant may not be out of place at this juncture, when every tongue runs riot with the name of rubber.

All Sapium leaves bear the distinct character of two glands on the petiole or leaf stalk; in some cases they are very conspicuous, being of considerable length, whilst, in othe cases, they are just barely indicated to the naked eye. The margins of the leaves are, in some varieties, serrated, and, in others, smooth, with a gland or two of some prominence. On good authority the writer is informed that both the serrated and smooth margins are to be found on leaves of the same tree.

The flowers are very small and are grown on long spikes, the females being at the bottom and the males at the top, the latter generally being also produced in larger numbers than the former. The fruit consists of a small capsule or seed case, not conspicuous at all, and each capsule generally contains three divisions, and, when ripe, splits open, when the seed itself is disclosed, which upon examination is shown to possess a bright arillode, which, in all probability, proves an attraction to birds, insects and rodents. The

small size of these seeds is responsible fo · the idea that used to prevail amongst the Indians that the tree never produced seed at any time. That there is a considerable variety in shape and size of the leaf can be seen by a glance, and this variability appears to be governed apart from distinction of species, by the age of the tree, the position of the leaves and other conditions.

A prominent characteristic of one species of Sapium is a distinct hooked gland at the apex of the leaf, but this distinction is said not to be confined to the species indigenous to this Colony alone, as it is found in many species not indigenous to British Guiana. This tree is known to us generally as *Sapium aucuparium*, but according to Mon. Huber is referred to as *Sapium Helmsleyanum*. Of this variety Mr. A. W. Bartlett writes : "The leaves show very considerable variety as to ize and shape both in those occurring in different parts o" the same tree, at different ages of the plant, and on different individuals." This may be said with accuracy in relation to other species of Sapium. He continues : "Thus the leaves on the lowermost branches of some of the trees are destitute of the hooked apex and end in a long blunt point as in *S. Jenmani*. Also the leaves of young plants and of saplings even measuring 15 to 20 feet are invariably wanting in the characteristic feature." It is obviously, therefore, a risky proceeding to attempt to identify any Sapium by examining a few leaves only.

It is generally taken as an accepted fact that most of the Sapiums of the coast region yield no rubber, but only an inferior quality of resinous latex, yet on the islands at the mouth of the Essequebo river, such as Liberty Island , Fort Island, etc. Sapiums are to be found freely growing "wild," and they do yield rubber, which is said to be equal to that obtained from the Sapiums o" the interior. Furthermore the name *Sapium Jenmani* appears to have been applied somewhat hastily to all rubber-yielding Sapiums. The Sapiums growing in these Essequibo islands may not be *S. Jenmani* at all, but probably will have to, in their turn, undergo the "martyrdom of christening." As to the other indigenous species, *Sapium biglandulosum* is a coast lover, and yields no rubber, while *S. paucinervum* is found to occur in the Pomeroon and in the North Western District as well as other portions of the colony, and also, in all probability, furnishes nothing but an inferior resinous, sticky substance, of no value whatever.

S. Helmsleyanum, to give the so-called *S. aucuparium* the name to which M. Huber has referred it, is distributed widely throughout the Colony, and proves very attractive to boys, for it is chiefly to this tree, though other species yielding resinous products are also utilised, that they have resource when they wish to snare birds. Usually the tree is hacked, and as the latex gushes out it is caught on a stick to which has been rolled portions of bread crumbs , moistened with a liberal supply of saliva. The whole is then smeared over the stick and the snare set "at right angles" to a long bamboo pole which is stuck in the middle of a pasture or other likely spot. So effective is this snare that frequently the active and sturdy vicious little parroquet, known locally as the Keri-Keri, is firmly entrapped by this adhesive mixture, when it has alighted on one of the numerous perches jutting from a bamboo stem.

As to the identity of the tree, a foot-note by Mr. Bartlett, in a paper of his on our local rubber trees, throws considerable light.

It is as follows : " In a copy of a paper I have just received through the kindness of Monsieur J. Huber, of the Para Museum, entitled ' Revue Critique des Espéces du genre Sapium, I observe that our specimens identified as *Sapium aucuparium*, Jacq. have been referred to a new species *S. Helmsleyanum Huber.*" Now Mr. Bartlett quotes Dr. Huber as writing of Para rubber as follows : " Little of it (Para rubber) is pure Hevea rubber but usually a mixture of the latices of *H. Braziliensis* and *Sapium aucuparium*. The rubber of *S. aucuparium* has never been marketed alone and very litt e can be said definitely of its value. But when mixed with Hevea latex a rubber is produced not to be distinguished from the supposed pure Hevea rubber."

Mr. Bartlett brought forward two theories, in 1907, to reconcile these different experiences as to the latex of the so-called local *S. aucuparium*, viz., either that the species was different, or to quote this authority " more than one distinct species have been included under this name," or that the trees yielding resin in this colony on our coastlands were only comparatively young trees.

It is a well-known fact, of course, that, if we except *Hevea brasiliensis*, many rubber-producing trees yield, when they are young, poor quality resins rather than caoutchouc.

At any rate sufficient has been said to show that it is important that there should be no confusion concerning the identity of this tree.

But the question of the resinous quality of the latex furnished by trees known to yield rubber of good quality when they have attained a number of years, brings us to that which naturally is now arising. Do the so-called *S. Jenmani* yield rubber at a sufficiently early stage of growth to make planting Sapium rubber-growing a commercial undertaking ? Have we to wait for five or fifty years before a product comparatively rich in rubber and poor in resin is obtained ? These are questions which we should very much like to see definitely settled, while the provoking variability of the genus iteslf also pleads for a nomenclature, the definiteness of which may give the answer to many puzzling conditions.

As to its variable characteristics, I may mention that, recently in the North Western District, I found a *Sapium sp.* with a twisting, tortuous stem, which was hugging in its vice-like grip one of our native palms, in an embrace which must prove to be one of death, so far as the unfortunate palm is concerned.

One would have been certain that this cruel habit belonged to a native *Ficus*, but the leaves proved the tree to be a Sapium, and one which yielded a thick-creamy latex apparently rich in caoutchouc and quite different from the sticky substance furnished by our *Ficus* and non-rubber yielding *Sapiums*.

To return to the question of the mixing of latices of *S. aucuparim* and *Hevea brasiliensis*, it might prove of interest to carry out some experiments with the mixing of the latex of *Sapium Jenmani* and other rubber yielding Sapiums with that of *Hevea brasiliensis*.

Quite recently the writer was told of a case where the latex of *Hevea brasiliensis* was mixed with the thick yellowish latex of one of our indigenous *H veas* possibly *H. confusa*), with he result that the product was very favourably reported on in England.

In the Aruka valley of the North Western District the conditions are exceptionally suited to Sapium growing. There the tree makes most amazing growth on the soft pegassy lands of the district. On the other hand this peat soil does not suppor *Hevea brasiliensis* satisfactorily, though where it is mixed with the clay sub-soils the growth of this tree is fair, such as on the dams that have been thrown up when trench digging operations have been carried out. On the heavy clays of the coastlands rubber-yielding Sapiums are, apparently, a failure. They are attacked by scale (*Lecanium* chiefly) and make poor and stunted growth.

A noticeable characteristic of some of our Sapiums, frequently even in the case of trees growing in the interior, is the dying back of the topmost branches.

As to the product, it has been proved that some of our wild Sapium trees yield a rubber which can command a price, when cleanly prepared, very little below fine hard Para.

In the North Western District considerable progress has been made with the planting of Sapium trees, this activity being due chiefly to the pioneer efforts of the late Mr. David Young. As the trees planted by Mr. Young must have , in many instances, attained some six years, possibly we shall be shortly in a position to know something definite concerning the yields and the quality of the product obtained from trees at an age when Para rubber is tappable.

Until information as to the yield and quality obtained from cultivated Sapiums is forthcoming, there does not appear to be much probability of many more estates undertaking any such cultivation extensively.

ON THE HYMENOPTERA OF THE GEORGETOWN MUSEUM, BRITISH GUIANA.*

By P. Cameron.

Part I.

The species of Hymenoptera in the British Guiana Museum having been sent to me for examination by Mr. J. Rodway, the Curator, I have thought it desirable to enumerate all the species, described and undescribed. In this paper I have dealt with the *Cynipidæ*, *Ichneumonidæ* and *Evaniidæ*. The number of new species is large, a fact not to be wondered at; seeing how very little has been written upon the Parasitic Hymenoptera of North-east South America and, indeed, of South America as a whole.

It gives me pleasure to state that the specimens are well-set, in good condition and free from traces of the ravages of mites or *Psoci*.

CYNIPIDÆ.

Charips (*charips*) *guyanensis*, sp.n.

Black, smooth and shining, the antennæ, legs and mandibles rufo-testaceous, the antennæ paler, more yellowish in tint than the legs, darker towards the apex; the palpi pallid yellow; wings hyaline, the nervures pallid testaceous; the apical abscissa of the radius roundly curved, as long as the part of the radius bounding the radial cellule; the cubitus not traced beyond the cubital cellule. The third antennal joint is distinctly thinner than the fourth, and not quite one-fourth longer than it. The radial cellule is closed in front.

On the same card as the female is a male which has the antennæ almost black from the 4th or 5th joint; the hind femora are darker coloured, being infuscated above and below.

Charips is the name adopted by Dr. Kieffer (Das Thierrich, Cynipidæ) for the genus formerly known as *Allotria* and *Xystus*, both these names being, it appears, pre-occupied.

EVANIIDÆ.

Evania rodwayi, sp.n.

Black, densely covered with a white silky pile, more sparsely so on the mesonotum; wings hyaline, the nervures black, inclining to fuscous; the recurrent

* Although but few of these have been found as parasites their importance in dealing with insect pests is incalculable. They preserve the balance of life and prevent the serious injury which might arise were insect plagues allowed free scope. In the following list it may be noted that one is from a castor oil pest, another from a sweet potato moth and a third from a calabash moth. Some pests of weeds may perhaps suggest that weeds themselves are pests, but as the larvæ are always liable to come upon our cultivated plants the parasites may be put down as exceedingly useful. The names given were not suggested by me.—J.R.

nervure received in second cubital cellule, clearly separated from the transverse cubital. Metasternal process distinctly roundly diverging. On the mesosternum between the four front legs is a furrow, divided by four keels, and ending in a larger ovate fovea, which is narrower and deeper at the base. The long spur of the hind tibiæ is about one-fourth of the length of the metatarsus and shorter than the second tarsal joint ; the tibiæ spineless, the apices of the tarsal joints with some spines. The third and fourth antennal joints are almost equal in length. Malar space nearly as long as the fourth antennal joint. Hinder ocelli separated from each other by slightly more than twice the distance they are from the eyes. Male. Length 7 m.m.

Head, pro-and mesothorax smooth, except for a few punctures along the parapsidal furrows, a row of punctures at the apex of the propleuræ, five foveæ at the top of the apex of the mesopleuræ and some short keels below them, and some scattered punctures on the lower apical half. Parapsidal furrows complete, curved, converging towards the apex, the space between them there a little less than that outside them ; there is a short furrow in the centre outside them. Metanotum reticulated below the abdomen, with scattered punctures and opaque before it ; the metapleuræ almost smooth at the base, the rest with round, clearly separated punctures, except at the apex, where there is a row of short keels. Abdominal petiole smooth. Hind coxæ sparsely, weakly punctured on the outer and lower side.

In Mr. Bradley's table in Trans. Am. Ent. Soc. xxxiv. p. 168, this species could only be confounded with *E. rufidorsum*, Szép. and *E. signata*, Schl. ; but these two species differ in sculpture and colouration.

Evania erythraspis, sp.n.

Black, the scutellum rufous, the apex of the mesonotum tinged with rufous, the mandibles of a darker red, with the teeth black ; the underside of the antennal scape and the basal three or four joints of the flagellum of a brownish red ; the anterior legs yellowish testaceous, their coxæ black behind and at the base in front, the apical joint of the trochanters black, the middle legs similarly coloured but darker in tint ; all the spurs yellowish, the hinder reaching not far from the middle of the metatarsus, longer than the second joint. Metasternal process with the forks thick, short, diverging. Wings hyaline, the stigma black, the nervures fuscous, the recurrent nervure roundly curved, received very shortly beyond the transverse cubital ; the transverse median nervure interstitial. Male.

Length 4 m.m.

Face densely covered with silvery pubescence, irregularly punctured, a curved furrow on either side of the middle of lower half, the malar space more closely and distinctly punctured ; the front and vertex strongly punctured, the punctures large and clearly separated, stronger on the outer than on the centre. Ocelli large, the hinder separated from each other by double the distance they are from the eyes. Malar space short, one-third of the length of the eyes. Mesonotum strongly punctured, almost smooth behind, the furrows wide and deep. Scutellum with large, deep, clearly separated punctures. Metanotum reticulated, the

apical slope straight, oblique transverse. Pleuræ irregularly punctate, the punctures almost hid by longish white pubescence. Abdominal petiole strongly, irregularly punctured. Hind coxæ about two-and-a-half times longer than wide, densely covered with white longish pubescence. The abdominal petiole is not one quarter longer than the distance between its origin and the scutellum.

In the Bradley table (*l.c.*) this species comes near *E. pulcherrima*, Szép. and *longitarsis*, Kief.

Semæomyia guyanensis, sp.n.

Black, the antennal scape and the basal two joints of the flagellum rufous, the former brighter in tint, the basal half of the mandibles of a darker red colour; legs black, the anterior, the middle trochanters and knees testaceous, as is also the base of the hind trochanters; wings hyaline, the nervures black; metasternal process short, not forked; calcaria pale, the longer of the hinder one-third of the length of the metatarsus. Hind ocelli separated from each other by almost double the distance they are from the eyes. Male.

Length 4 m.m.

Antennæ stout, thickened towards the apex, the pedicle twice longer than wide, the third joint a little longer than the fourth. Malar space not much longer than the antennal pedicle. Front and vertex closely, distinctly, but not very strongly punctured. Temples short, the occiput transverse. Mesonotum and scutellum smooth and shining, the furrows wide, deep, smooth. Metanotum closely reticulated, the base above in front of the abdomen with a semi-circular area, opaque, aciculated; the part at its apex shining, smooth; the top of the apical slope is more oblique than the lower and larger part. Abdominal petiole smooth, shining, except for an opaque line on the basal two-thirds; laterally it is deeply furrowed. The tibiæ are shortly spinose, the hinder metatarsus as long as the other joints united.

The genus *Semæomyia* was described by Mr. J. Chester Bradley in the Trans. Am. Ent. Soc. xxxiv, including only Neotropical species, among others *S. taschenbergi* Brad. *S. barticensis*, Bradley and *S. Kieffieri*, Brad., from British Guiana. In Mr. Bradley's table the species runs to *oculata* Szép. from Brazil and *ablata*, Schlett from Columbia.

ICHNEUMONIDÆ.

ICHNEUMONINI.

Stenichneumon? watertoni, sp.n.

Black, the face, clypeus, mandibles, palpi, a narrow line of equal width on the inner orbits extending from near the ocelli to the antennæ, a line of the same width on the top of the eyes, a wider one on the lower two-thirds of the outer orbits, its upper third obliquely roundly narrowed, a line on the sides of the pronotum, its base roundly narrowed to a fine point, its apex projecting down to the tubercles, two narrow lines near the apex of the mesonotum in the centre, the sides and apex of the scutellum, post-scutellum, the lower edge of the

mesopleuræ, roundly incised above and the mesosternum, yellow ; the sides of the metapleuræ and the apex of the metanotum yellow, tinged with rufous ; the abdomen ferruginous, the post-petiole tinged with black, the petiole itself paler, more yellowish in tint. Four front legs red, paler in front, the coxæ and trochanters yellow, the apical three joints of the middle tarsi black, the hind legs bright red, the tibiæ paler, the tarsi yellowish ; the apices of the tarsal joints spinose, wings hyaline, iridescent, the stigma and nervures black ; the areolet five-angled, in front one-third of its width behind, the recurrent nervure received at the base of the apical third ; the transverse median nervure received beyond the transverse basal ; disco-cubital nervure unbroken. Pleuræ and metanotum densely covered with whitish pubescence. The 11th to 23rd antennal joints white. Basal three metanotal areæ confluent. Post-petiole rather strongly, closely punctured. Male.

Length 14 m.m.

Face and clypeus sparsely punctured in the middle, the sides smooth. Mesonotum closely, the scutellum more sparsely punctured ; post-scutellum smooth. The metanotal areola finely rugose, bordered by a furrow ; the lateral basal areæ strongly, but not closely punctured ; the others finely, closely reticulated ; the posterior median area smooth above ; the posterior lateral coarsely, irregularly reticulated. Propleuræ smooth at the base, the rest finely punctured, the apex with a few striæ. Meso-and metapleuræ much more strongly punctured.

JOPPINI.

Microjoppa antennata, Fab.

Ichneumon antennata, Fab. Ent. Syst. ii, 158,103.

Joppa antennata, Fab., Syst. Piez., 122, b ; Brullé, Hymén. iv, 270, 1., Pl. 43, f. 1.

Microjoppa antennata, Kriechbaumer, Berl. Ent. Zeuts., xliii, 53.

Microjoppa bimaculata, sp.n.

Luteous, the antennæ, the front except for a narrow line at the eyes, the vertex, occiput in the middle to the bottom, at the sides to the bottom of the lower third of the eyes, apex of mandibles, a mark of equal width on the base of the second abdominal segment, not reaching to the apex, a mark on the base of the third, its centre dilated to the apex, a large semi-circular spot on the fourth, reaching close to the apex, which is pallid yellow, the fifth except for a narrow yellow line on the apex and the whole of the sixth and seventh black. Legs coloured like the body ; the apex of the hind femora, the base of the hind tibiæ more narrowly and the four hinder tarsi, black. Wings hyaline, tinged with yellow, the stigma and nervures black, the parastigma testaceous, the areolet oblique, four-angled, the recurrent nervure received near the base of the apical third ; the transverse median beyond the transverse basal ; disco-cubital broken by a distinct stump. Male.

Length 12 m.m.

Head, pro-and mesothorax smooth, the mesonotum thickly covered with short black pubescence; the metanotum smooth, the posterior median area closely covered with short, broken striæ, arranged in longitudinal rows above, in transverse ones below; the apical half of the apical lateral areæ with stout, broken mostly oblique striæ, the areola large, wider than long, rounded at the base, transverse at the apex. The basal three abdominal segments are strongly, closely, striated.

Microjoppa flavinervis, sp.n.

Luteous, the flagellum of antennæ, the vertex from the keel on occiput to opposite the anterior ocellus, the mark continued broadly down the middle of the front for more than half-way and roundly narrowed below, the teeth of mandibles, the mesonotum in front on either side of the furrows, the rest from near the apex of the furrows, the base of the metanotum to the middle of the areola, the first abdominal segment to the spiracles, the second and third to near the middle, the marks slightly narrowed to near the apex, the third with a semi-circular mark on the basal half, a similar mark on the basal three-fourths of the 4th and the whole of the fifth and sixth, black; legs similarly coloured, the hinder knees and tarsi black; wings yellowish hyaline to the parastigma, clearer hyaline beyond, the apex with a smoky cloud, commencing near the middle of the apical abscissa of the radius; the nervures and stigma luteous, the areolet five-angled, the nervures almost meeting in front; the disco-cubital nervure indistinctly broken by a stump. Female.

Length 13 m.m.

Smooth and shining, sparsely pilose, the metanotum with the pile longer. Areola horse-shaped, open at the apex, the bordering furrow clearly defined; the posterior median area shagreened on the top. The first, second and basal half of the third abdominal segments are closely striated.

Microjoppa basimacula, sp.n.

Luteous, the face except in the middle and the orbits pallid yellow, the antennæ, mandibular teeth, the mesonotum except round the edges, the base of metanotum to the middle of the areola, the base of first abdominal segment, the mark bifurcated at the apex, the base of the second except at the gastracoeli to near the middle, the mark obliquely narrowed at the apex and with the sides slightly dilated, the basal half of the third, the fourth to the middle at the sides, the middle roundly dilated, a semi-circular mark on the basal two-thirds of the fifth and all the others, black. Legs coloured like the body, the apical three joints of the middle and the whole of the hinder tarsi and the hind knees, black. Wings hyaline, clearly tinged with yellow to the stigma, the basal nervures luteous, the apical fuscous; a fuscous cloud in the apex, commencing shortly behind the middle of the apical abscissa of the radius; the areolet four-angled, receiving the recurrent nervure beyond the middle; the disco-cubital nervure broken by an incipient stump. Female.

Length 12 m.m. Male and Female.

Smooth and shining, the basal three segments of the abdomen closely striated, the striæ on the third finer on the apical half. Basal slope of the metanotum and the areola smooth; the others distinctly, but not very strongly punctured. The male has the head in front paler, more yellowish than it is in the female.

Microjoppa variimaculata, sp.n.

Luteous, the flagellum of antennæ, the vertex, a somewhat semi-circular mark in the centre of the upper half of the front, apex of mandibles, the upper half of occiput, a spot on the base of the second abdominal segment between them, curving round the apex of the gastracoeli and projecting beyond them as a semi-circle, not reaching quite to the apex, a semi-circular spot, not quite reaching to the apex, on the third, the fourth to near the apex, the mark rounded at the apex, and the whole of the following three segments, black, as is also the sheath of the ovipositor; the apices of the fifth obscure yellow. The head in front and the pleuræ are yellowish, there is a black line down the middle of the scutellum on the basal three-fourths. Legs coloured like the body, the apex of the hind femora, the base of the tibiæ more narrowly and the hind tarsi black, the apical three joints of the middle tarsi infuscated. The basal three abdominal segments striated, the striæ on the third extending to the apex and finer there. Wings hyaline, the base tinged with yellow, the stigma and nervures black, the apical nervures inclining to fuscous, the apex of the disco-cubital nervure, the transverse cubitals and the recurrent luteous; the areolet four-angled, receiving the recurrent nervure distinctly beyond the middle, the disco-cubital nervure broken by a minute, but distinct stump. Female.

Length 12 m.m.

Areolet clearly wider than long, the base almost transverse, with the sides rounded, the apex broadly rounded inwardly.

This species is very similar to *M. bimaculata* described above; that may easily be known from it by the black on the back of the head extending half way below the keel of the occiput and the front is entirely black, not the central part only, while the apex of the areola is angled inwardly, not broadly rounded.

Conopyge flavipes, sp.n.

Black, the 8th to 17th antennal joints white, the palpi and legs yellow, the coxæ and the apical two-thirds of the hind femora black, the second and third abdominal segments red, the following yellow, tinged with rufous; wings hyaline, the stigma and nervures black, the areolet five-angled, very little, narrowed in front, the recurrent nervure received near the apex the disco-cubital nervure broken by a minute stump; the transverse median nervure almost interstitial. Female.

Length 13 m.m.

Head closely, almost uniformly punctured, except on the inner side of the outer orbits. Mandibles rufous to the base of the teeth, near which the red is tinged with yellow; there is a rufous spot on the malar space in front and another

in the centre of the face shortly below the middle. Propleuræ smooth, with seven longish keels running obliquely from near the top. Mesonotum closely, finely, but distinctly punctured, except beyond the middle where the punctures are large and scattered, as they are on the scutellum. Metanotum closely, strongly punctured, except the basal slope and areola which are smooth and the posterior median and lateral areæ which are strongly closely striated, the areola is twice longer than wide, widened and rounded at the base, the apex with a small smooth, raised, triangular area projecting from it. Post-petiole punctured at the base, the apex strongly striated, the middle bordered by stout keels; the second and third segments are closely, strongly punctured, more or less striated at the base, the punctures running more or less into each other; the other segments smooth. Head and thorax densely covered with white pubescence.

Joppa (*Microjoppa*) *macrospila*, sp.n.

Luteous, the flagellum of antennæ, mandibular teeth, the vertex, the black continued as a semi-circle down the middle of the upper half of the front, the upper half of the occiput, the mark widened at the eyes, mesonotum, scutellum, the basal third of the second abdominal segment, dilated between the gastrocoeli and roundly narrowed laterally at the apex, the middle slightly rounded inwardly; the third to shortly beyond the middle, the whole of the others, the hind coxæ, the apical half of the four front femora behind, of the apical all round, the black at the base widened below, and the hind tarsi, black. Wings hyaline, tinged with yellow at the base, the stigma and nervures black; the apex of both wings with a narrow fuscous border, the areolet shortly appendiculated, the recurrent nervure received before the middle; the fore half of it is broadly, roundly curved outwardly. Face strongly keeled laterally, the keel extending half-way down the clypeus; its lower half is widely depressed at the sides; the sides of the clypeus at the apex are broadly rounded. Scutellum strongly, longitudinally striated. Base of metanotum smooth, as is also the areola; the latter has the base rounded, the apex transverse; it becomes slightly, gradually narrowed from the lateral keels; the other areæ are transversely, irregularly striated; the basal lateral area with the basal half punctured. Apex of mesopleuræ crenulated, the striæ becoming wider below. Basal three abdominal segments strongly, closely striated; the black on the apical is tinged with violaceous; the gastrocoeli deep, strongly, roundly striated.

Macrojoppa parviceps, sp.n.

Rufous, the antennæ, front, vertex, outer orbits to the end of the eyes, base of pronotum narrowly, and the hind femora, tibiæ and tarsi black, the black on the femora tinged slightly with rufous; wings yellowish hyaline from the base to near the transverse median and transverse basal nervures, the rest fuscous violaceous, the stigma ochreous yellow; areolet four-angled, the nervures meeting in front, the recurrent nervure received at the base of the apical fourth, the disco-cubital roundly bent to the costa at the bend and with two minute stumps there; the transverse median nervure received shortly beyond the transverse basal; the post-petiole finely striated in the middle, the sides punctured, the second to fifth segments closely striated, the striæ on the posterior segments finer than on

the basal. The face, clypeus and malar space are yellowish ; the mandibles and palpi testaceous. Male.

Length 18 m.m.

Hind legs very long, the tarsi densely covered with stiff black pile below ; the mesonotum and breast with short, the metanotum with longer white pubescence. Head and thorax smooth : the metanotum on the sides from the basal to slope to near the apex finely punctured.

Pedinopelte violaceipennis, sp.n.

Black, the apex of mesothorax, including the postscutellum, the metathorax and the basal three segments of the abdomen red ; wings uniformly fuscous violaceous, the stigma and nervures black, the areolet oblique, four-angled, almost appendiculated, receiving the recurrent nervure almost in the middle ; the transverse median nervure received shortly beyond the transverse basal, the disco-cubital broadly roundly curved, broken by a minute stump before the middle. Male.

Length 17 m.m.

Head and thorax smooth and shining, the raised central part of the first abdominal segment and the middle of the second and third segments closely, distinctly longitudinally striated, the striae on the latter two and, more particularly, on the first stronger ; the transverse furrows deep, crenulated on the second, the first wider, smooth and with only a few striæ. Gastrocoeli deep, transverse, the bottom on the inner side with a few striæ. Malar space as long as the eyes. Head and thorax densely covered with short black pubescence ; the black on them has a violaceous hue, as have also the legs and, more particularly, the coxæ and femora.

Stirojoppa, gen. nov.

Scutellum roundly convex, the apex with an oblique slope, the basal slope stoutly keeled laterally. Post-scutellum margined at the sides and apex. Basal depression of metanotum wide and deep, the areola projecting into it ; the latter is obliquely narrowed at the base, flat and smooth, the centre slightly depressed ; from its outer edges a keel runs down to the top of the apical slope ; the basal lateral areæ are bounded at the top and sides by stout keels, the lateral ones becoming fainter towards the apex ; the apical areæ are not defined, beyond that the middle is depressed : the spiracular area is bounded on the outer side by a keel ; there is a roundly curved keel on the lower part of the base of the metapleurae. Post-petiole finely striated in the middle : the second and third abdominal segments closely punctured. Labium depressed. Front widely and deeply depressed. Temples wide, obliquely narrowed. Occiput deeply, widely depressed. Antennæ dilated beyond the middle. Wings uniformly fuscous violaceous ; the areolet five-angled, narrowed in front ; disco-cubital nervure broken by a distinct stump ; the transverse median nervure interstitial. The sheath of the ovipositor largely projects.

Comes nearest to *Pedinopelte*, to which it has a considerable resemblance in form and colouration ; it may be known from it by the strongly keeled scutellum, by the more clearly defined areola and lateral areæ, by the four-angled areolet and interstitial transverse median nervure, and by the normal abdominal furrows.

Stirojoppa violaceipennis, sp.n.

Red, the antennæ, head, the apical half of the third and the whole of the following abdominal segments with the legs black ; the wings fuscous violaceous, the nervures and stigma black, the recurrent nervure received almost in the middle of the areolet, its posterior two-thirds rounded outwardly. Female.

Length 17 m.m.

Head pro-and mesothorax and basal slope of metanotum smooth, the rest of metanotum closely, distinctly punctured, except the centre, which is smooth, and its sides which are strongly obliquely striated ; the basal part of the spiracular area is somewhat more strongly punctured, the apical strongly obliquely striated, the metapleuræ punctured, more closely and finely at the base than at the apex. Post-petiole finely closely striated in the middle, but not at the base and apex, the sides sparsely punctured, the second and third segments closely, regularly punctured ; the gastrocoeli smooth, large, wide, deep. Female.

Length 17 m.m.

The black on the apical abdominal segments has a distinct violaceous tint ; the metanotum and mesosternum are densely covered with white pubescence. Labrum dark red.

Rodwayia, gen. nov.

Metanotum closely, strongly transversely striated, except for two smooth, clearly defined areæ on either side at the base, there being between these, in the centre of the base, a small, wider than long area ; the outer area enclose the spiracles, which are linear ; the apex has a steep slope and has a short, wide tooth on the top at the outer edge. Labrum projecting. Scutellum roundly convex, the sides keeled to shortly beyond the middle. Areolet large, longer along the radius and cubitus than along the transverse nervures, which are parallel, the areolet being of equal width, five-angled, bluntly, indistinctly, so where the recurrent nervure is received ; disco-cubital nervure broken by a stump, the transverse median nervure received shortly beyond the transverse basal. Apex of clypeus rounded ; the labrum projecting. Abdomen smooth, the petiole slender, the post-petiole not separated ; the second segment finely, closely punctured, the ventral fold extending to the sixth segment. Antennæ longer than the body, serrate. Hind legs long.

This genus is not typical of any of the sub-tribes of *Ichneumonina* ; it differs from them in the large areolet, not narrowed in front and in the metanotum not being areolated, but strongly tranversely striated. The form of the areolet is more like what it is in the *Crytinæ* than in the *Ichneumoninæ*, but it wants the pleural and mesonotal furrows of the former group. Pending an inspection of the unknown female, I, for the present, refer it to the *Joppini*, with which it has some resemblance, although the depression at the base of the metanotum is not so deep, being more as in the *Ichneumonini*.

Rodwayia balteata, sp.n.

Yellow, the antennæ, tips of mandibles, the orbits behind the top of the eyet, the middle of front and vertex, the latter behind, occiput, the mesonotum except narrowly at the base, the line projecting backwards shortly behind on either side of the middle, the scutellums, the basal half of the third abdominal segments, the whole of the fourth, fifth and sixth, the tarsi and the basal two-thirds of the hinder tibiæ, black. Wings hyaline, tinged with yellow, the apex with a cloud commencing near the apex of he basal third of the apical abscissa of the radius, and there is a narrower cloud in the apex of the hind wings, the stigma and nervures are black. Male.

Length 13 m.m.

Smooth and shining, except the transverse striæ on the metanotum, a few striæ on the apex of the metapleuræ and the post-scutellum, which is strongly longitudinally striated ; the depression at the sides of the latter is strongly obliquely striated.

Rodwayia rufa, sp.n.

Ferruginous, the flagellum of antennæ, the mandibular teeth, the apical third of the hind tibiæ and the hind tarsi black ; the face, clypeus, malar space, lower outer orbits and the inner narrowly below, pallid yellow, the palpi of a deeper yellow colour ; the under sides of the basal joints of flagellum of a darker red ; wings hyaline, the apex with a fuscous violaceous border, commencing shortly behind the middle of the apical abscissa of the radius ; the costa, stigma and nervures black, the middle area on base of metanotum distinctly obliquely narrowed towards the apex ; the part from the keel to the apical slope strongly, closely transversely striated ; the top of the apex finely, irregularly longitudinally, the rest more closely and regularly transversely striated. Petiole smooth, the post-petiole with some weak scattered punctures, a fovea in the middle ; the second and third segments finely, closely punctured, the others smooth, the first segment is of a brighter colour than the others. Male.
Length 13 m.m.

Cryptinæ Mesostenini.

Mesostenus guyanaensis, sp.n.

Black, the post-scutellum and the parts bounding it, apex of mesopleuræ narrowly in the upper half, widely on the lower, where the red extends to the middle and the whole of the metathorax red, the antennal scape, the greater part of the post-petiole, the apical third of the second abdominal segment, and the apical half of the third, yellow tinged with red ; a line on the upper inner orbits, the clypeus, mandibles except the teeth, palpi, tegulæ, tubercles and scutellum, whitish yellow ; the basal three or four joints of the flagellum brownish. Legs : the four anterior fulvous, the coxæ, trochanters and base of middle tibiæ whitish yellow, the femora more rufous in tint than the rest ; the hind legs black, the femora broadly rufous in the middle, the base of the tibiæ, the apex of the basal joint of the tarsi and the whole of the second and third white wings hyaline, the apex with fuscous border, commenc-

ing at the apical fourth of the radial cellule ; the stigma and nervures black ; the areolet square, the apical nervure faint, but distinct, receiving the recurrent nervure shortly beyond the middle ; the transverse median nervure received very shortly behind the transverse basal, almost interstitial. Metanotum without an area at the base ; there is a distinct basal transverse keel and an indistinct one between the spines, which are short and broad ; the base is irregularly punctured near the keel ; the middle space is irregularly obliquely striated, the striæ closer on the outer side than in the middle ; the apical slope is more strongly obliquely striated ; the spiracles are twice longer than wide. There is a closely striated oblique band down the apical part of the mesopleuræ, the striæ longer and stronger above and below ; the metapleuræ closely, distinctly punctured.

Mesostenoideus ornatipetiolatus, sp.n.

Black, the face, clypeus, labrum, palpi, the eye orbits broadly except for a black line near the top of the outer, a line on the prothorax near the base, slightly narrowed below on the pleuræ, a longish triangular spot on either side of the apex of the pronotum, two longish lines on the mesonotum along the furrow, turned outwardly at the base, where they are narrowed, tegulæ, scutellums, two curved transverse spots on the base of the metanotum, the spines, tubercles, a mark, longer than wide, oblique at the base and apex, a longer, slightly narrower one on the apical three-fourths below, its base rounded above, the apex obliquely narrowed following the line of the apical crenulated furrow, below with a short oblique branch running along the base of the sternal furrow, a large, oblique semi-circular mark, its base and apex shortly dilated, in the centre of the metapleuræ and a line on the apex of the first to seventh abdominal segments, yellow ; the first segment red except for the yellow apical line ; legs : the anterior yellow tinged with fulvous, the middle rufo-fulvous, the coxæ of both yellow in front, the hinder red, the coxæ with a yellow mark at the base above, the apical fourth of the femora more than the apical half of the tibiæ above, less than the half below and the tarsi black. Wings hyaline, the nervures and stigma black, the second transverse cubital nervure obsolete, the transverse median nervure interstitial. Male.

Length 12 m.m.

Antennæ shorter than the body, serrate, tapering towards the apex. Face strongly punctured, striated above, the clypeus finely and closely punctured, the front keeled, in the middle, the rest obliquely striated ; three or four oblique keels run down from between the ocelli. Mesonotum strongly punctured, the scutellum more sparsely and weakly so. Metanotum with two curved keels on the base, running to the outer end of the pleuræ past the spiracles ; the space enclosed by them longitudinally reticulated ; the rest is coarsely on the sides reticulated, in the depressed centre strongly tranversely striated. Propleuræ finely punctured, the apex striated, the striæ longer in the middle. Mesonotum except in the middle closely, finely punctured, more closely above than below, the base and apex crenulated ; the sternal furrow strongly crenulated. Metapleuræ strongly reticulated. The second abdominal segment becomes gradually

widened towards the apex ; its sides at the base are widely depressed ; the petiole slender, the post-petiole not much widened.

Mesostenoideus sibine, sp.n.

Black, the abdomen and legs red, the tibiæ and tarsi with the red tinged with yellow, the four front coxæ and trochanters yellow below, as is also the base of the anterior femora, the face, clypeus, labrum, a line round the eye orbits, that on the outer side widened below, a semi-circular mark on either side of the apex of the pronotum, a line on either side of the middle of the mesonotum, it curving round on the outer side of the base to the tegulæ, scutellums, two squarish marks on the base of the metanotum, the spines, a wide longitudinal mark on the upper side of the mesopleuræ, rounded at the base and apex and with an incision on the top shortly beyond the middle, a longer, narrower mark below, commencing farther back and with the apical half obliquely sloped, a mark below the hind wings, a wide longish mark on the upper part of the metapleuræ, its apex projecting below, the top with a shorter and thicker projection and two semi-circular spots on the apex of the post-petiole. The apex of the sixth and the base of the thirteenth antennal joints and the joints between them whitish yellow. Wings hyaline, the stigma and nervures black ; the arcolet open at the apex, the transverse median nervure interstitial. Female.

Length 15 m.m. ; terebra 4 m.m.

Bred from the Limacodid moth, *Sibine trimacula*.

Pronotum and mesothorax closely punctured, the propleuræ, except at the base above, somewhat strongly longitudinally striated ; the scutellum smooth almost impunctate, its basal depression with four stout keels. The raised central part of the mesopleuræ is smooth below, the depression below it obliquely striated, smooth at the apex. Metanotum coarsely reticulated, the basal reticulations roundly curved, the apex closer and transverse ; the metapleuræ more finely, obliquely and closely striated, the striæ curved and twisted. Metanotal spines large, thick, conical, wider at the base than they are long. Abdomen smooth, the first segment gradually widened at the apex. Tibiæ and tarsi shortly spinose, the second joint of the hind tarsi white : the others absent.

Mesostenoideus atriceps, sp.n.

Black, the abdomen and legs red, the tibiæ and tarsi paler, more fulvous coloured than the basal parts ; the following parts are whitish yellow : the face, clypeus, a line on the inner orbits to the top of the occiput, where it is widened, a wider one on the lower three-fourths of the outer, widened below and extending to the bottom, leaving the malar space black, palpi, a broad line in the middle of the pronotum, tegulæ, a longish conical mark in the centre of the basal lobe of the mesonotum, a longish oval mark on the scutellar keels, scutellums, the keels at their sides, a longish wide line on the sides of the metanotum, commencing shortly beyond the keel and extending to the apex, a large line on the lower part of the propleuræ, the lower basal two-thirds becoming gradually widened below, the apex bluntly rounded, the tubercles, a large longitudinal mark on the lower

part of the mesopleuræ, the basal third becoming gradually narrowed obliquely below, its apex obliquely rounded, the usual conical mark behind the hind wing and a large, oblique oval mark on the apical two-thirds of the metapleuræ, yellow. Wings hyaline, the nervures and stigma black, the transverse median nervure received shortly behind the transverse basal. Female.

Length 13 m.m. ; terebra 2 m.m.

The 7th to 13th joints of the antennæ are white. The face and clypeus are strongly, but not closely punctured, the sides of the raised central part almost striated; the front strongly irregularly obliquely striated, a stronger keel runs down from the ocelli. Mesonotum somewhat strongly punctured, the punctures closer round the furrows, which are crenulated. Base of metanotum sparsely, not very strongly, punctured; there are two keels down the centre; the top in the centre beyond the keel is finely obliquely striated, the striæ converging between the spines; the rest strongly, not closely, transversely striated. Metapleuræ strongly obliquely striated, the striæ on the apical part more oblique, stronger and more widely separated than they are on the base. There is a Y-shaped striated space on the propleuræ. Mesapleuræ irregularly, obliquely striated below the tubercles; the basal part finely punctured; the apex crenulated; the deprssion on metapleuræ more widely so.

Mesostenoideus unilineatus, sp.n.

Black, the palpi, tubercles, metanotal spines and a band, narrowed in the middle white, a brownish line on the sides of the petiole at the apex; the anterior legs obscure testaceous, their coxæ black to near the apex, the top of the femora and the tarsi infuscated, the middle coxæ, basal joint of the trochanters bright, the femora of a darker red, the apex of the femora narrowly and the hind tibiæ and tarsi black; the hind legs black, the coxæ and basal joint of trochanters red, the femora dark red at the base; the apical half of the basal joint of the hind tarsi and the second, third and fourth joints white. Wings hyaline, the stigma and apical nervures fuscous, the basal black, the areolet small, square, the transverse basal nervure interstitial. Female.

Length 10 m.m. ; terebra, 2. m.m.

Opaque, alutaceous, the matanotum finely, closely reticulated, the apical slope transversely in the middle, the sides more strongly obliquely striated. Propleural furrow striated, the apex with a narrower striated belt; the mesopleura finely, closely obliquely, striated, the striæ more or less intertwining and becoming stronger towards the apex on the upper apical half; the metapleuræ similarly, but somewhat more strongly striated. Mesosternal furrow widened towards the apex, strongly crenulated.

Mesostenoideus cratodontus, sp.n.

Black, the face, clypeus, labrum, palpi, basal third of mandibles, the eye orbits all round, the line widened on the outer side below, a line on the pronotum, tegulæ, a triangular mark on the apex of the middle lobe of mesonotum, tegulæ, the scutellums, the metanotal teeth, a line, widened at the apex, on the lower

part of the propleuræ, tubercles, a large wide line on the apical three-fourths of the mesopleuræ, transverse above, becoming gradually widened from the base to the apical third, then narrowed, the apex thicker than the base, the usual mark below the hind wings, a large mark, almost filling the space, on the metapleuræ, dilated at the base above, the apex becoming obliquely widened from the bottom to the top, the post-petiole except at the base, the black there trilobate, and the apices of all the segments, and the ventral segments, lemon-yellow ; the line on the penultimate much widened at the sides as is also that on the last, the line on it being much narrowed in the centre. Legs red, the apical two joints of the tarsi black, the four front coxæ and trochanters, the hind coxæ broadly at the base above, yellow ; the apical two joints of the tarsi black ; the hinder tarsi white. Wings hyaline, the nervures and stigma black, the transverse median nervure, received behind the transverse basal. Female.

Length 10 m.m. ; terebra 3 m.m.

The apex of the 6th and the 7th to 13th antennal joints white. Face closely, the clypeus sparsely punctured. Front irregularly reticulated, striated above, the depressed lower part finely, closely transversely striated. The apical third of the mesonotum is finely, closely longitudinally striated ; the furrows are more strongly, widely striated, the striæ oblique and clearly separated. Scutellums impunctate. Metanotum aciculated in the centre of the basal part and with a shallow depression which becomes widened towards the apex, the outer part irregularly, obliquely striated ; the rest strongly, irregularly reticulated above, transversely striated on the apical slope ; the teeth are large, bluntly conical, widened at the base, longer than wide and than the projecting part, which is longer on the outer than on the inner side. The top of the propleuræ at the base and apex and the lower part are striated ; there is a finely striated oblique band on the mesopleuræ ; the metapleuræ smooth above, the base punctured, the rest irregularly obliquely striated. Abdomen smooth, shining, the second segment opaque, aciculated.

Polyaenus spilonotus, sp.n.

Black, shining, the face, clypeus, the inner orbits to the end of the vertex, the outer on the lower two-thirds, the line extending to the lower edge of the malar space on the outer side, palpi, a line, narrowed on the basal end below on the centre of the pronotum, on the sides ; a spot, longer than wide, of equal width, on the apex of the middle lobe of the mesonotum, the keels at the base of the scutellum, the scutellums, the narrow keels running out from them, the metanotal spines, a line running down from them, its apex obliquely narrowed on the outerside below, two narrow lines on the centre of the base of the pronotum, a longish mark, narrowed above, on the lower basal half of the propleuræ, tubercles, a large longish mark, gradually narrowed above from the base to the apex, the mesosternum, the usual mark behind the hind wings, and a squarish mark, but slightly narrowed behind, on the metapleuræ, yellow, the abdomen rufo-testaceous, darker towards the apex, the legs of a brighter red colour, the tarsi slightly paler, more yellowish in tint. Wings hyaline, the stigma and nervures black,

the areolet minute, longer than wide, the recurrent nervure interstitial with the second transverse cubital nervure ; the transverse median nervure received shortly before the transverse basal. Male.

Length 10 m.m.

Frontal spines, broad, the two united on the lower half, the upper two separated by a triangular space ; two keels run down to them from the ocelli. Face closely, strongly, the clypeus sparsely punctured, middle lobe of mesonotum distinctly, but not strongly punctured and densely covered with black pubescence. The basal region of the metanotum has two fine keels down the middle, with some stronger transverse striæ between them ; the part bordering this is smooth, bordered on the outer side by some reticulations, followed by two or three fine transverse keels ; the lower, outer edge is depressed ; the part between the keel and the spines is transversely reticulated ; the apical slope more finely (but still strongly) transversely striated. Propleuræ with the apex and the lower central part striated ; there is a broad striated band on the mesopleuræ below the tubercles. Metapleuræ smooth at the base, the rest strongly punctured, with some striæ near the smooth part, the spines are prominent, wider at the base than they are long. The spiracles on the first abdominal segment are more prominent ; more projecting than usual.

Polyaenus fusciventris, sp.n.

Black, the abdomen fuscous, the post-petiole and the basal half of the second abdominal segment, black ; the face, clypeus except at the apex, a narrow line on the inner orbits extending on to the top of the outer, a broad line on the lower half of the lower, extending on to the malar space, its upper half obliquely narrowed, basal half of mandibles, palpi, a line on the centre of the sides of the pronotum, a wider one, widened towards the apex, on the lower edge of the propleuræ, a wide conical spot on the apex of the middle lobe of the mesonotum, a large semi-circular spot on the apex of the scutellum, the scutellar keels, post-scutellum, the metanotal spines and a line leading down from them to the apex, tubercles, a large line along the lower part of the mesopleuræ, the base projecting above and not reaching to the lower part of the main line, which has the basal fourth wider than the rest and is obliquely sloped ; from it the mark becomes narrowed towards the apex, with a slight rounded curve beyond the base ; the lower part is straight ; there is the usual mark behind the hind wings, but none on the metapleuræ. Four front legs pallid yellow, the fore coxæ black, the middle reddish behind, the fore femora blackish behind, the middle entirely black ; the hind legs very long, the coxæ, trochanters and femora red ; the tibiæ and tarsi yellowish white, the apex of the femora and the base of the tibiæ blackish. Wings hyaline, the stigma and nervures black ; the transverse median nervure received behind the transverse basal ; the areolet minute, narrowed at the base, longish, receiving the recurrent nervure in the apex. Male.

Length 13 m.m.

Upper half of face strongly punctured, but not closely, the upper half of the clypeus with scattered punctures. Front deeply hollowed, obliquely, sparsely

striated above, the spines long and sharp-pointed. Prothorax smooth except for some curved striæ in the middle of the apex of the pleuræ. Mesonotum finely, distinctly, but not closely punctured, the apex of the lateral lobes smooth, as are also the scutellums. Base of metanotum smooth, with two keels down the centre of the apical half. The basal half of the central half obliquely, the apical more transversely, strongly striated ; the apical slope is closely, regularly transversely striated. Meso-and metapleuræ smooth, densely covered with white pubescence. The 11th to 20th antennal joints white, tinged slightly with rufous.

Polycyrtus nigriventris, sp.n.

Ferruginous, the antennæ, head and abdomen from the post-petiole black, the clypeus, mandibles, labrum lower side of malar space, the palpi, and the 8th to 14th antennal joints, white, wings hyaline, the stigma and nervures black, the areolet a little longer than wide, slightly narrowed at the base, the recurrent nervure received in the apical fourth, the transverse median nervure interstitial. Female.

Length 13 m.m. ; terebra 2 m.m.

Smooth and shining. Frontal spine longish conical, testaceous at the apex. Metanotal spines, conical, not very stout, longer than they are wide at the base. The apical slope of the metanotum bears four irregular keels. The base and apex of the post-petiole, the gastroeveli and the apex of the second segment narrowly are dark rufous. The second and following abdominal segments are covered with short white hair. Four stout short keels lead down from the ocelli, the central two straight, the outer oblique.

A longish slender species.

Polycyrtus melanocephalus, sp.n.

Ferruginous, the head entirely black, the palpi white, the antennæ black, the scape pale rufous below, the 8th to 16th joints white they are shortly and densely pilose ; the mesonotum and apical segments of the abdomen are slightly darker coloured, wings hyaline, the stigma, costa and nervures testaceous, the stigma paler coloured, the areolet small, a little longer than wide, of equal width, receiving the recurrent nervure near the apex ; the transverse median nervure interstitial. Female.

Length 8 m.m. ; ovipositor 2 m.m.

Ida Sabina on the Berbice River. August. Smooth, shining. Metanotum and base of legs sparsely covered with fuscous hair. The hind tibiæ paler coloured than the femora, their tibiæ pale yellow, sparsely, shortly spinose below. Metanotal spines of moderate size, conical, a little longer than they are wide at the base.

Polycyrtus albolineatus, sp. n.

Ferruginous, the antennæ, mandibles, the vertex, front, broadly, the occiput still more broadly, prothorax, mesonotum and scutellum black ; the face, clypeus, labrum, palpi, a line on the inner orbits, round the top to the bottom of the outer

and the malar space, the line on the outer extending to the outer edge on the lower half, a broad line, narrowed at top and bottom, not reaching above to the pronotum, a slightly narrower line on the sides of the pronotum, not reaching to the base or apex, tegulæ, a line along the inner basal part of the lateral mesonotal lobes, the scutellar keels, the scutellums except a mark, rounded at the apex on the base of the scutellum, tubercles, a line leading down to them, broad above, narrowed below, and a narrow line on the apex of the mesopleuræ, white, legs coloured like the body, but slightly paler; the wings hyaline, the stigma and nervures black, the areolet double the length of the first transverse cubital nervure, widened at the apex, receiving the recurrent nervure near the apex; the transverse median nervure received shortly behind the transverse basal. Female.

Length 9 m.m.; terebra 3 m.m.

Antennæ stout, as long as the body, the 6th to 13th joints white. Entirely smooth and shining. Front spine stout, conical, not quite twice longer than it is wide at the base; there is a short rounded tubercle-like projection immediately above it. Metanotal spines large, broad at the base, slightly curved. The lower half of the propleuræ is finely, closely striated, the meso-and metapleuræ sparsely, weakly punctured. The hind tarsi are paler, more yellowish in colour than the others and are closely spinose.

The male is similarly coloured; the antennæ are longer and have the white band longer; they are closely densely covered with short, black stiff pubescence. In both sexes the abdomen is slightly infuscated on the apical half. In the male the top of the frontal spine is black.

Cryptanura interrupta, sp. n.

Black, the abdomen and legs red, the palpi, a mark on the base of the mandibles, a squarish spot on the middle of the clypeus, the inner orbits the line continued to the top of the outer, a line, narrowed at the apex, on the pronotum, tegulæ, scutellum, metanotal spines, a line round the base of the prothorax, tubercles the usual large spot at the hind wings, a short line on the lower, apical part of the mesopleuræ, a conical spot in the middle of the apex of the metapleuræ, a wide line on the apex of the first abdominal segment, a narrower, interrupted one on the second and the whole of the penultimate, white; the legs coloured like the body, the fourth anterior coxæ and a band, shorter than the spurs, white. Wings hyaline, the stigma and nervures black, the parastigma white, the areolet small, squarish, the first transverse cubital nervure oblique, the recurrent nervure received before the middle; a triangular cloud along the outer side of the transverse basal and transverse median nervures, but extending inside the former in front, and a cloud at the apex, commencing near the base of the apical third of the radius and extending to its apex; it has the outer side more irregular in outline, becomes gradually narrowed and reaches almost to the end of the discoidal cellule; the transverse median nervure received shortly behind the transverse basal. Female.

Length 7 m.m.; terebra 2 m.m.

Aciculated above, the rest striated. Mesopleuræ with the base finely, closely striated, the striæ stronger at the base, a broad, striated strongly, band on the upper half; the apex crenulated, the rest finely rugose. Metapleuræ finely, closely punctured. Legs densely covered with white pubescence.

Cryptanura fasciatiipennis, sp.n.

Black, the palpi, tegulæ, tubercles and metanotal spines whitish yellow, the apices of the basal three abdominal segments broadly white, tinged with testaceous, the last segment white; the forelegs testaceous, their tibiæ behind and at the base all round white, the middle pair black, the femora rufo-testaceous, the tibiæ with a broad white basal band, the hind legs black, except for a white basal band on the tibiæ; all the calcaria white; the wings hyaline, a smoky cloud beyond the transverse median nervure and extending to the bend of the discocubital nervure, reaching close to the top part of the transverse basal nervure but not going beyond that; there is a cloud in the apex, which commences at the middle of the apical abscissa of the radius; the recurrent nervure is received in the middle of the areolet, which is angled there; the apical nervure is very faint; the transverse median nervure is received shortly beyond the transverse basal. Face, pleuræ, metanotum and coxæ densely covered with white pubescence.

Female.

Length 7 m.m.

Vertex shining, the front more opaque, aciculated weakly so below. Face opaque, finely, closely punctured, not separated from the clypeus, which is more sparsely punctured. Mesonotum opaque, alutaceous, the furrows shallow, but distinct. Base of metanotum opaque, alutaceous, obscurely striated on the outerside, the part between the keel and the spines irregularly obliquely striated, the apical slope more strongly longitudinally reticulated. Propleuræ striated below and more narrowly at the apex above. Mesopleuræ and sternum closely, finely punctured, except at the apex above, where it is smooth and shining; the part in front of the smooth space striated; the metapleuræ more strongly and regularly punctured.

Cryptanura curtispina, sp.n.

Black, the inner orbits, the line extended to the upper part of the outer, the lower fourth of the outer, the line gradually widened below and extended to the malar space and the clypeus, the face, except for a mark in the centre of the lower half, the mark narrowed above and extending along the upper side of the clypeus, mandibles except the teeth, palpi, a line round the base of the prothorax, a narrower one on the apical half of the pronotum, tegulæ, scutellum, a large triangular mark behind the hind wings, metanotal spines, a mark, twice longer than wide, on the apical half of the metapleuræ, whitish yellow; the apices of the basal three abdominal segments yellow, tinged with rufous, the fourth segment rufous, the apical whitish yellow. Four front legs pallid yellow, the base of the middle tibiæ paler; the hind legs rufous, the tibiæ darker coloured, especially towards the apex, their base with a white band, the basal joint of the trochanters and the apex of the femora narrowly black, the tibiæ, white, the basal two-thirds of the

first and the apical black. Wings hyaline, the stigma and nervures black, the apical nervures fuscous, the areolet square, its apical nervure faint, the recurrent nervure received in the middle, the transverse median nervure interstitial. Male.

Length 4 m.m.

The underside of the antennal scape yellow, of the flagelloid fuscous. Face sparsely punctured. Mesonotum opaque, closely, finely punctured. Base of metanotum opaque and closely punctured ; the part behind the keel finely longitudinally striated at the base, the striæ roundly curved in the centre, the apical slope more closely, strongly and regularly striated. Propleuræ smooth. Mesopleuræ closely, regularly and distinctly longitudinally striated ; the metapleuræ more strongly obliquely so. The tarsi are closely, shortly spinose.

Cryptanura cinctipes, sp.n.

Black, the abdomen and legs red, the sixth to twelvth joints of the antennæ except above, palpi, a spot in the middle of the clypeus, rounded above, transverse below, a line on the inner and upper eye orbits, half the width of the space between the ocelli and the eyes, a small spot, roundly narrowed below, on the malar space, a line round the base of the prothorax, a wider one on the sides of the pronotum, tegnlæ, tubercles, scutellum, the usual spot behind the posterior wings, metanotal spines, a line on the apical three-fourths of the lower part of the mesopleuræ, its upper basal two-thirds widened above, the base oblique, the apex rounded, a more obscure line along the lower part of the furrow on the breast, a conical mark, twice longer than wide, on the lower apical part of the metapleuræ, a broad continuous line on the apex of the first, second and seventh, a narrower line on the sides of the third and the fourth anterior coxæ, whitish yellow, the sixth and apical abdominal segments blackish ; wings hyaline, the stigma and nervures black, the parastigma white ; a cloud beyond and touching the transverse median and tranverse basal nervures, not reaching to the costa and extending in front to the innerside of the latter nervure, its outer side paler, irregular and becoming gradually wider towards the posterior end, and an irregular apical cloud, commencing near the apex of the apical two-thirds of the apical abscissa of the radius, reaching to the apex of the radial cellule, straight on the inner side, roundly irregularly narrowed on the outer ; the transverse median nervure received shortly behind the transverse basal ; the areolet slightly narrowed and open in front, the recurrent nervure received shortly before the middle. Female.

Length 8 m.m. ; ovipositor 2 m.m.

Cryptanura albispina, sp.n.

Head and thorax rufous, the under side of the antennal scape, tegulæ and spines white, the latter of a clearer white, the flagellum black, the underside of the 7th to 13th-14th-joints white ; abdomen black, the base and apex of the first, the apex of the second and third broadly—the apical fourth of the second and the third of the latter—and the sixth and seventh entirely with the ventral

surface, testaceous; wings hyaline, the stigma and costa black, the nervures of a paler black; the areolet small, open at the apex, the transverse cubital nervure obliquely slope, the transverse median received shortly behind the transverse basal. Female.

Length 8; terebra 1 m.m.

Face shagreened, the clypeus, except on the apical slope, closely distinctly punctured. Front somewhat strongly, obliquely striated, the striæ beginning at the hinder ocelli; a strong keel runs down the middle from the ocelli, mesonotum strongly shagreened, the apex in the middle strongly, irregularly longitudinally striated, scutellum smooth, shining. The two basal parts of the metanotum longitudinally striated, the basal part more finely than the second; in both the striæ almost form reticulations, the apical slope is more strongly transversely striated; the sides from the spiracles, are closely oblique, rather strongly striated. Legs pallid testaceous, the middle coxæ and the femora behind fuscous; the hind legs with the coxæ pallid testaceous, a large dark mark, roundly incised at the base, on the outer and lowerside, the trochanters fuscous, the femora testaceous, broadly fuscous above, the tibiæ black, the apex with a white band as long as the hind spurs; the tarsi white, the first joint narrowly at the base and the last dark rufous; the four front legs white, the hinder black. The metanotal spines are large, longer than they are wide at the base and curved.

Cryptanura ornatipennis, sp.n.

Black, the thorax red, the prosternum black, the mandibles to the base of the teeth, palpi, a line on the upper inner orbits, dilated at the top of the front and extending to the hinder ocelli, a line round the base of the pronotum, tegulæ, tubercles, scutellum to the top of the apical slope, metanotal spines, broad bands on the apices of the basal three abdominal segments, a narrow one, not reaching to the outer edge, on the sixth and the whole of the seventh, white; legs rufo-testaceous the hinder darker coloured, the four anterior coxæ white, the basal joint of the four front trochanters black, the tarsi infuscated, the base of the middle tibiæ with a white band on the base; the hind coxæ and trochanters black, the former with a broad oblique band on the inner side above, the femora darker coloured below and black at the apex, the tibiæ and tarsi black, the former with a white ring, nearly as long as the long spur of the hinder calcaria; the tibiæ closely spinose. Wings hyaline, the stigma and nervures black, a fuscous triangular cloud on the outer side of the transverse basal and transverse median nervures and a wider one at the apex, commencing shortly behind the middle of the apical abscissa of the radius; areolet open at the apex, narrower there than at the base, receiving the recurrent nervure at an angle in the middle. Female.

Length 7 m.m.; ovipositor 2 m.m.

Face thickly covered with white pubescence, finely striated in the middle above; the clypeus weakly sparsely punctured, its apex rufo-testaceous. The part at and below the ocelli weakly, irregularly obliquely striated. Mesonotum finely, closely punctured, the scutellum smooth. The metanotum round the basal slope finely punctured, the rest obliquely striated, the outer part with the striæ

finer, closely and less distinct than they are in the middle ; the rest is strongly closely striated, the striæ more or less twisted, the outer more regularly so than the central, which are oblique and converge towards the centre ; those on the apical slope are stronger and more distinctly and regularly twisted. Upper third of propleuræ closely punctured, the rest strongly striated. Mesopleuræ finely, closely punctured except at the apex above, this part having its base bordered by fine striæ ; the metapleuræ are more strongly punctured. Abdomen smooth.

Glodianus pallidiceps, sp.n.

Head, thorax and basal half of abdominal petiole red, the rest of abdomen black, with white lines on the apices of the basal five abdominal segments, above, the line on the first wider than the others and with the middle of the base dilated, its sides rounded, the line on the second shorter than the others, separated from the outer edge by half its length, its base dilated triangularly in the middle, the other lines are of equal width ; the sides of the second and following segments are white on the lower edge, the line becoming gradually wider to the fifth, that on the apical third still wider, but of equal width. The face, clypeus, labrum and mandibles are pallid yellow, the outer orbits have the rufous tint paler than it is on the vertex. Antennæ black, the scape red, the 8th to 14th joints white except above ; the joints are thickened and compressed beyond the middle, attenuated at the apex. Legs : the four front legs, the hinder coxæ and the basal joint of the trochanters on the inner side, coloured like the body, the rest of the hind legs black, except the apical half of the basal tarsal joint and the whole of the second, third and fourth which are white. Wings hyaline, the nervures and stigma black ; the areolet slightly longer along the longitudinal than along the transverse nervures, and of equal width, the second transverse cubital nervure bullated behind. Female.

Length 16 m.m. ; terebra, 17 m.m.

There is a flattened, distinct spine, rounded and narrowed above, in the middle of the front. Face roundly raised in the centre, finely, closely punctured, the sides of the raised part obscurely striated. Clypeus roundly convex, separated from the face. Labrum projecting. Parapsidal furrows stoutly, widely striated ; the apex of the mesonotum with fine, close, rounded striæ. Scutellums smooth, shining. Base of metanotum to the keel smooth, the rest closely, strongly regularly striated, with a short, stronger stria or keel on the sides of the top of apical slope. Propleuræ smooth, with three stout oblique striæ on the top in the centre. The raised upper part of the mesopleuræ smooth, the rest closely, finely punctured, obliquely finely striated below the middle of the smooth part. Metapleuræ closely, obliquely striated, strongly above, weaker below, the base smooth. Abdomen smooth ; the black on it is tinged with blue.

Glodianus lissonotus, sp.n.

Ferruginous, the face, clypeus, labrum and mandibles pallid yellow ; the postpetiole and the following abdominal segments black, the apex of the second to fifth segment with a band rounded at the base, the following two with narrow lines and the second and following ventral segments pallid yellow ; the four front

legs and the hind coxæ and basal joint of the trochanters coloured like the thorax, the hind femora black streaked with dark rufous, the tibiæ and almost the basal half of the tarsi black, the rest of the tarsi white ; antennæ black, the scape rufous, the tenth to thirteenth joints white. Wings hyaline, the nervures and stigma black ; the areolet of equal width, a little longer along the longitudinal than along the transverse nervures, the recurrent nervure received near the apex ; the transverse median nervure received shortly before the transverse basal. Female.

Length 16 m.m. ; terebra 11 m.m.

Head smooth, a narrow keel runs down from the ocelli. Pro-and mesothorax smooth ; the furrows not striated. Base of metanotum smooth, the rest transversely striated, the striæ weaker at the base. Apical half of metapleuræ finely striated below.

Glodianus ornatitarsis, sp.n.

Ferruginous, the back of the second and following abdominal segments infuscated, the face and clypeus paler, more yellowish in tint ; the flagellum of antennæ, the hind trochanters, femora, tibiæ and the tarsi except the apical two-thirds of the second joint and the third and fourth (which are white) black ; wings hyaline, the nervures and stigma black, the areolet small, square, open at the apex, receiving the recurrent nervure at the apex ; the transverse median nervure interstitial. Male.

Length 12 m.m.

Head below the ocelli strongly obliquely striated, the lower part of the front more transversely so. The sides of the face irregularly transversely striated, the centre raised and smooth above. Clypeus finely sparsely punctured. There is a distinct keel down the middle of the depressed lower part of the front. Mesonotum strongly, closely punctured, the inner sides of the lateral lobes striated, the apex of the central stoutly, obliquely striated the striæ clearly separated, roundly curved at the base. Scutellum roundly convex, smooth, the sides at the base and apex keeled. Metanotum with a semi-circular area on either side at the base, the inner side strongly obliquely striated ; the spiracles are bounded on the the inner side by a semi-circular keel ; the basal part between the areæ is bounded by a semi-circular keel ; the base of the apical part at the areæ is obliquely stoutly striated, the rest is strongly transversely striated, more strongly on the sides than in the centre. Propleuræ finely punctured, the centre strongly striated, the central striæ extending from the base to the apex, the others on apex only. Mesopleuræ finely, not very closely punctured, except for a large smooth space on the upper apical part : there are some striæ on the upper basal corner ; the apex crenulated. Metapleuræ strongly obliquely striated ; the spines large, becoming gradually widened.

Glodianus xanthostomus, sp.n.

Head, thorax, antennal scape, first abdominal segment, the four front legs, the hind coxæ, trochanters and base of femora narrowly ferruginous, the face, clypeus, labrum, mandibles, except the teeth, palpi, a narrow line on the lower half of

the inner orbits and the malar space, pallid yellow; the flagellum of antennæ black, serrate, the joints clearly separated below, densely covered with stiff black pubescence; wings hyaline, the nervures and stigma black, the areolet of equal width, a little longer along the longitudinal than along the transverse nervures, the transverse median nervure interstitial. The frontal keel rounded above at the apex, the base obliquely depressed, the slope longish, the apex has a steep slightly oblique slope. Male.

Length 13 m.m.

Face closely, strongly punctured, the clypeus more sparsely so; the front and vertex smooth. Mesonotum sparsely punctured in the middle, the furrows strongly, widely transversely striated. Scutellum smooth, the sides stoutly keeled; the post-scutellum largely bifurcate at the base. Base of metanotum smooth, its centre depressed, narrowed towards its apex: the apical part is narrower, not distinctly margined like the basal; the transverse basal keel is roundly turned towards it; the centre of the metanotum is strongly transversely striated, the striæ at the sides curved; at the apex they are roundly curved; there is a strong keel on the sides on the top of apical slope.

Glodianus pallidipalpis, sp.n.

Head, thorax and basal half of the first abdominal segment ferruginous, the rest of the abdomen black, tinged with blue, the four front legs and the hind coxæ, trochanters and extreme base of femora coloured like the body, the rest of the hind femora, the tibiæ and the basal joint of the tarsi to near the apex black, the apex of the first tarsal joint and all of the others white, except that the apices of the joints are darker coloured. Clypeus, labrum and mandibles except the teeth and the palpi pallid yellow. Antennæ black, the eighth to twelvth joints white. Wings hyaline, the nervures and stigma black, the areolet larger, longer than usual, narrowed behind, distinctly longer along the longitudinal than along the transverse nervures, the recurrent nervure received near the base of the apical third; transverse median nervure interstitial. Front with a longitudinal keel down the centre of the middle region; the lower depressions finely, closely striated. Female.

Length 23 m.m.; terebra 7 m.m.

Parapsidal furrows obsolete. Base of the metanotum in the centre transversely striated, the rest closely covered with fine roundly curved striæ; the more strongly striated apical part is not bounded at the base by a keel; the striæ are more or less roundly curved; the sides at the top of the apical slope bear broad, rounded, short spines. Prothorax at the base above striated, the apex of the propleuræ with an irregularly striated border. Mesopleuræ granular, a broad, oblique striated band down the middle. Metapleuræ regularly somewhat strongly obliquely striated. Tarsi closely, strongly spinose.

This species is not typical; there are no furrows on the mesonotum, the base of the metanotum is not smooth, the areolet is larger, longer and distinctly narrowed behind and the tarsi are much more thickly spinose.

PIMPLIDÆ.

Pimplinæ.

Epimeces latifasciatus, sp.n.

Rufo testaceous. the antennæ, head, hind legs and the apices of the basal three abdominal segments, the sides of the second and third broadly and all the others, black; wings fuscous. the base to the transverse band and median nervures and a band, extending from the para-stigma to the apex of the stigma, yellowish hyaline; the hind wings yellowish hyaline to near the middle, fuscous on the rest; the stigma yellowish testaceous, clypeus and mandibles rufo-testaceous; the palpi pale testaceous. Female.

Length 24 m. m.; terebra 7 m.m.

Smooth and shining, densely covered with whitish pubescence, black on the hind legs and on the apical abdominal segments on which it is longer and denser than on the basal. The second abdominal segment is flat, longish pyriform. The transverse cubital nervure is slightly shorter than the space between it and the recurrent.

This species has the general colouration of *E. tibialis*, Cam.; that species is much smaller, the colour is paler and the basal four abdominal segments are devoid of black.

Epimeces fuscipennis, sp.n.

Rufo-testaceous, the antennæ, head except the oral region. the apices of the basal second, third and fourth abdominal segments from the end of the raised central part, the fifth and sixth broadly in the middle of the base, their apices and the whole of the apical, black; legs coloured like the body, the hinder femora dark fuscous, the tibiæ and tarsi black, the base of the tibiæ with a pale testaceous band. Wings uniformly fuscous, the stigma and nervures fuscous, the transverse cubital nervure short, half the length of the space between it and the recurrent. Male.

Length 11 m.m.

The apical half of the clypeus rufo-testaceous. the labrum mandibles except the teeth and the palpi of a paler, more yellowish colour. Smooth and shining. The sides of the central, basal part of the first abdominal segments are stoutly keeled; the second to fourth are depressed in the middle on the basal half, the sides roundly raised. The hind coxæ have the sides and lower surface broadly infuscated.

Odontopimpla armatipes, sp.n.

Black, the basal four abdominal segments, the sides of the fifth and sixth and the hind legs red, the hind coxæ black, the apical fourth of the tibiæ and the hind tarsi of a lighter black colour, the four front legs rufo-testaceous, the anterior coxæ with almost the basal half and the middle to near the apex, black; the clypeus, a line on the lower half of the inner orbits the palpi and tegulæ pall'd

yellow; wings yellowish hyaline, the nervures yellow, black in the clouded parts, the stigma black; a cloud extends from the para-stigma to the apex of the stigma and to the opposite side of the wings, narrowed on the outerside from the disco-cubital nervure, a wider, fainter cloud in the apex of both wings, the areolet oblique, almost appendiculated, the apical nervure double the length of the first, the recurrent nervure received in the apical fourth. Female.

Length 17 m.m.; terebra 9 m.m.

Smooth and shining, covered closely with white pubescence, which is longer on the clypeus and median segment; the pubescence on the legs closer and shorter. The basal depression on the first abdominal segment is strongly keeled laterally; there is a longish ovoid depression down the basal half of the second; it is strongly but not closely punctured. Sheath of ovipositor thickly covered with stiff black pubescence. The femoral tooth is broad, bluntly rounded at the end, longer on the basal than on the apical side. The apices of the scutellums are narrowly deep blood-red.

Neotheronia erythrea, sp.n.

Ferruginous, darker coloured on the apical half of the abdomen, the head except above, and the pleuræ, paler, more yellowish; the hind legs coloured like the body, with the tarsi black, the four anterior paler, more testaceous in colour, the base still paler, more yellowish in tint, the antennal scape black, the scape testaceous, darker above, the base of flagellum brownish; wings hyaline, the stigma and nervures black, the apex from the base of the apical half of the radius fuscous violaceous, the areolet four-angled, the recurrent nervure received in the apical fourth; it has a longish nervure on the outerside of the middle, the transverse median nervure interstitial. Female.

Length 12 m.m.; terebra 2 m.m.

Smooth, shining, the mesonotum densely covered with short black pubescence, the face more sparsely with longer white pubescence. Clypeus separated from the face by a distinct furrow, which is transverse in the middle above, the sides roundly curved downwards. Malar space about one-half the length of the pedicle of the antennæ. Metanotum with a stout curved keel at the top of the apical slope; there is another on the apex; there is a longish conical fovea on the top of the basal half, its sides distinctly margined; there are no lateral keels. Scutellum with the sides keeled on basal third. Abdominal petiole nearly four times as long as wide; an oblique depression on either side near the apex. Mandibles, pale yellow, the teeth black. Palpi rufo-testaceous.

Neotheronia claripennis, sp.n.

Head and thorax yellow, the abdomen brownish testaceous, an irregular line on the sides of the first, and slightly more than the basal half of the others black; tips of mandibles, an irregular line joining the hinder ocelli to the eyes, a slightly narrower line round the apex of the vertex, three broad lines on the mesonotum, the central beginning at the base, the others beyond it; the lateral depressions at the sides of the scutellums, a longish triangular mark on the apical half of the

basal part of the metanotum between the keels, a larger, more distinct triangular spot on the apex, a line on the apex of propleuræ on the upper two-thirds and a similar line on the apex of mesopleuræ, black. Antennæ with the scape yellow, lined with black above, the flagellum dark rufous, darker above and below at the apex. Wings hyaline, unclouded, the costa and stigma testaceous, the nervures black, the areolet five-angled, the nervures closely meeting in front, the recurrent nervure interstitial. On the metanotum in the middle are two keels, forming an area of equal width; on the sides is a keel on the apical two-thirds, there is a complete keel outside the spiracles and there is a keel on the lower side of the metapleuræ. The apical two joints of the hind tarsi are infuscated; the fore-legs are of a brighter yellow than the others. Female and Male.

Face closely weakly punctured, densely covered with short pale pubescence. Eyes distinctly converging below, about one-fourth narrower at their end than on the vertex. Thorax smooth, impunctate; the parapsidal furrows weakly indicated on basal slope. Abdominal petiole three times as long as it is wide at the apex. Ovipositor testaceous, blackish at the apex, as long as the hind tarsi. There is a blackish streak on the upper, inner side of the hind femora, the hind knees being also black.

Length 9 m.m.; terebra 3 m.m.

Temples distinctly roundly narrowed. The apical black mark on the metanotum may be absent. The mandibular teeth are almost equal in length.

OPHIONIDAE.

Labenini.

Nonus biannulatus, sp.n.

Black, the maxillary palpi, the basal three joints of the flagellum of antennæ and a wider ring in its middle, white, as is also the apical fourth of the sheaths of the ovipositor; the fore femora above and the apical joint of the trochanters pale testaceous, the tibiæ on the inner side in front and entirely so behind testaceous, the rest fuscous, the basal three joints of the tarsi pallid fuscous; the basal two of the middle of a paler fuscous colour; the apical third of the basal joint of the hind tarsi and the whole of the second and third white. Wings hyaline, the nervures and stigma black, the areolet in front one-quarter longer along the radius than it is along the first transverse cubital nervure; it is a little wider at the apex than at the base and receives the recurrent nervure in the apex of the basal fourth; the radius is roundly, broadly curved beyond the areolet; the transverse median nervure is received at the apex of the basal fourth of the nervure; the transverse cubital nervure in hind wings is broken half-way between the middle and the apex. Female.

Length 17 m.m.; terebra 8 m.m.

Smooth, the basal half of the second abdominal segment finely, closely punctured, and with some fine striæ, the base at the sides keeled; the pleuræ and coxæ densely covered with white pubescence. There is a wide, longish furrow,

with sloping sides, along the mesopleuræ above the middle. There is a curved keel, narrowed at the base, diverging in front, at the base of the metanotum; there are three areæ on its apex; the central large, roundly dilated at the base, the sides above obliquely narrowed, the lateral areæ widened above.

Ophioninæ.

Ophion latilineatus, sp.n.

Ferruginous, the head bright yellow, the thorax of a paler yellow, with three broad fuscous lines on the mesonotum, the antennæ blackish, reddish brown at the base below and towards the apex above; wings hyaline, the stigma and costa ferruginous, the nervures black, the base of radius thickened; the recurrent nervure one-quarter longer than the transverse cubital, which is roundly curved; the basal transverse keel on the metanotum roundly curved in the middle; the basal three or four transverse striæ straight, the others thicker and broadly roundly curved; the upper basal half of the metapleuræ irregularly obliquely striated. Apical slope of scutellum rather strongly, but not closely striated. Male.

Length 32 m.m.

Post-petiole distinctly separated; thickened; the fourth and following abdominal segments thicker than the others. The apical part of the disco-cubital nervure is broadly roundly curved; widely bullated at the base, as is also the recurrent nervure near the top.

Enicospilus flavus, Bé.

Ophion flavus, Bouché, Hymén, iv, 139.

There are two horny points in the wings, a large semi-circular one, rounded at the top, transverse behind, and gradually narrowed to a point below; and a minute one, widely separated from it; the large one has no continuation; the recurrent nervure is separated from the transverse cubital by three times the length of the latter; the nervures are black; the basal abscissa of the radius thickened and slightly, broadly curved. The striæ on the top of the metanotum are almost longitudinal and irregular; on the rest of it stronger and oblique.

Enicospilus guyanensis, sp.n.

Luteous, the head pallid yellow, the antennæ of a deeper, more rufous colour wings hyaline, the stigma and nervures ferruginous, the apical nervures darker in tint, the basal horny point large, transverse below, the top basal half roundly widened from the base upwards, the smaller, apical half oblique on the upper two-thirds, the lower projecting into a point, which becomes gradually narrowed towards the apex, the second point is small, its apex broad, rounded, the lower edge rounded, the upper rounded inwardly; the apical abscissa of the disco-cubital nervure fully one-third longer than the transverse cubital, which is rounded. Basal half of the scutellum with a shallow furrow down the middle; the apical slope with two long and two short stout striæ. Metanotum with irregular longitudinal striæ in the middle of the base, the sides more strongly obliquely striated, the apex with rounded striæ. The middle of mesopleuræ broadly, finely obliquely

striated, the striæ stronger on the lower half. Except on the basal and ower parts the metapleuræ are finely striated and punctured. There is a broad black mark in the middle of the seventh abdominal segment on the sides.

Enicospilus parvifasciatus, sp.n.

Luteous, the head yellow, the thorax paler, more yellowish in tint, the antennæ more rufous, the apical abdominal segments darker than the basal ; three large broad black marks on the mesonotum, a black mark on the apex of the mesopleuræ, commencing near the top and reaching below nearer to the bottom, it becomes gradually widened from the top to the bottom, with the apex and lower side straight ; the legs paler in tint than the body ; wings hyaline, a small triangular cloud, longer than it is wide at the apex, filling the base of the radial cellule, the costa rufo-testaceous, the stigma and nervures black ; the recurrent nervure separated from the transverse cubital by four times the length of the latter ; the basal abscissa of the radius is thickened to the middle ; the transverse median nervure interstitial. The base of metanotum is smooth ; the upper part of the apical part is smooth, except for a straight and two curved striæ in the centre ; the rest strongly, closely transversely striated. There is only one horny point in the forewings ; it is conical,longer than it is wide at the apex ; the top narrowed, rounded end at the base, the apex transverse except for a small projection on the lower edge. Female.

Length 18 m.m.

Enicospilus maculiceps, sp.n.

Luteous, the stemmaticum black, the apical three abdominal segments dark fuscous, the wings hyaline, the costa, stigma and nervures blackish, the transverse median nervure received very shortly beyond the transverse basal, the recurrent nervure distant from the transverse cubital fully four times the length of the latter ; there is only one horny point ; it is almost semi-circular, the rounded end in front. Metanotum strongly striated ; the striæ in the centre of the base transverse, those on the sides roundly, obliquely curved, the others closely, strongly transverse.

Comes near to *E. flavus*, Bé.. it may be known from it by the third and fourth abdominal segments being black, by there being two horny points in the wings, the larger apical one being differently formed, it becoming gradually narrowed to a fine point, the antennæ are darker coloured, fuscous to black, and the metanotal striæ are stronger, closer and run into reticulations.

Thyreodon nigro-caeruleus, sp.n.

Black, tinged with blue on the pleuræ and metanotum ; wings uniformly fuscous-violaceous, the nervures and stigma black. Face covered with pale, the thorax more densely with longer black pubescence, which is longest on the scutellum. Head and thorax closely punctured, the centre of the scutellum moother than the sides. The sides of the metanotum finely, sparsely punctured, the centre raised, irregularly longitudinally reticulated ; the top of the slope finely, obliquely striated, the striæ interlacing ; the sides below are more strongly obliquely striated, smooth on the inner side ; the central furrow is

strongly not very closely, transversely striated. Metapleuræ closely finely obliquely striated. Front broadly raised between the antennæ and ocelli, the sides depressed, the depression narrowed above, the bottom, except at the top, finely, closely striated. Female.

Length 27 m.m.

Apex of clypeus transverse, its sides broadly rounded. Sides of scutellum keeled to shortly beyond the middle.

Anomalinæ.

The only member of this group in the collection is treated by Szépligeti (Gen. Ins. Ichn. Ophion, p. 3.) as a distinct group—*Xiphiosominæ.*

Xiphosoma mexicanum Cr.

Proc. Acad. Phil. 1873, 380.

A specimen smaller than any I have seen from Central America.

Obs. Iphisoma as printed in Mr. Cresson's papers *l.c.* seems to be a printer's error for *Xipho oma.* The species appears to have a wide distribution.

Xiphosoma striatum, sp.n.

Rufo-testaceous, the head more yellowish in tint (the rufous tinge may be owing to discolouration), the antennæ, the depressed central part of f ont, the stemmaticum, occiput, three large marks on mesonotum, apex of scutellum, post-scutellum, a stripe on the base of metanotum, narrowed in the middle, a large mark, longer than wide, sharply narrowed above, transverse below, on the basal two-thirds of the apical slope, an oblique line, commencing at the tubercles, where it is widened at the base and apex and running obliquely to near the bottom of the apex, its middle narrowed, rounded at the apex, the lower part with the apex squarely dilated, a small spot on the base of the sternal furrow, the base of the metapleu æ, the base of petiole narrowly, the post-petiole, and the top of the other segments, black ; the four front legs pale yellow, the femora tinged with testaceous, the apices of the middle tarsal joints infuscated ; hind legs black, the apex of coxæ narrowly, the greater part of the apical joint of the trochanters, a broad line on the apex of the femora and a narrow one on its apex, rufo-testaceous. Wings hyaline, the apex faintly and narrowly smoky, the stigma and nervures black ; the areolet oblique, narrow, twice longer than wide, pedunculated, the pedicle longer than the lower branch, the recurrent and the transverse median nervures interstitial. Female.

Length 12 m.m. ; terebra 4 m.m.

Head smooth, a curved furrow bordering the outside of the ocelli, the part outside the furrow, next to the eyes raised ; the frontal depression finely, closely striated. Mesonotum trilobate, strongly, but not very closely punctured ; the scutellums smooth. Metanotum finely, closely striated, the striæ st onger on the outer edge. Mesopleuræ sparsely punctured on lower half ; there is an oblique depression down the centre. Femoral tooth oblique, acutely pointed, longer than it is wide at the base.

This is a smaller species than *X. mexicanum*, Cr. ; that species has the metanotum smooth, and on it, instead of a large conical black mark, has a black line.

CAMPOPLEGINI.

Campoplex watertoni, sp.n.

Black, the head and thorax densely covered with silvery pubescence, the antennal scape, tegulæ and four front legs bright yellow, the hind legs and the abdomen ferruginous, the wings hyaline, the stigma and nervures black, the areolet large, shortly, distinctly appendiculated, four-angled, the recurrent nervure received near the apex of the basal third : the apex of the forewings with a smoky border. Male.

Length 8 m.m.

Head alutaceous, the lower part of the vertex and the centre of the front with fine curved striæ. Mesonotum closely, somewhat strongly punctured, the sides more strongly than the middle. Metanotum with two central and one large lateral area ; the areola open at the apex ; the base is aciculated, the rest irregularly, transversely striated. Pleuræ smooth, shining, the apex in the centre irregularly striated. Basal half of mesopleuræ longitudinally striated, the striæ shorter in the middle, the apical half smooth and shining. Metapleuræ finely, weakly punctured, shining, the top densely covered with longish white pubescence.

Podogaster rufomaculatus, sp. n.

Black, the apical half of clypeus, mandibles except the teeth, pleuræ, sternum, apex of metanotum narrowly, the basal third of first abdominal segment and the under-side of antennal scape pale rufous, the sides of the third and fourth abdominal segments rufo-testaceous ; the four front legs similarly coloured, but more yellowish paler, their tarsi fuscous ; the hind legs black, the basal half of their coxæ pale rufous, the trochanters and knees fuscous, the wings hyaline, the nervures and stigma black, the transverse median nervure received very shortly beyond the transverse basal, almost interstitial, the transverse cubital nervure very short, the recurrent nervure received four times its length beyond it ; the apical nervures in the hind wings are obliterated. Male.

Length 7 m.m.

Smooth and shining, the metanotum aciculated, the aciculation becoming stronger towards the apex which is beyond the apical keel, transversely, closely striated. The lower part of the mesopleuræ and the metapleuræ are minutely closely punctured. There are two longitudinal keels on the base of the metanotum in the centre, forming an area of equal width, twice longer than wide ; the transverse keel is bent obliquely towards it, uniting to its outer apical side ; the apical transverse keel is roundly curved.

Eutanygaster gen. nov.

Wings short, the stigma distinct, the basal two cubital cellules confluent with the disevidal cellules, the cubitus commencing at the second transverse cubital nervure, which is received close to the first ; the transverse median nervure

is interstitial; the apical nervures in the hind wings are interstitial; the radial cellule long, reaching to the apex of the wing; the radius issues from the middle of the stigma Eyes large, reaching to the base of the stigma. Mandibles almost equally bidentate. Parapsidal furrows distinct at the base. Metanotum long, transversely striated, the base with a semi-circular area on either side; the spiracles small. oval; the slope is gradual, oblique. Abdomen four times as long as the thorax, strongly compressed, curved roundly, the first segment shorter than the second, its apex dilated. Legs long, the middle tibiæ with two spurs, he long spur of the hinder nearly half the metatarsus: the tarsi closely, distinctly spinose.

The apex of the thorax does not project into a neck, but is transverse and very little narrowed. The mandibular teeth almost equal in length. Clypeus not separated from the face by a distinct furrow; its apex broadly rounded. ovipositor projecting one-third of the length of the abdomen.

This genus resembles in the body form *Podogaster* and certainly it is closely allied to it, but may readily be separated from it by both the transverse cubital nervures being united to the radius and clearly separated at their junction with it, by there being a distinct pterostigma, by the transverse median nervure being interstitial and by there being two areæ on the base of the metanotum.

Eutanygaster brevipennis, sp. n.

Black, the mandibles except the teeth, palpi, tegulæ, and almost the basal half of the first abdominal segment pallied testaceous, the apices of the second, third and fourth ventral segments of a deeper, darker testaceous, the four front legs testaceous, the hinder black, except the apical joint of the trochanters, the apex of femora narrowly and the spurs which are testaceous; wings clear hyaline, the stigma and nervures black. Female.

Length 9 m.m.; terebra 2 m.m.

Smooth, shining, almost bare, the metanotum slightly depressed in the middle, finely closely transversely striated; the metapleuræ and the hind coxæ finely closely punctured, the upper part of the mesopleuræ raised; below is an oblique, smooth shallow depression, the rest is sparsely weakly punctured. Face sparsely, weakly, but distinctly punctured

Charops peronatus, sp.n.

Black, the head and thorax densely covered with silvery pubescence, the apical abdominal segments with a shorter and sparser pile, the mandibles, palpi, underside of antennal scape and the tegulæ, pallid yellow, the ventral surface of the second and the base of the third ventral surface pallid testaceous; legs, the anterior with the coxæ black, the trochanters, the outerside of the tibiæ and the spurs pallid yellow, the rest testaceous; the middle with the coxæ, basal joint of trochanters, almost the basal half of the femora and the apical fourth of the tibiæ black; the rest of femora rufo-testaceous, the tibiæ and tarsi pallid yellow, the apices of the tarsal joints blackish: the hind legs black, except for a pale yellow band, commencing near the apex of the basal fourth and extending

shortly beyond the middle; the four front spurs white, the posterior black. Wings hyaline, the nervures and stigma black; the transverse median nervure received shortly beyond the transverse basal; the recurrent half its length beyond the transverse cubital. Female.

Length 5 m.m.

Head closely, minutely punctured, the front obscurely, closely obliquely striated, especially on the sides. Mesonotum finely punctured in the middle, the sides irregularly transversely striated, scutellum margined on the sides, an obscure keel down the middle, the rest finely rugose. Metanotum rugosely punctured, the centre closely, distinctly striated, this striated part margined by keels, which converge slightly at the base. Propleuræ finely rugose, striated at the base and apex; mesopleuræ with a broad curved striated belt, commencing at the base above and reaching to the apex below. Metapleuræ finely irregularly punctured, the lower basal part irregularly striated. The pubescence on the metathorax is longer and denser than elsewhere.

Charops latiannulatus, sp.n.

Black, the antennal scape except for a line on the outerside, the mandibles, tegulæ, the forelegs except the coxæ and basal joint of the trochanters testaceous, the four hinder black, the basal two-thirds of the middle tibiæ and a broad ring on the hinder, commencing near the base and extending shortly beyond the middle; the four front spurs testaceous, the hinder black; wings hyaline, the nervures and stigma black, the nervures as in the preceding species. There is a pale, testaceous spot on either side of the middle of the second abdominal segment: the apices of the ventral segments pale testaceous. Male.

Length 7 m.m.

Face closely, the clypeus sparsely punctured: the space below the ocelli closely irregularly striated, the frontal depression shining. Mesonotum finely closely punctured, the furrows irregularly widely closely transversely striated. Scutellum smooth. Base of metanotum finely, closely, irregularly longitudinally striated, the rest of it almost rugosely punctured: the middle space widely, the sides closely obliquely, the centre at the apex more transversely striated, the apical slope more strongly transversely striated, the striæ more or less twisted, the spines large, conical, broad at the base. Base of propleuræ with some stout vertical striæ, the rest finely, closely, longitudinally striated above, below much more strongly striated. Mesopleuræ closely longitudinally striated except for the usual smooth, shining space at the apex above. Metapleuræ more strongly obliquely striated, the striæ more or less twisted. Abdomen smooth.

PRISTOMERINÆ.

Pristomerus tricarinatus, sp.n.

Black, the prothorax, meso- and metapleuræ and sternum pale rufous, as is also the extreme apex of the metanotum; the basal half of first abdominal segment pale yellow, the sides of the third and fourth testaceous, the four front legs pallid yellow, the femora slightly tinged with fulvous; the hind legs black,

the basal half of the hind coxæ pallid fulvous, the trochanters testaceous marked with black laterally : the extreme base of the femora and their apex more broadly pale yellow ; wings hyaline, the stigma and costa black. Male.

Length 7 m.m.

The apical half of the clypeus, mandibles, except the teeth and the palpi pale testaceous, as well as a narrow line at the eyes opposite the antennæ. Face smooth, shining, sparsely covered with short white pubescence ; the front and vertex alutaceous. Ocelli large, amber coloured. Pro- and mesothorax smooth, the mesopleuræ finely punctured, except at the apex above ; the me'anotum finely, closely, transversely striated, more strongly so towards the apex ; the basal area twice longer than wide, narrowed towards the apex ; the basal transverse keel obliquely turned to the outer apical side ; the second is near the apex and is broadly roundly curved ; there is a similar keel at the extreme apex. There are four small teeth—rounded, indistinct—on the apex of the hind femora beyond the large one.

Pharsaliinæ.

The curious genus *Pharsalia*, Cresson is placed by Ashmead in the *Nototrachini* (Bull. U. S. Nat. Mus. xxiii, 88) along with *Nototrachus* and *Eugnomus* ; by Szépligeti in a sub-family of the *Ophionidæ*, an arrangement with which I agree with him. cf. Gen. Ins. *Ichneumonidæ Ophionidæ*, 3. Its alar meuration, is not unlike that of *Ropronia*, a genus which has been referred to the *Proctotrypoidea* and which has also been made the type of a distinct family by Mr. J. C. Bradley.

There are three points in the male which have not been pointed out by the writers who have described this genus, namely, the eyes in the male are pilose and the costa extends as a thickened vein, about two-thirds of the length of the radial cellule in front and beyond it ; in the male the genital armature largely projects—to a greater extent than the length of the last segment ; it is in the form of two broad, knife-like projections, with the basal third wider than the rest. There are two spurs on the hinder tibiæ, one only on the four anterior.

Ophionellus, West. appears to be identical with *Pharsalia* ; in *O. fragilis*, West, the type of the genus, the antennæ are said to be from 30-40-jointed, as against 25 in the species I have described.

Pharsalia annulipes, sp.n.

Black, the underside of antennal scape, two longish triangular marks on the top of the face, united above and continued as a short line along the eyes, reaching to shortly above the antennæ, malar space, mandibles except the teeth, palpi, a short line on the upper, outer orbits, and the tegulæ, whitish yellow, legs : the anterior rufo-testaceous, the tarsi paler, the coxæ and basal joint of trochanters pallid yellow, the middle coxæ, basal joint of trochanters, a band of the length of the second tarsal joint on the base of the tibiæ and the basal three tarsal joints, white, the femora rufous, the tibiæ of a darker rufous

colour, the rest of the legs blackish ; the hind legs black, the basal joint of the trochanters and a band of about its length on the base of the tibiæ, white wings hyaline, the stigma black, the nervures pale. Female.

Length 13 m.m.

Head and thorax densely covered with a silvery pile, which is longest on the face and breast. Head smooth, the base and sides of mesonotum smooth, the rest coarsely reticulated—punctured ; there is a double row of punctures along the sides. The long metanotum is furrowed down the sides and is transversely reticulated. The base of the propleuræ is smooth, bare and has a row of punctures down the lower basal half ; the apex of the mesopleuræ is bare, has a crenulated furrow on the apex and some striæ on the lower apical half ; the upper half of the metapleuræ reticulated, the reticulations almost hidden by the dense silky pubescence. The apices of the third, fourth and fifth segments are testaceous. The antennæ are covered with a short, dense blackish pile ; they are 25 jointed.

A SYNOPTICAL VIEW OF THE MOSQUITOES OF BRITISH GUIANA.

By Rev. Jas. Aiken, M.A.

In no branch of Natural Science has progress been made with greater rapidity than, in recent years, has marked the advance of the knowledge of Economic Entomology, more especially in the tropical regions under occupation by white men. With respect to mosquitoes a whole new fauna quite startling in its dimensions has been displayed, and the collaboration of the Pathologist and Enomologist has resulted in the detection of many homicidal criminals winged with death, and the exposure of their dark and subtle methods of attack. So much has been done that it is already possible for authoritative writers to speak of "the prospect of the complete conquest of man over the insect pest in the West Indies" ("Health Progress and Administration in the West Indies," p. 40, 1910, Sir R. Boyce) and to pronounce, as the same distinguished authority has done, that the gravest scourge of man in the Tropics. Yellow Fever, is now so perfectly under medical and sanitary control that its terrors are a thing ot the past.

In British Guiana in recent years a not altogether contemptible contribution has been made to knowledge in this department. Beginning with Drs. Rowland and Low in 1899 and 1900 collections have been made over a considerable area of the Guianas, of the colony and in some few places in the highlands of the interior. The workers, including with the above named Drs. Ozzard and Wallbridge and in recent years Drs. Wise and Minett and Mr. H. W. B. Moore have however been few and, in recording as I shall attempt to do the present position of the knowledge of Mosquitoes in British Guiana, it is with the certainty that the number of species still to be discovered is probably greater than that hitherto worked out, and the hope of helping some to begin work of the sort required.

A comprehensive synoptic table of the mosquitoes of the world wears to the tyro a rather discouraging appearance. The science indeed has reached dimensions quite alarming with its 180 genera and in the genus culex alone 194 species, and it is possible that an intending inquirer's first glance might be his last if he were not assured that his own efforts in any particular region do not demand preliminary knowledge quite so encyclopædic as the mastery of all this detail would imply.

In Guiana so far only thirty genera with sixty-one species have been identified, and the diagnosis of these is for the most part possible to any one with an observant eye, a fairly efficient coddington lens and the patience of the naturalist. The synoptic tables which follow are intended to smooth the way of any such and together with the articles which have appeared in the B. G. Medical Annuals of 1905, 6 and 8 and some further detailed descriptions which the grace of the Editors of "Timehri" may allow me to publish, should make a good beginning in this very useful study comparatively easy.

The equipment required for a start is not large. Some fine entomological pins (No. 20), some cards round or square, $\frac{3}{4}$ of an inch in diameter, some stout pins, a pair of forceps and a store box as nearly as possible airtight, lined with cork or eta palm pith covered with white paper will suffice. For cards it may be remarked visiting cards cut up very nicely for the purpose and you may immortalize your friend by using his pasteboard to pin a newly-discovered species.

The system of classification most generally accepted is that of Mr. Fred V. Theobald, Vice-President and Zoologist of the South Eastern Agricultural College, which is, in its latest form, modified from that of Dr. Lutz. It is based largely on the scale characters of the adult insects. So far as knowledge of the life history of the various species has been carried, there is considerable divergence from this system in the grouping of Culicidæ by Drs. Dyar and Felt based on male genitalia and in that based on larval characters and life habits. Dr. Dyar and Mr. F. Knab, of the States Bureau of Agriculture, have gathered a mass of accurate information on these points which has led them to consider many of Theobald's generic distinctions invalid. There are, in spite of the difficulties in applying some of Theobald's characters, some advantages in an arrangement of species based on adult characters and, as his system is still that of reference by most writers in English, we retain it in the subjoined tables.

In this classification Corethra and Mochlonyx are separated from Culicidæ and placed in a separate Family Corethridæ. The Culicidæ include the Sub-Families Anophilinæ, straight of proboscis and with palpi long in both male and female, Megarhininæ, curved of proboscis with long palpi in male and long or short in female and, between these, the great mass of species is grouped under Orthorhynchæ. This group is divided into nude metanotum species (Metanotopsilæ) and ornate metanotum species (Metanototrichæ) in which scales or chaetae adorn that part. Each of these sub-groups are again divided by palpal characters into Heteropalpæ and Micropalpæ or, as a further refinement in the Metanototrichs, Isomicropalpæ. The Heteropalps have long male, short female palps, the Micropalps both sexes short, the standard of comparison being the length of the proboscis.

The Orthorhynch Metanotopsilous type are the Heteropalp Sub-Families Culicinæ which contains over 60 genera and Heptaphlebomyinæ with one Genus Heptaphlebomyia ; the Micropalp Aedinæ with nine Genera, Uranotæninæ with nine genera and Denioceratinæ with two genera ; the Metanototrichons type are the Heteropalp Sub-Family Trichoprosoponinæ with six genera and the Isomicropalp Dendromyinæ with eleven genera and Limatinæ with one genus Limatus and one species *Durhami*. All these Sub-Families are represented in British Guiana with the exception of Heptaphlebomyinæ in which the special character is the development in the wing of a distinct seventh vein with scales. In compiling the following tables I have as far as possible re-examined the material in my possession and in some cases modified the diagnosis with special reference to local types. The following is Mr. Theobald's synopsis of the Sub-Families. In most cases I prefer the term "cuneiform" to the rather inadequate description "forked," for the scales indented and spread at apex formed on the heads of most mosquitoes.

Table of Sub-Families.

A. Scutellum simple, never trilobed. Proboscis straight ; palpi long in male and female.

ANOPHELINAE.

A.A. Scutellum trilobed

a. Proboscis strongly recurved ; 1st sub-marginal cell very small.

MEGARHININAE.

aa. Proboscis straight ; metanotum nude.

b. Wings with six long scaled veins.

c. Antennae with 2nd. joint normal in length.

d. 1st sub-marginal cell as long as or longer than 2nd. posterior cell.

e. Female palpi shorter than proboscis, male palpi long.

CULICINAE.

ee. Palpi short in male and female.

AEDINAE.

dd. 1st sub-marginal cell very small, smaller than 2nd. posterior cell.

URANOTAENINAE.

cc. Antennae 2nd. segment very long. .. .. DEINOCERATINAE.

bb. Wings with seven long scaled veins .. .. HEPTAPHLEBOMYINAE.

a.a.a. Proboscis straight ; metanotum with scales or chaetae.

b. Palpi long in male, short in female .. .. TRICHOPROSOPONINAE.

b.b. Palpi short in male and female .. .. DENDROMYINAE.

a.a.a.a. Proboscis elbowed .. .. LIMATINAE.

This last sub-family might, to be consistent, be placed on the character of the proboscis in a separate group, Ankyloryncliae ; but after all perfect consistency is unattainable and perhaps at best a trifling goal.

Sub-Family Anophelinae.

Five genera are represented in the colony. I give also the diagnosis of Anopheles as it is the type genus, though not represented locally.

Table of Genera.

1st sub-marginal cell large.

Antennal segments without dense lateral scale tufts.

A. Thorax and abdomen with hair-like curved scales.

a. Head with cuneiform scales, no flat ones.

b. Basal lobe of genitalia of one segment.

Wing scales rather large, lanceolate. 1. ANOPHELES, Meigen.

Wing scales mostly small, narrow or slightly lanceolate ; costa prominently spotted. .. .. 2. MYZOMYIA. Blanchard.

Wing with patches of large inflated scales. 3. Cyclolepteron. Theobald.

b.b. Basal lobe of genetalia of two segments.

a.a. Head with some flat scales on median area.
Prothoracic lobes mammilated.
Wing scales lanceolate .. .. .. 4. Stethomyia. Theobald.

B. Thorax with distinct narrow curved scales.
Abdomen hairy.
Wing scales broad and lanceolate.

Head scales broad not lying flat but not forked or fimbriated. .. .. .. 5. Myzorhynchella. Theobald.

C. Thorax and abdomen with scales.
Abdomen with lateral scale tufts. 6. Cellia. Theobald.

Genus Anopheles. Meigen.

No species classed by Theobald in this genus has been identified here. Messrs. Dyar and Knab include all Anophelines with the exception of the Coelodiazesis in this genus.

Genus Myzomyia. Blanchard.

One species has been recorded from Coriabo on the Barima River. (Dr. Low).

Myzomyia lutzii. Theobald.

Proboscis unbanded. Palpi with three white rings. Legs with median pale broad band on metatarsus and apical bands on tarsi (B.G. Med. Annual, *1905*, pp. 14, 36.)

Genus Cyclolepteron. Theobald.

One species has been recorded from Schepmoed on the Berbice River. Found by Dr. Rowland in May, 1905. One specimen only.

Cyclolepteron mediopunctatus. Theobald.

Proboscis unbanded. Palpi banded black and gold. Legs spotted with golden yellow, metatarsi and tarsi banded also; last tarsus all yellow. Abdomen with lateral tufts of black or black and gold scales. (B. G. Med. Annual, *1905*, p. 25. *1906*, pp. 59, 75.)

Genus Stethomyia. Theobald.

One species recorded from Corato and Cabacaburi, Pomeroon. (Dr. Low.)

Stethomyia nimba. Theobald.

Thorax black with silvery lines.

Proboscis covered with black and bronzy scales.

Palpi black. Legs unbanded.

Wings unspotted. (B. G. Med. Annual, *1905*, pp. 15, 36.)

Genus Myzorhynchella. Theobald.

One species recorded from Kanuku Mountains.

Myzorhynchella nigra. Theobald.

Proboscis black. Palpi with 4 narrow white bands. Legs with tarsi banded white apically ; last three hind tarsi, all white.

Wings with three large and two small yellow spots on costa. (B. G. Med. Annual, *1908*, pp. 3, 4, 22.)

Genus Cellia. Theobald.

Two species recorded from all parts of the colony in which collections have been made. Easily distinguished from M. nigra by the abdominal scales and prominent lateral tufts.

Legs with three hind tarsals white.

1. *Argyrotarsis.* R. Desvoidy.

Legs as above but apex of last hind tarsal with a black band. .. .. 2. *Albimana.* Wiedemann.

(B.G. Med. Annual, *1905*, pp. 14, 25, 29, 36. *1906*, pp. 65, 66, 72, 73. *1908*, p. 19.)

Sub-Family Megarhinnae. Theobald.

Ankyloryncliae. Lutz.

Lynchiellina. Lahille.

Mr. Theobald includes in this sub-family three genera, of which only Megarhinus has been recorded from the colony.

Genus Megarhinus R. Desvoidy.

Palpi long in both sexes. Last segment of female palp round or blunt as if broken.. Proboscis curved downwards. Abdomen with lateral tufts.

Two species or perhaps three are recorded from the colony.

1. Palpi of male and female 3rd joint longer than 4th.

Palpi of male 3rd joint longer than 4th.

Haemorrhoidalis.
Fabricius.

(B. G. Med. Ann., *1905*, pp. 15, 36.)

2. Palpi male and female 3rd joint about equal in length to 4th.

Separatus.
Arribalzaga.

(B. G. Med. Ann., *1905*, pp. 15, 36.)

Two species *superbus* and *lynchi* have been added by Dr. Dyar and Mr. Knab. The former is Osten Sacken's *haemorrhoidalis* and the latter Lynch's *haemorrhoidalis*, and the characters on which the species are separated are the arrangement of the white tarsal markings.

Sub-Family Culicinae.

I. Eyes and scutellum normal.

A. Legs with dense outstandings scales.

Head with spindle-shaped, broad curved and flat scales.
Hind legs only densely scaled.

Genus Janthinosoma.
Arribalzaga.

All the legs more or less densely scaled.

Genus Psorophora.
Robineau-Desvoidy.

B. Legsnormal, no irregular scales. Femora not markedly swollen.

1. *a.* Head with flat and upright cuneiform scales only.

Genus Stegomyia.
Theobald.

a a. Head with flat scales except a small area of narrow curved scales behind and upright cuneiform scales.

Genus Gnophodeomyia.
Theobald.

a.a.a. Head with flat scales at sides ; median area occupied by narrow curved and cuneiform scales.

b. Scutellum with narrow curved scales only.

c. Wing : lateral vein scales broadish ; median vein scales large and spatulate.

Genus Leucomyia.
Theobald.

(1.) Fork cells short.

Genus Culicelsa.
Felt.

(2.) Fork cells medium.

Head : curved scales broadish upright scales black and yellow.

Wing : median vein scales denser on 5th vein.

GENUS PROTOCULEX.
Felt.

c.c. Wing : lateral vein scales narrow linear or lanceolate ; fork cells long in female ; costa not markedly spinose.

GENUS CULEX.
Linnæus.

Proboscis with a tuft of hairs in middle.

GENUS TRICHOPRONOMYIA.
Theobald.

b.b. Scutellum with narrow curved and spatulate scales.
Wing : fork cells short.

GENUS GUALTERIA.
Lutz.

c.c.c. Wings : lateral vein scales elongated broadish
Fork cells long.

1. Brown species .. .. .. GENUS TAENIORHYNCHUS.
Arribalzaga.

2. Yellow species .. .. .. GENUS CHRYSOCONOPS.
Goeldi.

c.c.c.c. Wing : lateral vein scales large broad asymmetrical

GENUS MANSONIA.
Blanchard.

II. Legs with femora swollen apically and basally
Head : narrow curved scales on middle flat scales at sides only

GENUS MELANOCONION.
Theobald.

To the Genera above described two new ones will probably fall to be added. One is a domestic species which comes near Gnophodeomyia, but has the femora swollen apically and basally as in Melanoconion. I have sent specimens to Mr. Newstead, of Liverpool, and await his opinion. The larvae are found in houses, in cisterns and bath water and the adults have a peculiarly disrespectful affection for tender integuments, the lips, nostrils or other exposed mucous membrane receiving their attention. The name Asebeomyia would be proper for this new genus. Into this genus will also come my *Culex epira* (B.G. Medical Annual for 1908, p. 8). The other is a near ally of Culicelsa, specimens of which I received from Mr. W. H. B. Moore. I should place it in this genus but for the long first forked cell of wing. The larva which have also been kindly sent me by Mr. Moore show a peculiar development of the maxillæ which are armed at the apex with stout hairs curved at the ends quite differing in this respect from any culicine larva I have seen. The long narrow syphon is also distinctive in being armed with five spine like chaetae on one side near the apex, a tuft of fine hairs on the other side. In some respects this larva is similar to Pectinopalpus fuscus Theobald ? (1) as figured by Mr. Wesche from larvae collected at Lagos by Dr. W. M. Graham. (Bull. Ent. Research. Vol. I, No. 1, 1910. Plate II.) The adult in shape of femora and wing scales comes near Culicelsa, and the thoracic ornamentation is like *annulirostris* Skuse ; but the wing venation separates it from Felt's genus.

Genus Janthinosoma. Arribalzaga.

Three species are recorded from the colony. The character by which this genus is easiest identified is the proportionately very long narrow upright scales fimbriated rather than forked, and the large spindle shaped-scales on the head

a. Last two hind tarsals white.

Head bright honey yellow.
Thorax with scattered yellow and bronzy scales .. .. 1. *Sagi*, Theobald.

(B. G. Med. Ann., *1905*, pp. 16, 27, 36. *1906*, 66, 72, 75.)

Head golden, purple at the sides.
Thorax with broad yellow scaled lateral areas .. .. 2. *Lutzii*. Theobald.

(B. G. Med. Ann., *1905*, pp. 16, 27, 36. *1906*, pp. 66, 72, 73, 75.)

a.a. Last hind tarsal white.

Thorax with scattered bronzy and yellow scales .. .. .. 3. *posticata*, Wiedemann.

(B. G. Med. Ann., *1908*, pp. 6, 22.)

J. *sagii* is the *musica*, say, of former notes on the B. G. mosquitoes. Probably J. *albipes* which differs from *lutzii* in having creamy scales instead of yellow on the lateral thoracic areas is also to be found in the colony.

Genus Psorophora. Robineau-Desvoidy.

One species only is known here.

Psorophora Scintillans. Wiedemann.

Hind legs with apex of femora white scaled

The largest of the Culicine mosquitoes found here. Found on the Demerara river by Dr. Wise.

Genus Stegomyia.

One species and the variety *luciensis* have been identified. From Yupukari specimens came which showed points of difference from Fasciata, but their condition when I examined them was not such as to warrant separating them. (B. G. Med. Ann., *1908*, p. 7.)

Legs basally banded. Last tarsal segment all white.

1. *fasciata*, Fabricius.

(B. G. Med. Ann., *1905*, pp. 16, 26, 31, 36. *1906*, pp. 67, 73, 74. *1908*, pp. 19, 71.)

Last tarsal segment white with a black band at apex.

2. *var. luciensis*. Theobald.

(B. G. Med. Ann., *1905*, pp. 16, 36. *1906*, p. 71.)

Note.—The name *fasciata* is still retained by Mr. Theobald although Villiers' Culex fasciatus (1789) antedates Fabricius' use of the name. The type of C. fasciatus Villiers is lost and the description too vague to be of use, so that Mr. Theobald thinks that species had best be set aside, and as the identity of Meigen's *calopus* is doubtful retain the name for *C fasciatus*, Fab., especially as this mosquito is so universally known by that name.

Genus Gnophodeomyia. Theobald.

This genus is formed for a mosquito found in Berbice and bred from larvæ by Dr. Rowland and the writer. It is so far the only known representative of the genus. Messrs. Dyar and Knab have restored it to the genus Culex under the name *C. aikenii*. (B.G. Medical Annuals *1905*, pp. 25, 29, 32, 34. *1906*, pp. 60, 69, 71, 72, 76. *1908*, pp. 9, 10, 23.) V Scutellum with narrow curved scales all over, and six bristles on mid lobe 3-3 on each side of a bare space in middle.

Gnophodcomyia inornata. Theobald.

Messrs. Dyar and Knab have separated a species near above sent to them by Mr. H. B. Moore.

Genus Leucomyia. Theobald.

Our *Culex confirmatus* Arribalzaga (1891) has been removed to this genus and *scapularis*, Rondani (1848) identified with it. Possibly another species is local, that identified by Professor Howard as *Aedes Oswaldi* (*v.* B. G. Med. Annual, *1908*, p. 13.)

Leucomyia Scapularis. Rondani.

Legs unbanded, thorax with silvery scales in front, brown scales behind.

(B. G. Med. Ann., *1905*, pp. 18. 27, 36. *1906*, pp. 68, 75. *1908*, p. 10.)

Genus Culicelsa. Felt.

One species occurs in the colony. The genus was founded on our common *C. taeniorhynchus* Wiedemann.

Culicelsa Taeniorhynchus. Wiedemann.

Proboscis banded. Legs basally banded. Abdomen basally banded with lateral comma-shaped white markings on each segment.

(B. G. Med. Ann., *1905*, pp. 17, 26, 31. *1906*, pp. 65, 67. 68, 69, 72. 73. *1908*, p. 20.)

Genus Protoculex. Felt.

This genus was founded by Felt on our *C. serratus*, separated from Culex mainly on characters of male genitalia. Theobald adds to the definition the palp characters of female palpi 5 segments, male with 2 apical segments swollen.

Protoculex serratus. Theobald.

Thorax with broad median band of creamy broad curved scales and lateral brown narrow curved scales.

(B. G. Med. Ann., *1905*, pp. 17, 27, 29, 36. *1906*, pp, 68, 75, *1908*, p. 25.)

Genus Culex. Linæus.

The seven local species retained in this genus by Mr. Theobald are difficult to synoptise and vary greatly, but I believe most of the forms will find a place in the following groups.

A. Abdomen basally pale banded.

a. Scutellum with pale narrow curved scales. Head with pale border round eyes. Thorax with largish golden narrow curved scales. Legs with knee and tibial spot.

1. *fatigans.* Wiedemann.

(B. G. Med. Annual, *1905*, pp. 19, 27, 29, 37. *1906*, pp. 71, 72, 73, 74, 76. *1908*, pp. 11, 23.)

Thorax with small golden brown narrow curved scales. Legs yellowish apices of femora and tibia darker.

2. *flavipes.* Macquart.

(B. G. Med. Ann., *1905*, pp. 18, 37, *1906*, pp. 76. *1908*, p, 23.)

a.a. Scutellum with small brownish narrow curved scales. Legs with pale spots at apices of femora and tibia. Abdomen with bands which spread laterally on 6th and 7th segments.

3. *similis.* Theobald.

(B. G. Med. Ann., *1905*, pp. 25, 29, 30. *1906*, pp. 64, 76. *1908*, p. 23.)

Abdomen with bands on 2nd. to 5th segments only.

4. *palus.* Theobald.

(B. G. Med Ann., *1906*, pp. 65, 69, 76. *1908*, p. 23).

B. Abdomen unbanded but with basal lateral spots.

a. Scutellum with creamy narrow curved scales. Legs with tibial spot only.

5. *lateropunctata.* Theobald.

(B. G. Med. Ann., *1908*, p 11.)

a.a. Scutellum with brown narrow curved scales.

6. *scholasticus.* Theobald.

(B. G. Med. Ann., *1905*, pp. 18, 36. *1906*, p. 76. *1908*, p. 23.)

Legs unspotted.

7. *nubilus.* Theobald.

(B. G. Med. Ann., *1905*, pp. 18, 36. *1906*, p. 75. *1908*, p. 23.)

Mr. Theobald is not quite certain that *scholasticus* is really separate from *fatigans*.

A species of which I have seen only one specimen taken at Canefield, Canje, and of which the description has not yet been published, will have to be added. It is a very dark mosquito with abdomen basally banded and a tibial spot on the hind legs. The curved scales on the head are light bronzy colour and both black and ochraceous cuneiform scales are present.

Another new species comes also from Canefield, Canje Creek. Abdomen unbanded, with greyish lateral spots only seen in certain lights; hind tarsi with distinct ochraceous spots and fore with traces. It comes near *scholasticus*, Theobald, but the tarsal bands and absence of tibial spot distinguish it. The thorax has browny brown hair-like scales as also the scutellum. The first forked cell of wing is long, about 4—1 of stem.

In Messrs. Dyar and Knab's nomenclature *lachrimans* now stands for the local race of similis, the larva of which has some peculiarities; *cubensis* appears to be the West Indian type of *fatigans*, Wiedemann, found here, but Mr. Theobald declares our species identical with the widely dispersed insect. Dyar and Knab prefer the name *quinquefasciatus*, say, to *fatigans*, Wied., on grounds of priority; in replacing *Gnopodeomyia inornata*, Theobald, in Culex the name *inornata* becomes preoccupied by Williston's *Culex inornatus* and *aikenii* is transferred from above *lachrimans* to Theobald's *G. inornata*.

Genus Trichopronomyia. Theobald.

Two species are known, one occurs in the colony.

Trichopronomyia *microannulatus*. Theobald.

Proboscis banded and enlarged on apical half. Abdomen with basal median creamy yellow pots, last two segments with almost complete bands.

This species was described from a single male as was also the species *annulata* on which the genus is founded. I have not met with another specimen since the one bred from water taken from a pond in Stanley Town and sent to Mr. Theobald, and the female so far continues unknown.

(B. G. Med. Ann., *1908*, pp. 9, 23.)

Genus Taeniorhynchus. Arribalzaga.

Two species occur in the colony.

Legs basally pale banded. Abdomen unbanded, lateral pale spots Thorax dark brown, prothorax with saddle-shaped area outlined in golden scales, branching laterally in diagonal lines; mesothorax with two lines and a median patch of similar scales.

1. *fasciolatus* Arribalzaga.

(B. G. Med. Ann., *1905*, pp. 20, 37. *1906*, pp, 68, 76. *1908*, pp. 20. 24.)

Abdomen banded apically. Thorax rich brown golden scaled a paler V-shaped mark on each side.

2. *confinnis*, Arribalzaga.

(B. G. Med. Ann., *1905*, p. 20.)

Genus Chrysoconops. Goeldi.

This genus was separated from Taeniorhynchus to include a number of yellow species, the eggs almost rhombic in shape, the prevailing asymmetrical, wing scales and general appearance seem to justify their separation.

Chrysoconops fulvus. Wiedemann.

(B. G. Med. Ann., *1905*, p. 20, 29, 37. *1906*, p. 76. *1908*, p. 24.

Thorax yellow in front, darker behind. Abdomen ochreous, unbanded. Wings costa yellow, apex brown.

Genus Mansonia. Blanchard.

Two species have been identified here. *Tittilans* is the common coast species met with. *Fascipes* has been collected only in the interior at Omai. The larvæ of *tittilans* have been recently traced to their habitat by Mr. H. W. B. Moore and are similar in their way of life to those of *Taeniorhynchus perturbans* which Professor J. B. Smith found some inches deep in the mud and attached to the roots of water plants. Plants of the Pistia sp.p. are, Mr. Moore says, favoured by *tittilans*.

Proboscis banded. Thorax uniformly dark brown. Posterior border of wings with black and pale scales.

1. *tittilans*. Walker.

(B. G. Med. Ann., *1905*, pp. 20, 26, 27, 37. *1906*, pp. 68, 72, 73, 76. *1908*, pp. 13, 20, 24.)

Proboscis unbanded. Thorax with irregular line of pale grey scales laterally. Wings uniformly dark bordered.
2. *fascipes.* Coquillet.

(B. G. Med. Ann., *1908*, pp. 13, 24.)

Genus Melanoconion. Theobald.
Three species have been described from the colony.
Abdomen with lateral pale spots.
Pleurae black 1. *atratus.* Theobald.
(B. G. Med. Ann., *1905*, pp. 19, 29, 31, 34, 37. *1906*, p. 76. *1908*, pp. 20, 23.)
Pleurae yellow 2. *luteopleurus.* Theobald.
(B. G.Med Ann., *1905*, pp. 24, 25. *1906*, p. 76. *1908*, p. 23.)
Abdomen unadorned 3. *indecoribilis.* Theobald.
(B. G. Med. Ann., *1908*, p. 23).

To these will have to be added a new species I have recently separated in which there is an appearance of basal banding on abdomen and distinct tarsal markings.

Sub-Family Aedinc.

Three or, if Gualteria be included, four genera are represented here.

Table of Genera.

A. Legs densely scaled at apices of femora. Antennae 14 jointed, basal joint with scales. Thorax with broad flat spindle-shaped scales. Scutellum with broad flat scales. Wings with broad Mansonia-like and long lateral scales ; 1st forked cell with base nearer apex of wing than base of forked cell.
Head with upright fan shaped scales and small rather outstanding obovate scales.
1. Aedeomyia. Theobald.

B. Legs normal, no irregular scales.
a. Head with flat iridescent scales only ; palpi five jointed.
Wing with rather short fork cells.
2. Haemagogus. Williston.
Abdomen with cluster of blunt outstanding spines on the under side of penultimate segment.
Wing ; base 1st forked cell nearer apex of wing than base of 2nd forked cell. Palpi of male about half length of proboscis.
3. Cacomyia. Coquillet.

a.a. Head with flat scales at sides, upright scales in middle and spindle-shaped scales.
Wing : base of 1st forked cell nearer base of wing than base of 2nd forked cell.
4. Gualteria. Lutz.

Genus Aedeomyia. Theobald.
Of the two species described, one has been found here.
Aedeomyia Squamipenna. Arribalzaga.

Legs banded. Mid and hind femora with scale tufts.
(B.G. Med. Ann., *1905*, pp. 21, 28, 29, 31, 33, 38. *1906*, pp. 69, 72, 77. *1908*, p. 24.)

Genus Haemagogus. Williston.

One species found here.

Haemagogus Cyaneus. Fabricius.

Principal colours blue and dark violet.
Wing: 1st forked cell about twice stem, base nearer base of wing than base of 2nd forked cell.

In Proc. Ent. Soc., Wash. Vol. xi, 1909, No. 3. Mr. Knab proves conclusively that the type *Culex cyaneus* Fab. is a Sabethid. Williston's name *Splendens* therefore stands for this species. (B.G. Med. Ann., 1905, p. 21, 1906, p. 77. 1908, p. 24.)

Genus Cacomyia. Coquillet.

One species found here on Demerara River, Pomeroon and Canje.

Cacomyia Albomaculatus. Theobald.

Abdomen with median basal patches of white scales on last two segments.

(B. G. Med. Ann., *1905*, p. 22, 38. *1906*, p. 77. *1908*, p. 24.)

Genus Gualteria.

A specimen taken on the Dutch side of Corentyne, sent to Professor Howard, was identified by him as G. oswaldi. It may come in the Genus as defined by Lutz, but is almost certainly not his *oswaldi*. (*v.* B. G. Med. Annual, *1908*, p. 13, and sup. p .)

Sub-Family Uranotaeninae.

Of the nine genera included in this sub-family three very typical genera are found here, all small insects with brilliant blue and silvery markings.

Table of Genera.

First fork-cell very small.

a. Male ungues normal.
Wings with rounded white scales at root of 4th and 5th long veins.

1. Uranotaenia. Arribalzaga.

Wing with rounded white scales on base of 3rd. long vein and elsewhere.

2. Pseudo-uranotaenia. Theobald.

a.a. Male ungues broad and plate-like.

3. Anisocheleomyia. Theobald

Genus Uranotaenia. Arribalzaga.

Four species have been described from the colony. A new species near *Geometrica* and one or two others occur but have not yet been worked out. (B. G. Med. Ann., *1906*, p. 69).

Table of Species.

A. Legs banded. Thorax with median line of flat blue scales.

1. *Pulcherrima.* Arribalzaga.

(B. G. Med. Ann., *1905*, pp. 28, 29, 31, 33, 38. *1906*, p. 77. *1908*, p. 16.)

Thorax with narrow curved brown gold bordered scales and spot of pale blue scales near scutellum. Abdomen with lateral triangular pearly patches.

2. *geometrica.* Theobald

(B. G. Med. Ann. *1906*, pp. 63, 69, 77. *1908*, p. 24.)

B. Legs unbanded.

Thorax with silvery blue spot at base of each wing.
Abdomen with apical pearly blue spots.
Two and a half tarsi of hind legs white.

3. *lowii*, Theobald.

(B. G Med. Ann., *1908*, p. 14, 15, 16, 25.)

Thorax with azure blue scales at front of root of wings.
Abdomen with apical pale blue spots.
Two and a half tarsi of hind leg white, in some lights dusky.

4. *minuta.** *Theobald.*

(B. G. Med. Ann., *1908*, pp. 15, 16, 25.

Genus Pseudo-uranataenia. Theobald.

Founded on specimens taken in Berbice. One species found here.

Pseudo-uranataenia rowlandii. Theobald.

Wings with creamy white spot on costal border.

Thorax with scales similar to *Geometrica.* Abdomen unbanded.

(B.G. Med. Ann., *1905*, p p. 25 28. *1906*, p.p. 61, 77. *1908*, p. 24.)

Genus Anisocheleomyia. Theobald.

Anisocheleomyia leucoptera. Theobald.

One species bred from larvae from a pond in Stanleytown.
Head with dark flat scales violet reflections.
Thorax brown scaled in middle, silvery.
White outstanding scales at sides.
Abdomen with white median patches.
Wings white with costa brown at base and brown area at cross veins.

(B.G. Med. Ann., *1908*, p.p. 16, 24.)

* I give the diagnosis of *minuta* and *lowii* as in Mon. Cul. V. 498-499 Theobald, but as pointed out in B.G. Medical Annual 16th year p.16 (1908), I cannot distinguish two species. The close similiarity is apparent in the above synopsis.

Sub-Family Trichoprosoponinae. Theobald.

Table of Genera.

Palpi of female nearly one-third length of proboscis; of male about same length.

a A conical blunt processs between eyes and clypeus. Proboscis long.

1. Runchomyia. Theobald

a.a. Conicial process absent.

b. Clypeus with hairs.

Metanotum with chaetae and scales.

Proboscis moderately long.

2. Trichoprosopon. Theobald.

Proboscis long and thin.

3. Joblotia. Blanchard.

b.b. Clypeus without hairs. Proboscis short, thick aaically expanded.

4. Goeldia. Theobald.

Genus Runchomyia. Thoebald.

Of three species described one occurs in the colony: one described from the Philippines by Giles is, according to Theobald, doubtful. The distinguishing character is the blunt prominence on the frons.

Runchomyia frontosa. Theobald

Head with flat scales, brown and violet.
Antennæ bassal joint plug-shaped. Proboscis as long as body.
Wings with large broad brown scales and some long ones.

(B.G. Med. Ann. *1905*, p.p. 23, 38. *1906*, p 77. *1908*, p. 25)

Genus Trichoprosopon. Theobald.

In this genus Theobald seems to include Joblotia (Blanchard) although his synoptic table appears to distinguish them. (M. Cul., Vol. V, p. 554.) The Genus Joblotia was formed from *lunata* by Lutz on the absence of hairs on the clypeus, but is replaced by Theobald in Trichoprosopon in his Vol. V, (*v.* p. 557); the note in that reference is contradicted by his note on Lesticocampa id,, p. 621, which replaces *lunata* in Joblotia!! A Joblotia sp. was identified amongst specimens collected at Yupukari, and sent by Dr. Wise to the London School of Medicine. I have not seen a description of the species which was reported to be new. (*v.* B. G. Med. Annual, *1908*, p. 4.

Genus Goeldia. Theobald.

One species found by Dr. Low on the Demerara river and by Dr. Lutz in Brazil is the sole representative of the Genus.

Goeldia fluviatilis. Theobald.

Head with flat scales and black upright scales at nape.
Thorax with bronzy narrow curved scales, some broader scales near root of wing and in front of scutellum.
Wing with pale spot at base.

(B. G. Med. Ann., *1905*, p. 23. *1906*, p. 77. *1908*, p. 25.)

Sub-Family Dendromyinea. Lutz.

Eleven genera are now included in the sub-family, four of which are represented in the colony.

Table of Genera.

Legs with paddle-like structures.

1. Sabeethes. R. Desvoidy.

Legs without such structures.
Wing: lateral vein scales linear.
Proboscis shorter than body, swollen at apex.

2. Myeomyia. Theobald.

Proboscis equal in length to abdomen, not swollen.
Wing: lateral wing scales broadish asymmetrical. Posterior and mid cross veins in one line.

3. Sabethoides. Theobald.

Proboscis swollen apically.
Mesonotum: scales dusky metallic.
Clypeus without scales.
Wings with broad symmetrical lateral scales.

4. Dendromyia. Theobald.

The Genus *Dendromyia* from which this Sub-Family takes its name was formerly stated by Mr. Theobald to be very closely allied to *Runchomyia*, one of the Trichoprosoponinae but he has now adopted Lutz's classification in which these genera are placed in different sub-families.

Genus Sabethes. Robineau-Desvoidy.

Two species have been found in the colony.
Mid legs only with paddles. *remipes*. Wiedemann.

(B. G. Med. Ann., *1905*, pp. 23, 38. *1906*, p. 77. *1908*.)

All legs more or less padled. *longipes*. Macquart.

A specimen kindly procured for me from Essequibo River by Mr. R. O. H. Spence, of the Lands and Mines Department, differs in several points from *longipes* Macquart (Theon. Mon. Cul., I, 250, III, 3-7.) It has paddles on all legs shaped as in *longipes* but the mid paddle has white outstanding scales only at appex; the silvery white base of tibia and the tarsal white markings show all round; the foreleg has absolutely no white scales, the hind tarsi show distinctly light coppery brown, the metanotum has two rows of white scales, the posterior and mid cross veins of wings are almost in a line. The probosis is only slightly swolen apically. This is probably *S. Ochausi* D and R.

The type of S cyaneus in Copenhagen Museum is clearly proved by recent investigation to be identical with S. remipes which should therefore be known as S. cyaneus (*v.* note supra H cyaneus and reference to Mr. Knab's paper in proc. Ent. Soc., Washington.)

Genus Wyeomyia. Theobald.

A species from the colony has been identified as *melanocephala* by Messrs. Dyar and Knab. I have not yet seen the description which was published in the Proceedings of the Biol. Socy. of Washington, Vol. XIX, p. 140 (1906).

Genus Sabethoides. Theobald.

Abdomen metallic green, mauve, purple, blue, white and yellow; white lateral spots; venter yellow. Legs. 1st to 3rd tarsals of mid leg silvery underneath.

confusus. Theobald.

(B. G. Med. Ann., *1905*, pp. 23, 38. *1906*, pp. 65, 77.)

As above but without lateral white spots on abdomen.

undosus. Coquillet.

(B. G. Med. Ann., *1906*, p. 65. *1908*, pp. 17, 25.)

Genus Dendromyia. Theobald.

Four species occur here, the genus was founded on *ulocoma* and *assulepta* found by Dr. Low on Demerara river. It is allied to Wyeomyia and differs mainly in the wing scales which are broader and sometimes asymmetrical.

Table of Species.

A. Prothoracic lobes golden scaled.

Prothorax with two dark areas.
Abdomen dusky brown; venter, ochreous.

(B. G. Med. Ann., *1905*, pp. 22, 38. *1906*, p. 77. *1908*, p. 25.)

Asullepta. Theobald.

B. Prothoracic lobes not golden.

Abdomen dusky black. 1st segment violet reflections: yellowish venter.
Thorax unadorned.
Head with white line round and between eyes.

luteoventralis. Theobald.

(B. G. Med. Ann., *1905*, pp. 22, 38. *1906*, p. 77. *1908*, p. 25.)

Hind metatarsus longer than tibia.

quasi-luteoventralis. Theobald.

(B. G. Med. Ann., *1905* pp. 22, 38. *1906*, p. 77. *1908*, p. 25.)

No white line between eyes.

B.G. Med. Ann. *1905*, pp. 22, 38. *1906*, p. 77. *1908*, p. 25.

ulocoma. Theobald.

Sub-Family Limatinae.

One genus only is known, and occurs in Brazil and in the colony.

Genus Limatus. Theobald. One species only.

Limatus durhamii. Theobald.

Proboscis elbowed a tuft of scales at the bend, another at apex, some bristles at the base ventrally.

Mesothorax with rich purple scales and ⊥ shaped golden median lines in front.

Wing: lateral scales broad rather asymmetrical; base of wing pale yellowish.

Abdomen almost black, basal lateral white spots

Identified by Professor Howard in a collection from Rupununi. (v. B. G. Med. Ann. *1908*, p. 18.)

"THE NOMENCLATURE OF GEORGETOWN."

AN INTERESTING BIT OF HISTORY.

Mr. R. O. H. Spence, Chief Clerk of the Department of Lands and Mines, Georgetown, writes to the Editors under date 31st May, 1911, as follows :—

Anent the statement by Mr. Luke M. Hill, in his interesting paper on "The Nomenclature of Georgetown," published in No. 1, Volume I, New Series of *Timehri*, January, 1911, to the effect that Mr. Thomas Cuming, the former proprietor of Cumingsburg or Plantation La Bourgade, made a free gift to the town of the plots of land known as the Militia Parade Ground, and the Promenade Gardens, at the time this estate was laid out by him in streets and lots in 1807, I would crave your indulgence to state the following facts which may be of assistance to the historian in years to come, which came to my knowledge a few years ago, in the course of official investigations with regard to what is now known as the Promenade Gardens to the north of Middle street and the Parade Ground to the south of Middle street, between Carmichael street and Waterloo street :—

The old portion of the Promenade Gardens consisting of ten lots and the Parade Ground also consisting of ten lots all lying immediately adjacent to Middle street, were originally known as the "Parade Ground," and in 1848, as can be seen on reference to C. R. Player's General Plan of Georgetown of that year founded on Hilhouse's chart of 1824, the Government Observatory stood in the centre of the ten lots to the south of Middle street, that is, in the open space now called the Parade Ground.

Major General Hugh Lyle Carmichael, acting Governor of Demerara and Essequibo, informed the Court of Policy, on the 30th October, 1812, that he had "thought proper to accept the proposal of the Honourable Thomas Cuming to grant the occupancy of sixteen lots (in the Cumingsburg District and shown on the General Charts, sub-numbers 116 to 123 and 144 to 151 inclusive) as a place for parade, and if it should be thought proper afterwards for certain consideration, for public buildings, and that he had directed the land to be converted into a Parade Ground and would pay for it out of the King's Chest."

Mr. Thomas Cuming died at Elgin, Scotland, a short time after this and his Will dated 5th November, 1812, was deposited and proved in the Registrar's Office, Georgetown, on the 26th June, 1813. No mention whatever is made in this Will of the "Parade Ground."

Four more adjacent lots were evidently added to the sixteen above referred to, and on the 11th April, 1817, Charles Wilday (who was also Clerk to the Court of Policy at the time), special attorney of the heirs of Thomas Cuming, deceased, appeared before A. Dalzell and H. Halket, Counsellor-Commissaries of the Honourable Court of Criminal and Civil Justice of the Colony of Demerary and Essequibo and "declared to cede, transport and in full and free property, to make over to, and on behalf of the Colony of Demerary twenty lots of land,

situate in Cumingsburg District known, Sub Nos. 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 143, 144, 145, 146, 147, 148, 149, 150, 151, and 152, being all that parcel of land called "Carmichael Square." Acknowledging to be fully paid and satisfied for the same, engaging to warrant the said property free, from all claims whatsoever, according to law."

In April, 1818, the Board of Police, which at that time took the place of our present Town Council, requested the Court of Policy to give the necessary orders for the transferring and placing the square of lots in Cumingsburg, lately *purchased* by the Colony, in the name and under the control of the Board, on condition that the town should bear the expense of draining and improving it, the whole to form a Parade Ground and Public Walks, and it was resolved—"To give over all right and title to the said twenty Lots in payment of the sum of 900 (9,000?) guilders by the Board (half the original cost) and on condition that the Board will carry into effect the proposed laying out the said square into a Parade Ground or Public Promenade." It does not appear that the 9,000 guilders were ever paid by the Board of Police to the Colony, as at a meeting of the Town Council held on the 5th November, 1850, the Mayor said the question was, had they ever got a transport for the land? He knew that no part of the money had ever been paid.

I could add further particulars but the foregoing, I think, proves conclusively that Mr. Thomas Cuming did not "make a free gift to the town of the plots of land known as the Militia Parade Ground and Promenade Gardens."

SOME LINES OF PROGRESS.

ADDRESS BY THE PRESIDENT AT THE ANNUAL GENERAL MEETING OF THE R. A. & C. SOCIETY—JANUARY 26, 1911.

Your Excellency, Ladies and Gentlemen,—It is usual for the incoming President to deliver an inaugural address. This is a custom which, if it were possible, I should prefer to honour in the breach rather than in the observance owing to the pressure of the recent Criminal Session combined with other work. If, therefore, my paper produces any brood at all in the shape of ideas they will be rather like those of Dr. Johnson's conversation; that is to say, without a rag to cover them. I think the Society cannot sufficiently express its thanks to the outgoing President (Mr. T. A. Pope, B A., the respected Head of Queen's College) who stepped into the breach at what appeared to be the lowest ebb of the Society's fortunes and carried on the work during the past year. Only those who were more intimately concerned with the work of the revival of the Society can fully appreciate how much is owed to his continued activity and interest, and to his successful application of the *suaviter in modo* and the *fortiter in re* to what appeared to be a hopeless situation.

THE YEAR REVIEWED.

During the year the Society shared the grief of the whole civilised world at the death of King Edward VII., the greatest English Sove eign since the first of his name. Our expression of sorrow was conveyed in an address illuminated by Lieutenant Carroll. An enlarged photograph of this address hangs at the entrance to the Reading Room as a more or less permanent record of a remarkable and beautiful work of art, the labour of love of a very busy man. It was conveyed to the proper quarter by the Hon. B. Howell Jones, and His present Majesty acknowledged it in a gracious letter. He has since been pleased to accept the responsibility of patronage, following the example of King Edward and of Queen Victoria.

In my opinion the Society can look back upon the year's work with satisfaction and can look forward to the coming year with hope and cheerfulness. We begin the session with nearly five hundred members, associates, and lady subscribers. Of these about 130 joined our ranks during the past six months, many of them being representative in a special degree of the agricultural and commercial interests. We lost many associates with the opening of the Free Library, but they are beginning to return. To the efficient Librarian of that Institution, Miss Murray, we owe our thanks for co-operation, advice and assistance at all times. She recognises that there is no necessary rivalry of her useful institution with our larger scheme, and that they serve kindred but not identical purposes of public utility.

Our finances are in a sound condition and we have no debt or deficit. With the subscriptions from the increased membership much can be done to effect improvements and to place the Society on a proper working basis. We have at last obtained

from the Government and Town Council a very moderate rent for a tower which we had specially constructed for them at our own expense as a fire watch and signal station. On the principle, I suppose, that from him who hath little much shall be taken, this rent had remained unpaid for many years, nor would an attempt to press for arrears be likely to be received with enthusiasm. Still Providence at last has tempered the wind to the shorn lamb and we have to thank the Town Council for its kindly recognition of the educational work of the Museum by remitting the taxation on part of that building.

Improvements to the Society.

After the united efforts of Miss Murray and myself had removed a certain ancient and decrepit door-mat, bristling no doubt with microbes, to which the Society had long clung for some sentimental reason, many changes poured in during the year. A suggestion book was started and proved fruitful in ideas. A permanent electric lighting installation was placed in the Museum and more recently extended to the economic section. Lights were also placed at both entrances. Two bicycle stands were provided. Both of these additions we owe to private benefactors. Four notice boards now announce the identity of the building to a forgetful world. A second stairway now leads to the upper galleries and affords an extra entrance to the Museum. Ladies' and gentlemen's dressing-rooms are nearly completed with proper equipment of lavatories, and the former gentlemen's room is being arranged as a smoking and card room. The want of a quiet corner for an occasional chat has long been felt, and will be thus supplied. The Secretary's room has been thrown open and provides a large, well-lighted, and airy but more or less secluded corner, where in the intervals of the infrequent meetings of committees, ladies and others can play draughts, chess, or other games for which materials are forthcoming. Three writing places with note-paper and envelopes with the Society's heading have been provided. The Society is the fortunate possessor of a complete set of the beautiful publications of the Arundel Society reproducing the master-pieces of religious art. Many of these have now been arranged around the galleries and the remainder are in a good position in the entrance hall of the Museum. We are endeavouring to secure a series of lectures on the schools of painting and subjects represented. This alteration has involved the relegation to a less conspicuous position in the Museum of five interesting engravings, the presentation of a former President, dealing with company promoting in various stages from the office of subscription through the gilded halls of high finance to Massaruni Penal Settlement. No doubt it will continue to be as efficacious a deterrent in its new position as it has been in the old.

Lantern Lectures.

The Society owes its thanks to Mr. Leechman for manipulating the magic lantern at two lantern lectures by the Hon. Sir T. Crossley Rayner on West Africa, and by Mr. T. A. Pope on Egypt and India. We are counting upon the assistance of his clever pen for future numbers of "Timehri." We have also to thank His Excellency Sir F. M. Hodgson and the Chief Justice, Sir Henry Bovell, for presiding, and we appreciate highly His Excellency's presence at this our first general meeting of the year. On Monday, 30th January, we shall have the unique

opportunity of seeing the slides illustrating Sir Crossley Rayner 's trip to Kaieteur which he has prepared for the Society's benefit with great labour and care during the evenings of several months past. We can only show our appreciation of the learned Attorney-General's kindness and public spirit by providing an overflowing house at Monday's conversazione at what is certain to be a most instructive demonstration of the colony's possibilities from a scenic and commercial standpoint. The Hon. C. T. Cox, Government Secretary, will preside. In future the lantern lectures will occur at more frequent intervals.

I am glad to be able to lay on the table the first number of the revived "Timehri," the historic journal of the Society. You will note its new attractions in cover, paper, printing and illustrations. In the contents we may not be able to equal the achievements of the giants of an elder time, but you will note that Mr. J. J. Quelch, the former curator and editor, has not renounced his old allegiance, and that we publish papers by Mr. Luke Hill and Mr. Rodway. With Mr. Hill neither the Society nor "Timehri" will consent to lose touch, and as Honorary and Corresponding Member he will keep us informed of the larger life of the mother countries.

Practical Questions.

On the scientific side, the Society has been not unfruitful and several learned papers were read at the general meetings and many serious subjects discussed. Amongst other events, the Agricultural Committee considered the Polders Bill and the Commercial Committee nominated Mr. Delafons as its representative at Barbados to the Mail Conference. As you are all aware, the Conference was largely instrumental in the restoration of a direct mail service with Great Britain, the headquarters of our business firms, and to which we are bound to look for capital and fresh blood for many years to come. Any assistance which the members and officers of the Society have been able to give to the furtherance of commercial preference and other interourse with Canada has likewise been freely given. The officers of the Society have also been active in connection with the proposed Agricultural Conference in which the Hon. B. Howell Jones and the President will represent us. This will now take place in August, and the Society will receive it with a conversazione and with lantern lectures on rubber-growing in the East and West by Dr. Cramer of Surinam and Mr. Stockdale of the Agricultural Department. No doubt a further attractive and instructive programme to illustrate the colony's scenic and commercial possibilities will also be arranged in the interval. We had hoped that the projected visit of a large body of Canadian merchants would occur about this time but this also has been postponed. Should it occur later no doubt we shall be in a position to receive them here with the characteristic hospitality of the ancient colony.

The Library.

In regard to the literary work of the Society, the Book Committee has been busy as becomes a department which is mainly responsible for the survival of the Society through the vicissitudes of sixty-seven years, and the lassitude and mental inertia which are supposed to be inseparable from a tropical climate. Several

hundred volumes of general literature have been added to our 30,000 volumes. The list of magazines has been revised and increased. Economies have been effected where possible without touching efficiency, *e. g.*, in the substitution of the tri-weekly for the daily " Times " which creates a natural sentimental grievance. There is, however, every pr spect of much larger funds being available this year for books, magazines, and journals, and such heroic measures may be no longer necessary. The " Deutsche Rundschau " and " Revue de Deux Mondes " have alas ! long since disappeared as well as the " Dublin Review " and " Guardian." But better times are perhaps in store. A regular monthly supply of the leading serious publications and the best novels as they are issued is now procured from the Times Book Club, and numbers are added on the arrival of each mail through independent suggestion of members and purchases locally or in England. Many gifts of books and magazines continue to be made, and we trust that this excellent practice may continue.

Having detained you at unexpected length on our recent attempts, I must turn to the proper subject of my address which will fall naturally under the headings of

SUGGESTIONS FOR THE CONSIDERATION OF THE CORRESPONDENCE, BOOK, MUSEUM, AGRICULTURAL AND COMMERCIAL COMMITTEES, RESPECTIVELY.

In regard to the first mentioned, it is clear that the re-issue of " Timehri " will enable it to get into closer touch at once with the scientific and other learned societies of Europe and America. For years past this Committee has been paralysed by having no publication of the Society's proceedings to offer in exchange for the records of other gatherings of the learned and the practical. Correspondence under such circumstances tends to languish and comes to be regarded as selfishly unilateral. We must not expect too much from human nature. A hundred copies of " Timehri " will be easily disposed of in reviving such intercourse with the activities of British and Foreign associations.

Literary Stagnation.

In regard to the Book Committee I would suggest the consideration of the promotion of a Literary or Literary and Debating Club or Union holding evening meetings fortnightly or monthly. University extension lectures such as afford a healthy mental stimulus in English towns are hardly possible here, and the papers read at the general meetings are necessarily of too scientific or practical a character to interest any but the pundits of the sterner sex and attract the ladies not at all. When one knows that in the United States, North or South, even where the climate is hotter than here, as is the case in parts of the Mississippi Valley and along the Gulf of Mexico and the Sea Islands, there is not a prairie or mountain village without its well organised literary society, one feels that Georgetown is not doing as much as it ought to save its intellectual soul alive. Few opportunities of discussing any subject of art, letters or Imperial politics exist, and an appalling listness prevails on such subjects. What leisure can be spared from the problems of sugar, rice or balata, is absorbed by guessing teas or bridge. The latter is a far more virulent disease here than it has ever been in London,

where outside of the clubs it is beginning to sound the provincial note of ping-pong. In the States the practice of many of these literary gatherings is to select for the season's, generally the winter's study and discussion, some particular subject such as a country, a writer or a movement. A line of reading is planned, a list of authorities furnished and a syllabus printed. The theme is considered in all its branches. Following the advice of Edmund Burke they go patiently round and round the subject and survey it minutely under every possible aspect. The meetings are always social functions, and light refreshments and music vary the more serious occupations. Perhaps it might be possible to form such a club here which might begin with a study of the elementary geography of the colony.

The Museum.

The Museum Committee has a vast field of work before it and I am sure will rise to the opportunities afforded by the new conditions. Owing to the success of an appeal recently made to the planters and to the agricultural and mining community generally to join our ranks in larger numbers the Society is now more representative of those interests than has been the case for many years. The Museum Committee should receive new strength and life from added support and interest in its operations in those quarters. The economic section contains the nucleus of a great educational institution. Much unobtrusive work has been done by Messrs. Rodway and Moore following up with steadily diminishing resources the achievements of Messrs. im Thurn and Quelch. A thousand visitors weekly testify to its public utility and the unadvertised lectures given to conducted parties of juveniles and others have neither recognition nor direct reward. The number of people who are ignorant of the existence of the Economic Section, separated as it is by a gallery from the Natural History Section in another building, would probably include nearly every head of a Government department, senior official and company manager in the colony. The large room under this section is now being cleared out by the sale of the magazines for storing which it has been chiefly used, in addition to housing a few live specimens like the present pythons. We have ample space for future economic studies and the display of specimens. The new conditions should leave larger funds at our disposal, as the savings from the municipal taxation will be devoted to Museum purposes and the Society itself may be in a position to enlarge its contribution.

Extra Money Wanted.

Needless to say, the Government grant pays only some essential expenses including one-third of the Curator's salary and the Land Tax repayable to the Crown while the burden of the general upkeep of this great public institution is borne by us. We have, however, boldly demanded the modest sum of an extra $500 for this purpose with especial reference to our intended series of popular demonstrations and the study of the pests of economic plants. The proposed Government mycologist or biologist will require a Museum and a lecture room. We offer to place both at the disposal of the Government and to co-operate in every way to secure their full utilisation. We are now working in touch, as

far as possible, with the Agricultural Board from which through its learned head, Professor Harrison, the officers of the Museum have at all times received kindness, courtesy and assistance.

Much has already been done in the collection of entomological, zoological and botanical specimens. The life history of nearly all the pests prevalent in the colony can be traced but the advice of a recent friendly writer as to offering short notes explaining how to recognise and above all to destroy them remains yet to be taken. The various balata and rubber firms have also promised to help us in providing a large case illustrating in the most complete manner with photographs and specimens all the processes of those industries. It will be for the committee to see that promise carried into practical effect and to secure similar assistance from the sugar, rice, mining, timber, and other concerns.

I may mention that the officers of the Lands and Mines Department have offered their cordial co-operation, which will be invaluable towards this end. With improved funds the Museum should play a most important part in the agricultural education of the colony.

Maps.

For the Agricultural Committee I may begin by directing their attention to the urgent necessity for the provision of complete and reliable maps of the colony. In that respect this is the most backward of British communities. Private enterprise has produced very attractive pocket maps like those of the "Argosy" and "Chronicle" publishing houses, highly creditable to both firms, but they do not pretend to be more than a general indication, and the explorer or miner or forest-ranger could not trust himself to any of our present productions. The older maps are vain as a dream from the ivory gate. A proper cartographical survey of the colony remains to be made, and this will cost money, which the citizens must be prepared to spend for such an indispensable requirement. Recent bad times has caused all progress in this respect to be stopped, a ruinous form of economy on the part of the Combined Court in view of the fact that our chief asset is the forest and land which are thus allowed to remain partly shrouded in a pall of mystery. The Government geological map stops with the northern part of the colony, and it is for the Agricultural Committee to emphasise the necessity of completing it even if money has to be borrowed for the purpose. The Lands and Mines Department have done excellent work with very small resources but to expect it to issue even plane table maps without a suitable surveying staff and funds to pay it, is to expect bricks without either clay or straw. Maps of the colony and of all South America should be readily procurable here at a cheap rate. They should be in every Government and private office and in every home. If this were done the problem of the interior would come from the realm of myth to that of ascertainable fact.

Trade and Tourist Possibilities.

In a question closely connected with this, the Commercial Committee is more immediately interested, viz., that of our intercourse with adjoining countries.

With Surinam there is a direct communication through Sprostons' steamers and the Dutch fruit boats, and owing to that colony's similar development (or lack of it) to our own, not much further can be hoped for at the moment.

But the organised, more or less settled, and undoubtedly progressive republics of Brazil and Venezuela are as far removed from our commercial horizon as Japan or China. This is a fact not very creditable to our local enterprise. Colonel Monagas, the Venezuelan Consul, has been kind enough to promise us for the next "Timehri" which will appear, God willing, on July 1st, a paper on "Trade Relations and Communications with Venezuela." We also hope to secure more than one authoritative essay on the possibilities of relations with Brazil.

Possibly the beautiful slides of the Attorney General's Kaieteur trip may revive again that favourite project of our respected director, the Hon. B. Howell Jones, viz., a Sea Wall tourist hotel. His Excellency's interest in the scheme took the practical form of the offer of a grant of a choice of sites on the Sea Wall. I have no doubt that existing vested interests could be so dealt with that a hotel of sixty rooms could be kept going all the year round by some thirty or forty homeless persons like myself in constant residence and would make a handsome profit by attracting tourists to the colony during the five months of the European and American winter and early spring. Worked in sympathetic relations with the Royal Mail tourist system, advertised by attractive illustrated handbooks (such as Mr. Goring, Manager of Sprostons, Ltd., and Mr. Gonsalves, the enterprising maitre d'hotel of the New Victoria Hotel, have recently issued), utilising the powerful machinery of Sprostons to make a stay in the colony attractive and possibly assisted by the establishment of inexpensive dak-bungalows or rest-houses at Suddie, Bartica, Whim and Kaieteur, there is little doubt that ten per cent. or more on a capital of $75,000 would be easily forthcoming. I assume, however, the indispensable existence of a trained hotel keeper and an efficient lady housekeeper.

INADEQUACY OF THE ROMAN DUTCH LAW.

An Anachronism.

For the Commerical Committee no more serious or pressing subject could present itself than the consideration of he suitability of our present common law for existing requirements and possible developments of trade. The law of a country affects it in all its commercial relations at home and abroad. Any difficulty or uncertainty in regard to its incidence, especially in regard to the enforcement of contracts, hampers commerce in a manner almost inconceivable. Capital is a shy bird and as nervous of a law-suit as it is of a revolution. At the cession of Demerara, Essequebo and Berbice to Great Britain on 22nd July, 1815, the Roman-Dutch system was retained although during the occupation of the Nethe lands by France in the great war just concluded it had given place at home to codes based upon those of the great Napoleon. Those codes were retained after Waterloo and now prevail in the neighbouring Dutch colony of Surinam. Most of the countries of Europe and Louisiana in the United States have adopted codes of a similar character.

Development of Roman-Dutch Law.

Roman-Dutch law is a system which came to its highest perfection in the 16th 17th and 18th centuries and at the beginning of the 19th ceased to develop owing to its bolition in its nursery, the great Dutch law schools of Utrecht and Leyden and the Supreme Court of the Netherlands. It grew up through the grafting of the Teutonic provincial and tribal customs upon the Roman law of the Emperor Justinian which had been introduced into the Netherlands by sovereigns imbued with the traditions of Roman imperial administration and by ecclesiastics anxious to advance the religious influence of Rome. Feudal law from its home among the Franks of France and canon law, which may be said to be almost entirely Roman, affected it in later times. The Placaats or Ordinances of various Sovereign authorities modified it, generally in the direction of the Roman tradition, and in many cases still hold good. Purely Teutonic customs of great importance, however, continued to survive; notably community of goods and the rules of inheritance on intestacy.

Finally a remarkable body of able Jurists, professors at Leyden or Utrecht or practitioners of the courts, brought together this agglomeration into a more or less coherent and systematic whole. These may be said to begin with Grotius in the 16th century. They reached their greatest authority in Voet in the 17th and their line closed with Van der Keesel and Van der Linden in the 18th and early 19th centuries. I had almost said they sang their swan song with the last two, but one cannot associate music in any form with the terse, sober, and unimaginative pronouncements of these mighty men. This was the most remarkable body of Jurists the world has ever produced since the days of the great lawyers of the Roman Empire. Their work was either the outcome of their own University lectures like the productions of Voet, Van der Keesel and Matthæus or was a compilation of the opinions of the leading practitioners of the writers' time like the Hollandsche and Utrechtsche Consultatien of the middle of the 17th century. These authorities are naturally of varying value under the circumstances. Their views frequently conflict upon the most important points, although with many judges the pronouncements of Voet in his Commentaries on the Pandects published as long ago as 1698 are likely to outweigh even the massed opinions of his colleagues. In this country especially the Commentaries have been styled with some justice the Bible of the Bench.

In South Africa this system remained after the capitulation of 1803 as the treasured inheritance of a population predominantly Dutch and likely from all appearances to remain so in race however loyal to the British connection. Racial pride, local patriotism and long custom have wedded them to their common law. Litigants, lawyers and Judges have been bred up in its atmosphere. They have even clung to its criminal branch, although borrowing liberally from British sources both as to substantive law and as to procedure. Their large population makes a system of courts available which, crowned as it now is by the Supreme Court of the Union, makes South Africa practically autonomous so far as litigation is concerned. Appeals to the Privy Council have been few and are now likely to be as rare as angels' visits.

Superfluous and Antiquated.

In this colony we have a small population very mixed in race and colour but overwhelmingly British in its attachments and traditions. It certainly has no special sentimental affection for the Netherlands of 1815 or its legacies. The Dutch families could never have been very numerous and have entirely disappeared as such. That stubborn breed has never endured the predominance of another race. Roman-Dutch law, however, continues by virtue of the terms of the capitulation of 19th September, 1807:—"The laws and usages of the colony shall remain in force and be respected, the mode of taxation now in use adhered to, and the inhabitants shall enjoy the public exercise of their religion in the same manner as before the capitulation. No new establishments shall be introduced without the consent of the Court of Policy and the Legislature of the Colony."

The reference to the sovereign law-making authority of the Court of Policy and Legislature shows that no proposal was being made, even had such a Medean and Persian requirement been possible, to impose an unalterable system of common or other law upon the newly-conquered colony independently of the local parliament.

Encroached on by the English Statue and Common Law.

Great inroads have been made on this common law from time to time. English Criminal Law, the law of Evidence, Libel, Bills of Exchange, Insolvency, Insurance, Merchant Shipping and other Ordinances on the English model have succeeded one another. Our Company Ordinance of 1898 reproduced the English legislation up to that date and the English Consolidating Act of 1908 will shortly, I hope, appear upon our statute book. Even that historic Teutonic graft, community of goods, has been abolished by the Married Persons Property Ordinance of 1904 amended by a later Ordinance to give women part at all events of the benefit of the English law of intestacy in place of those ancient privileges just swept away. The colony does not as yet know that eminently British institution, the Suffragette, or many members of the Court of Policy would have been banged over the head with parasols ere now for their disregard of the vested interests of women in the course of this legislation.

But while much has gone from the Roman-Dutch domain much remains. Roman-Dutch law may be seldom quoted in the Courts and, as in South Africa itself, English authorities and precedents may tend more and more to have weight with judges and lawyers to its exclusion, but it remains as an element of uncertainty and confusion. It increases the work of both judge and counsel. It wastes time and is a source of expense. It is superfluous and antiquated. An academic opinion of Voet, a University professor of the 17th century, may outweigh the dictator judgments emanating from the wisdom and practical experience of judges like Russell or Halsbury after the world's commerce and the law merchant have progressed for three hundred years.

In South Africa and Ceylon.

Even in South Africa Roman-Dutch common law has been found inadequate by itself and the courts have largely drawn upon the vast resources of the English common law. The law of agency has been borrowed in its entirety. In Ceylon

the anglicizing tendency has been such that the joke goes that the arrival of a judge long versed in and wedded to the Roman-Dutch jurisprudence caused such dismay that urgent measures were taken to remove him by rapid promotion to another colony. In South Africa, too, the difference of opinion which arose in 1904 between the Cape and Transvaal Supreme Courts on the all-important question of *causa* (*oorzak*) or consideration in contract shows the inconvenience and danger to commerce arising from a system differing so radically from that of English law. In *Tembu v. Webster* the Supreme Court presided over by Sir Henry de Villiers. now Lord Villiers of Wynberg (from that delightful home where I have had the honour of his hospitality in past days), followed a series of decisions of the Cape Supreme Court beginning with *Alexander v. Pe ry* in 1874. It held that *causa* or *oorzak* was virtually equivalent to the English valuable consideration necessary to a simple contract, *i.e.*, one not solemnly entered into under seal. The Transvaal Supreme Court presided over by Sir James Rose Innes had already held in the same year that the *causa* which would support a contract in Roman-Dutch law need not be the valuable consideration of English law but that any serious promise to perform an act would constitute a binding agreement. In British Guiana a similar view was held in *De Cairos v. Gaspar* and in Ceylon in *Lipton v. Buchanan*. Here then at the very basis of all commercial transactions we find the Roman-Dutch fortress divided. Lord de Villiers' Court is in a minority but nobody will question the eminence of that great jurist and his dominant position as the doyen of the administrators of the Roman-Dutch jurisprudence.

Appeals and Federation.

If the upholders of the Transvaal views are right, and the views of the able Chief Justice of the Transvaal are supported by the majority we are separated in this colony by a great gulf from the English principles of contract. Moreover as the Full Court hears all matters of more than $2.500 in value there is virtually no appeal except to the Privy Council. Almost as urgent as the provision of such an Appeal Court is the reconstruction or abolition of the Full Court with the grant of the full jurisdiction of a Supreme Court Judge to its individual members, reduced by the present system of limited jurisdiction to a wholly unnecessary inferiority of status. If Roman-Dutch law were abolished the creation of a special Appeal Court for the West Indies and Guiana would be vastly facilitated. The Federation of those countries would be considerably advanced. My suggestion is that the Commercial Committee should consider the matter and invite the opinions of the legal fraternity. In this respect the views of the learned Chief Justice Sir Henry Bovell, a careful and conservative student of both bodies of jurisprudence, should be sought through the Executive and carefully weighed. Upon the necessity for removing the *débris* of this once magnificent structure raised by the jurists of Holland there is virtual unanimity among the leaders of the profession in both its practising branches. Perhaps my friend, Mr. J. A. V. Abraham, stands alone in having a good word to say for it and even he admits that it is only a magnificent ruin.

A Code.

Should the Commercial Committee decide to propose this great reform and the Government accept the idea, a short code should be drafted embodying those parts of the Roman-Dutch law and practice which it may be desirable to retain. No doubt few will be eager to see the historical but intricate complications of the English law of real property and conveyancing inflicted upon the colony. Estates in land with their tails male and female and all the other learned lumber of the past we do not require. A codification of the law of immovable property accompanied by a reform or development of the transport system would be of the greatest benefit.

An Examiner of Title.

The present method of land transfer seems to have worked fairly well in practice. The community is honest and scandals are few. But the method is none the less in some degree a delusion and a snare. An official examiner of title should be appointed and a registrar of title substituted for the transport judge. The Bench would no doubt be glad to be relieved of an unpleasing and laborious function, and title to immovable property would assume its real character and no longer be vested with the fancied sanction of a judgment of the Supreme Court. The transport judge, according to Sir Edward O'Malley, lately the highly esteemed Chief Justice of this colony, is really a mere official witness without responsibility in case of mistake or fraud. Some system like the Torrens of Australia, which has been successfully introduced into Trinidad or the similar Canadian provisions, could, if necessary, be easily set up, securing an absolutely indefeasible title on registration but leaving to the aggrieved a remedy in damages, for which a system of insurance could provide. The great merit of the present method is simplicity and cheapness but neither the simplicity nor the cheapness need be radically interfered with. Perhaps I should mention that the idea of establishing the Torrens system was propounded in Sir A. Swettenham's time and finds a warm supporter in the present Attorney General.

The Problem of Railway Construction.

To the Agricultural Committee in conjunction with the Commercial Committee and independently should be recommended the study of the railway problem in all its bearings. Independently, because the labour question is a vital one to that interest and while it should not offer an insoluble problem by any means, carelessness or lack of unanimity might cause disaster. I have no professional or other interest in any of the schemes now being dangled before the country, which remains quite unemotional in view of its temptations. I had, indeed, for a time a slight professional connection with a project advanced by a number of leading English business men which I thought might form a basis of discussion and negotiation. It was rejected as expensive and unnecessary and I cannot say whether it will be revived. It had the merits at least of solid financial backing and of definiteness as a trunk railway not destined to end in the bush.

I mention it, as nothing struck me more forcibly than the cheerfulness with which the scheme was accepted by many without examination of the cost, and the recklessness with which the very idea was rejected by others without the most cursory examination. Two phenomena were prominent in the discussions, first, a high degree of optimism as to the possibilities of the interior in those whose lives had been spent among its rivers and savannahs (I do not think I am indiscreet in mentioning among those Mr. Michael McTurk, C.M.G., lately Protector of Indians, a recent accession to this Society); secondly, an unfathomable depth of pessimism and scepticism in those who had never left Georg town except for a carriage drive or a steamer excursion.

This colony should not rely solely on either the enthusiastic optimists or the invincible pessimists. The careful collection of the data should be the aim of those whose interests are involved, also the scientific examination of the financial aspect of any scheme. No scheme acceptable on other grounds should be rejected summarily on the assumption that we cannot afford it until it is clear that we can do better elsewhere or that sound finance does not justify our acceptance. Actuarial and financial experience is not scarce in the colony. Nothing should be done or be allowed to be done in a corner.

Wild-cat Company Promoting.

But if the country is to be opened up on a large scale by any big scheme of construction the matter must be dealt with on business lines; a certain amount of risk and expense are unavoidable. Large sums of money can only be raised on known conditions—either through the attractive demonstration of resources which can be promptly marketed or by the securing of the capital permanently or during the initial stages of development. No one face to face with the experience of the Demerara Railway will favour any demand for a permanent guarantee. But we must not fancy that capital is only waiting the opportunity to pour into this country to complete any accepted scheme. Capitalists, in Great Britain at all events, are neither philanthropists nor reckless gamblers, and we are handicapped here by an evil, if undeserved, reputation as to climate and by lack of prestige due to the vicissitudes of our staple product. More recently we have begun to suffer from wild-cat company promoting in which the escutcheon of this conservative colony has been dragged through the financial gutters of New York and London. Any proposals purporting to emanate from this country will be carefully and sceptically scrutinised for many years to come.

The question resolving itself into one of price, it remains for us to ascertain whether we can arrange for one which in labour, land and money we should as a community be willing to pay. I think the Society can congratulate the present Governor, Sir Frederic Hodgson, in having committed the Government and the Legislature to the initial stages of an attempt to tackle this problem.

It would clearly be to the advantage of those financially interested in this colony to take hold of the problem and protect themselves by solving it in a manner compatible with their interests. They should see that at every stage

of the proceedings those interests are safeguarded. At the present moment there is occurring a remarkable reaction towards the methods of the days of individual proprietorship. Directors of many of the leading firms, planting or commercial, or both planting and commercial, are visiting or about to visit the colony. Why should they not face the problem and in co-operation with their local representatives and others entitled to be considered, formulate a definite policy? They may not succeed in framing a scheme which will dispense with the company promoter but at all events they can see that the bargain is not entirely one-sided.

The maps of South and West Africa, Canada and Brazil show how those progressive countries are being covered with a network of railways. The necessity for dealing on a large scale with railway questions has created the South African Union, where 75 millions sterling have been spent on construction. It has united East Africa with the former Uganda Provinces East of Lake Victoria Nyanza. It has united Lagos and Southern Nigeria and will eventually build up a West African Dominion by the incorporation with them of Northern Nigeria On that much abused West Coast 1,100 miles of railway have been built in ten years. In Canada the five millions sterling of subsidy and the vast land grant to the Canadian Pacific have been so little egretted that three great trunk lines now exist and mighty schemes for connecting the great lakes with Hudson's Bay are being rapidly pushed forward with the aid of lands and money(still indispensable to construction even in that progressive land.) How long is British Guiana to remain huddled upon the foreshore—a byword to the daring British pioneers elsewhere for its neglect of the resources it wrested over a hundred years ago from the Hollanders?

A question of such vital importance can hardly be classed as politics, so I have handled it without reserve. One does not cease to be a British citizen by accepting the office of Solicitor General of British Guiana. Moreover the furtherance of every form of progress has, at all times, been the object of this Society, and I should be sorry to depart from the high traditions of former Presidents. The railway question was dealt with from its engineering side by Mr. Luke Hill in his Presidential address in 1902. But we have built no railways since. The Society might well consider the republication of that interesting paper and of the discussion it aroused.

In regard to other matters I may conclude by pointing out that it is to the Society that the introduction into the colony of the first agricultural chemist was due. The Botanic Gardens are the result of its suggestion. The Chamber of Commerce and Agricultural Board are merely the development of its committees. It contributed much to the original project of the East Coast Railway. Its Collectors and Curators from the days of Appun appear to have done yeoman service in making the resources of the colony known. The local representation at the various great exhibitions such as London, Chicago, Dublin, Glasgow, and Paris has all been arranged gratuitously by the Society, its officers and members. It is thus the parent of the Permanent Exhibitions Committee. Numerous horticultural and other local shows have been successfully promoted by its means. The mining industry in all its branches has always engaged

its friendly attention, and balata was mainly introduced to the world in connection with the exhibitions of the Society. It is now prepared to live up to the traditions of the past and to advocate fearlessly every progressive movement in the colony. But even if the prophecies and proposals of the pessimists had been realised and the Society had last year abandoned its great ambitions and sunk to the position of a mere lending library and reading room, it could still have made with confidence the parting request of that great actor on the world's stage, the Emperor Augustus—*Vos Plaudite*!

PROCEEDINGS OF THE SOCIETY.

Meeting, Jan. 27th, 1911. *Elections.—Members*—Messrs. P. J. Willems, Cephas Whitney, Dr. W. J. von Winckler, C. Farrar, A. J. McConnell, F. V. McConnell, F. B. Henderson, Alex. Gonsalves, M. J. de Freitas, Ernest Beach, W. M. B. Shields, T. M. Marshall, F. J. Minors, Luigi Psaila, I. E. A. Patoir, T. Earle, John Downer, Joseph Pile, N. Cannon and Hon. Dr. J. E. Godfrey.

Associates.—Messrs. R. C. Curtis, Jos. Rongeiron, A. G. Sterling, J. R. Oudkerk, Jnr., F. M. Smith, A. J. Hohenkerk, W. E. Lewis, John Park, John Henderson, E. J. Partridge and Jos. L. Blank.

Hon. B. Howell Jones gave notice of motion to amend the rule in regard to opening on holidays so that the Rooms be opened at 10 instead of 7 a.m.

Mr. Luke M. Hill was proposed as an Honorary Member.

At the request of the Permanent Exhibitions Committee it was agreed that the Canadian gold medal and diplomas be kept and displayed with others.

The President gave an Inaugural Address (see p. 207) for which a hearty vote of thanks was accorded.

Donations to Library.—Circular, Coronation Exhibition, from Chamber of Commerce ; Suggestions for Teachers, from Dept. of Science and Agriculture ; 4 vols. books from the Bishop of Guiana ; 21 vols. books from Mrs. May ; and Journal from Department of Agriculture, Ireland ; *To the Museum*, from Mr. Franklin Adams, Coca leaves.

Meeting, March 2nd. 1911.—*Elections.—Members.*—Messrs. Paul Cressall, G. Bettencourt, A. A. Thorne, Edgar Beckett, and Captain Rice. *Associates.*—Messrs. H. G. Lord, Solomon Wong, G. F. Hopkinson, J. R. Farnum, J. Thelwall, Frank Dargan, Rev. Father Cooksey, A. E. Braggins, C. A. King, D. Bailey, J. H. Matthews and A. Leighton.

Mr. Luke M. Hill was elected an Honorary Member.

The motion to open at 10 a.m. on Holidays was introduced and Dean Sloman proposed that the Rooms be not opened at all on Holidays or Sundays. This being of the nature of a new motion the President asked the Dean to give notice for next meeting, which having been done the original motion was passed.

A notice of motion to admit smoking was laid over.

The Hon. Treasurer's statement for 1910 was laid over and adopted.

Mr. C. R. Keyte read a paper on Wireless Telegraphy for which a vote of thanks was warmly accorded.

Donations to Library.—4 vols. books from the Bishop of Guiana, a portrait of the late King from Mr. J. Solomon and a number of books, magazines, picture and maps, with several pieces of furniture from Mr. J. J. Nunan.

Meeting, April 6th, 1911. *Elections.—Members.*—Messrs. G. H. Gainfort, Cecil Morris, W. E. Bellamy, M. P. Camacho, E. Edwards and L. Iremonger. *Associates.*—Messrs. J. H. Thomas, J. MacMahon, Robert Wong and A. McLean Ogle.

Dean Sloman's motion to close the Rooms on Sundays and Holidays, after discussion, was rejected by 23 to 12.

The motion to admit smoking was passed without opposition.

Dr. Minett read a paper on "Mosquito Prophylaxis" for which the President tendered a cordial vote of thanks.

The President gave an account of the financial condition of the Society, its progress and the work being done by the Committees.

Donations—To Library.—18 vols. books from Mr. J. J. Nunan and 3 vols. books from the Bishop of Guiana.

To the Museum.—Broken Statuary found at Aliki from Mr. M. McTurk.

Meeting May, 18th, 1911. *Elections.—Members.*—Dr. Ram Norayan Sharma, Messrs. A. E. French, Thos. Ramsay and J. B. Sharples. *Associates.*—Dr. MacQuaide, Messrs. Jos. Lam. L. W. Collins, Jas. B. Cummings and Salvador de Caires. Mr. N. Darnell Davis was proposed as an Honorary Member.

The President reported Miss Amie M. Steel had been appointed Lady Assistant Librarian.

Dr. J. S. Wallbridge read a paper, "Fifty Years' Recollections" for which a hearty vote of thanks was accorded.

Donations to Library.—2 vols. books from the Bishop of Guiana and 2 do. from Dr. F. H. Anderson.

Meeting, June 15th, 1911. *Elections—Members.*—Messrs. E. W. de Flines John Macdonald, Richard Fowler, J. K. D. Hill, H. P. C. Melville, J. L. Walton, G. E. Bodkin, Frank Gill, S. Alves and Rev. Jas. Aiken. *Associates.*—Messrs. G. C. C. Sharples, S. E. Wills, W. Ault and A. B. Clarke. *Lady Subscribers.*—Misses Lily Callender and I. Uchlein. *Honorary Member.*—N. Darnell Davis, C.M.G.

The President reported that arrangements had been made for lighting at the Coronation and that the July *Timehri* was in order and would be reduced in price to 36 cents.

Notice of motion was given to amend By-Laws 1 and 3, Chap. V., to allow the Directors to admit Members and Associates.

In the absence of the writer, the President read Mr. McTurk's paper "Reminiscences of My Journey from Kalacoon to the Orinoco in connection with the Boundary Dispute" (see p. 89) for which a hearty vote of thanks was accorded.

Donation to Library.—Egyptian Historical Studies from Dr. F. H. Anderson. *To Museum.*—A Harpy Eagle from Mr. M. McTurk and a Model of a Gold-saving Table from Mr. J. Henderson.

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TIMEHRI:

THE JOURNAL OF

THE ROYAL AGRICULTURAL AND COMMERCIAL SOCIETY OF BRITISH GUIANA.

VOL I. DECEMBER, 1911. NO. 3.

FOREWORD.

With this number the first volume of the new issue of *Timehri* is concluded. The Editors are satisfied that in scientific value and in variety of interest the number will be found to equal its predecessors.

An interesting article from the pen of Professor Crampton with photographs and drawings to illustrate his expedition to Roraima on behalf of the American Museum of Natural History unfortunately arrived too late but it is possible that a special Easter number may be published in which this article as well as an article with photographs and drawings by Dr. Lütz on the subject of the Kaieteur section of the work of the expedition will appear. The special production if undertaken will deal with the resources of the colony from every point of view and should prove a suitable herald of the new constructive policy.

We regret to announce that the magazine on the eve of going to press has temporarily lost the valuable services of one of the Assistant Editors, Mr. George Mackenzie, who has had to leave the colony through serious illness. His numerous friends hope, however, to see him back in restored health in a short time.

Owing to the general progress made by *Timehri* and to the large supply of articles which its appearance has called forth, the Directors of the Royal Agricultural & Commercial Society, at the suggestion of the President, have appointed an Editorial Committee to conduct the magazine after the publication of the present number. It includes the following gentlemen : the Hon. Professor Harrison, C.M.G. (Director of the Department of Science and Agriculture); Dr. Kenrick Stanton Wise, B. Sc. (Government Bacteriologist); John Cunningham, Esq. (Manager of "The Argosy" Company, Ltd.): D. K. Jardine, Esq., B. Sc. (Publisher of the "Daily Chronicle"); G. E. Bodkin, Esq., B. Sc. (Government Entomologist); W. C. Marchant, Esq. (Editor, "Daily Chronicle"); T. A. Pope, Esq., B.A. (Principal of Queen's College); Wm. Douglas, Esq. (Pln. Diamond); G. F. Franks, Esq., M.A.; F. A. Stockdale, Esq., M.A., and the present Editors and Assistant Editor. The selection of an editor-in-chief will rest with the Editorial Committee.

This body will furnish the scientific and literary knowledge and the practical experience which should not alone maintain the high level won by the magazine in the past, but should make it a permanent influence for progress in British Guiana and in the West Indies.

In the present number as in preceding numbers the purely scientific side of the magazine has been principally supervised by my learned colleague and co-editor, Mr. Jas. Rodway, F.L.S., but his assistance has been forthcoming in every department including those of sub-editing and management. In announcing the conclusion of the first volume of the new series and the transference of the general control to the editorial committee I desire to call attention to the services he has rendered as well as to those which have at all times been generously given by Rev. Mr. Aiken and Mr. George Mackenzie. *Timehri* and the Society also owe much to the publisher, our Honorary Secretary, Mr. John Cunningham, who has been compelled *virtute officii* to withhold from commerce and journalism some of the energies meant for mankind. To all the work of reviving the Society's magazine has been a labour of love.

The general work of the Society continues to progress even more favourably than was anticipated at the beginning of the year. Before the close of the session some twenty-three papers and lectures will have testified to its varied activities. Its somewhat antiquated executive system has been modernized and simplified and the Museum has been placed under the supervision of a Committee, divided into numerous sub-committees, which should render much assistance to the Curator. The Society will be represented at the forthcoming Agricultural Conference in Trinidad in January and it looks forward to playing an active part in every phase (except the purely political) of the life of the colony and of the West Indies during the coming year. The membership is now approaching the six hundred mark to which it may be advisable to limit it. Much ampler funds are in sight for purchases of new books and for the renewal of some of our present stock of 30,000 volumes. A new catalogue is in course of preparation and every effort will be made to avoid Lord Rosebery's reproach, which all such large collections are in danger of incurring, viz., of becoming a mere cemetery of dead books.

JOSEPH J. NUNAN,

President of the Royal Agricultural and Commercial Society.

OUR PEOPLE.

(By Mr. J. E. Hewick, late Senior Puisne Judge.)

The noblest study of mankind is man. What a study it is indeed in this colony, mixed as is the population! First and foremost in point of numbers are the black race in whose welfare anyone long resident here must take an interest because undoubtedly they should be the backbone of British Guiana and also because under the freedom of British rule they should expand and flourish. But alas! statistics show the reverse of progress either in the way of natural increase or in the upward march in condition.

What is the reason for, if not a retrograde movement, something very like it? In the ordinary course of events the black population of the colony ought to have been at least double the number they are at present and the hinterland ought to be teeming with populous and thriving villages. As a matter of fact, the land occupied is still in reality only the fringe of the colony bordering on the sea—not as much even as was under cultivation at freedom time some seventy years ago. It is true that there are many men employed in rubber and balata-bleeding and in gold-mining, but there is no such thing as a real settlement in the interior and until there is, the colony of British Guiana may drift from bad to worse. The only safety for the future is the opening up of the country, and its population by a people who will devote themselves to the cultivation of the land, to cattle raising, and kindred pursuits.

It is easy to understand when the abolition of slavery became an accomplished fact that the newly-made freedmen were somewhat obsessed by their novel condition. But at the same time it is difficult to believe that years of work, even if under bondage, would not leave an impress on the character of the people and make work a necessity. If one takes the trouble to study the past history it will be found that in most cases the former slaves combined and bought the estates on which they had been born and which to them was home. The division gave to each family a fairly large portion of land quite sufficient for its support for years to come, not possibly as exporters of cotton or sugar but certainly as growers of coffee, arrowroot, coconuts, arnatto, and such like for foreign markets, while the land could easily supply all that was needed for home consumption. No doubt for a time the freedmen managed to live in comfort but as the children grew up and the old hands died off there very soon came into being a different order of things. Little by little the lands were abandoned and after a time their reclamation, for it was that which became necessary, was too much to be undertaken. The sugar estates in the hands of the proprietors were at their zenith and it was far easier for a black man to earn a living wage on them and participate in the joys of a real village community than to labour on his own land. East Indians were introduced later on but the work of cane-cutting and trench-digging with carpenter's, mason's, and blacksmith's work remained for the blacks. The ordinary labour was done by the "coolie." Physically the superior of the immigrant the negro easily held his own and lorded it over the mild Hindu to his heart's content. But the Asiatic after a time began to encroach on the province of the negro and from his thrifty

habits (penurious they might be called) and the smallness of his wants, it was not long before holdings were transferred and the negro was displaced. As sugar growing and manufacture became of necessity, owing to low prices, more scientific, the less eager the black man was to work on the estates. The discovery of gold and the rush for balata opened a wide field more suited to his tastes ; a few months of hardship in the bush was rewarded with the means of a spree at home. Hundreds flocked to the bush, many alas to leave their bones there or to contract diseases which sapped their strength ; for the new race, although inheriting from their parents a grand physique, had by neglect of ordinary hygienic precaution made inroads on it. Thrift was an unknown quantity ; enough for the day was their motto ; and when the morrow came it found them literally on their beam ends. In some of the villages in the vicinity of the sugar estates a certain amount of property was still held but the youth of these villages left for the bush attracted by the successes of a few and the substance was abandoned for the shadow. This was not altogether a thing to be surprised at, taking into consideration the character of the negro and his want of adequate training. Fond of dress and of amusement, nothing pleased him so much as to dress in what he thought was the height of fashion and indulge in festivities whenever an opportunity offered. A costly wedding with carriages drawn by white horses was a great attraction, while a funeral with hearse and mourning coaches a prospect which eased the dying bed. Education, it is true, made some headway but there is no question that such learning as was taught did little or no good. All it apparently accomplished was a desire to use long words and to ape the manners and customs of the "upper circles." A better system might well be introduced with advantage and one is glad to see the steps Mr. Thorne and his supporters are taking to ensure this. Unfortunately an imperfect education does not beget a desire to work on the land. It is the same everywhere. In time, possibly learning may teach the people the desirability of working in that state of life to which God has called them and against which they kick when they have passed the Sixth Standard.

Amongst the black race of the colony there are without question men of a great amount of ability, but they are frequently very severely handicapped by their surroundings and the associations of early life. When a man has been to England, where he is made much of, has taken a fairly good degree in law, medicine or some other profession, he naturally does not like being hailed as "Buddie" by some out-at-elbow old school-fellow who is digging in a trench or is driving a donkey cart. It is difficult to get away from these old associations. On the one hand if these approaches to familiarity are met with coldness the Divine, Medico or Lawyer is at once put down as stuck up and is reminded of the time he was a "shut tail like a-we." On the other hand if he responds he is subjected to all kinds of undue familiarity and is first expected by some of the unprincipled ones to do anything and everything for his friend or so-called client, no matter how much it is against the etiquette of the honourable profession to which he belongs.

Unfortunately, too, race prejudice is apt to develop, as it has done in the East and produce demagogues, who, disappointed in their aspirations, set to work to put class against class, utterly indifferent to the fact that by so doing

they alienate those who have a real desire to befriend the race and thus make the real progress of the negro a task of incalculable difficulty.

There is a want of confidence in each other also which hampers the efforts of men who, like Booker Washington in the United States, aim at the uplifting of the negro. Should by any chance a similar character appear in British Guiana and found a Tuskagee I am quite sure that there would be available the same sort of material which has conduced so much to the success of that institution. But not on the coast-lands, at any rate for several years to come. Want of capital is the greatest drawback, for however desirous a man, born leader though he may be, is, he cannot make a beginning in the hinterland without something to sustain his students until they become self-supporting. There is plenty of land suitable for such an undertaking and sites abound on which farms might be established, *but they must be under a central head and be subject to regular rules.* I see no reason whatever why a similar institution such as that of Tuskagee should not be established in the hinterland of British Guiana, provided there is forthcoming a man of the calibre of Booker Washington, that is, one whom his fellows not only respect but in whom they place confidence, as having one object, namely, the real elevation of his own people and not his personal aggrandisement alone. In order to make such a settlement as I indicate successful amongst our blacks there must be amusements of sorts, such as dramatic entertainments, lectures, and concerts all of which would come within the curriculum. Whenever a student showed capacity in science he should be given an opportunity of pursuing it till he become an expert. It is the half-hearted teaching which does so much harm. The recent attempt at proper apprenticeship is a move in the right direction, for who has not suffered from the ignorance and self-assertiveness of a young man posing as a carpenter boss, after a year's haphazard work carrying the tools of his boss and seeing that no doubt efficient workman make a sash window or paint a house. A properly trained workman possessing a certificate of capacity would always get work; while the colony was spreading there ought to be plenty to do in and about the settlement—all the students would not be carpenters, but those engaged in farming or cattle-raising or whatever other pursuits they were fitted for would require work to be done. At first, no doubt, there must be a common fund under the capable control of a committee to dispose of the produce, supply the wants and divide the proceeds —a community in fact all working for the commonweal.

It will naturally be urged that there are no means of communication with the interor to enable the transport of produce. This is true, but were the produce available steady means for transport would not be long in following. Up the Berbice River there are high lands close to the river and below the rapids, within easy reach also of the Demerara River across the Savannah. The White Cliff is an ideal spot for a settlement, such as I have roughly indicated and, if a beginning were made there, I am quite sure it would spread until it took in a large tract of that at present absolutly unoccupied land.

There are many who will look upon the suggestions made here as Utopian and smile broadly at the ideas enunciated. From past experiences there is perhaps good ground for hesitation in at once recognizing the feasibility of the scheme. But let the man be forthcoming and let the start once be made under the

guiding hand of a really capable man and I am sure that the practicability will be evidenced. Where to find much a man is the *crux*. I confess that I could not put my hand on one willing to undertake the work, but that does not mean he does not exist. There is a glimmering of a sense of responsibility, an attempt at self-reliance and co-operation but not sufficiently wide to accomplish much. Still it is there and if it is based as it should be on a proper, not aggressive pride of race, there is no reason why, in the near future, the British Guiana black man should not make for himself a firm position in the country and wipe away the stigma which at present undoubtedly attaches to him in the opinion of the small world that knows of his existence.

After writing this I noticed in the newspaper, letters written by men of the race bearing out my own ideas, which are givan in the hope that every effort will be made to advance the black man and give him that position which he can, if properly directed, occupy,

Next in point of numbers are the East Indians who have made and are making themselves of more importance day by day. Imported for the purpose of supplying the neceessary labour for the sugar estates, they have to a large extent supplanted the blacks on the plantations. Even in the villages they have risen to no small importance while in the matter of agriculture, especially in rice-growing they are far and away ahead of all other races. For many years the return ships to India claimed a good many, but since the abolition of back-passages the number of those leaving these shores has been greatly reduced. The creole coolie adopting the habits of his black brothers has steadily gained in physique and has become more creole than the black people themselves. Demerara is his home and few have any ambition to leave it ; he is contented with his lot in the village communities, where he finds all he wants. East Indians are still, however, a race apart and are easily influenced by their priests. It is a sad commentary on the black race to notice that, on lands which were their own, the erstwhile proprietors are now being employed in many instances by the East Indian to plant rice—the said East Indians being now the owners of the land.

Advancing as they are in prosperity, the East Indians nevertheless suffer from many disadvantages, which result in demoralising them to an enormous extent. Creolised though the Demerara born have become they are still Asiatics, and notwithstanding the fact that they have adopted many of the customs of the blacks, they are yet imbued with the traditions of the past and caste remains as a severely drawn line. The Brahmins, those who know anything of the sacred books, have no difficulty in attracting "chelas." The reading of "Khatas" and an exposition of the religion is an everyday occurrence. while the astuteness of the "second born," the outcome of ages of dominance and brain exercise, is ever welcome when a difficulty arises and advice is required. Chelas, of course, have the preference. I am writing of Hindus. Long as the East Indians have been in the colony, it is strange how little is really known of their manners, customs and traditions. Very few take the trouble to make themselves acquainted with even the outlines of those characteristics which make the East the East and which will never be eradicated. To understand the Asiatic is hopeless until a study is made of him, a by no means

uninteresting study either; he has a past full of romance, his history affords a true indication of the bent of his mind and to a student is a key to many of his apparently strange actions. It is amusing to note the way in which the names even are anglicised—Phuljan becomes Paul John, Bakkar—Barker, Ibrahim—Abraham, Suleiman—Solomon and so on. The latter are not so bad of course, but they do not, as they ought, indicate that the bearers of those names are Mohamedans—a knowledge which would very often prevent acts absolutely abhorrent to the followers of the Prophet.

Accustomed as the East Indian is to the marriage ceremonies of his religion and the relative positions of husband and wife in the household he does not fall in with the local manners and customs. Anyone who is at all observant must notice that when an East Indian man and woman take their walks abroad the woman does not walk with the man but follows him—this prevails even amongst the creoles. If this custom is not observed it may be assumed that the parties are either not husband and wife or are Christians. This brings me to the marriage laws which affect the East Indian population. For many years a grievous wrong was done to them by not recognizing the marriages celebrated according to Hindu or Mohamedan rites. The result was the practical bastardization of the issue and the accompanying evils, which resulted in so many so-called wife "murders or mutilations." which are always held up as peculiarly coolie. Many women who, if they knew they were recognized as having validly married would lead chaste lives and be good wives, are led astray. Their self-respect is undermined and when once they realise the weakness of the tie they break loose on the least possible pretext. This holds good in the case of the man also for although wrapt up in his children and delighting in them, he is master of his home and expects certain attentions from his wife, whose line of conduct is clearly defined by custom. An attempt has been made to remedy this state of things to a certain extent. But very few are aware of the provisions of Sections 145 and 151 of Ordinance 18 of 1891 which are as follows :—

> "(1.) A marriage contracted after the commencement of this Ordinance between a male immigrant, not being under fifteen years of age at the date of the marriage, and a female immigrant, not being under thirteen years of age at the date of the marriage, are free from any disability mentioned in section 145, profess the same religion, not being the Christian Religion, *and are subject to the same personal law*, shall if contracted according *to the religion and personal law* of such immigrants and registered under this Ordinance, be deemed to be valid as from the date of such marriage : Provided that, before any such marriage is contracted, the parties thereto shall first obtain a certificate signed by the Immigration Agent General to the effect that there does not appear from the records of the Immigration Department to be any impediment to the intended marriage : and no such marriage shall be deemed to have been duly contracted unless such certificate has been first obtained ;
>
> (2.) If the marriage referred to in any such certificate is not contracted within three months from the date of the certificate, the certificate shall on the expiration of the said period, become null and void."

Section 145 reads :—

" No marriage shall be contracted under this Ordinance, or if so contracted and registered, the same shall be null and void *ab initio* where it is shown that either of the parties has or had at the time of such contracting and registration, a wife or husband alive, or where either parties is directly descended from the other, or where the female is a sister of the male, either by the full or half blood or where the male is a brother of the female, either by the full or the half blood."

The term " Immigrant " has a special meaning in this part of the Ordinance and unless the context otherwise requires is " any person introduced or coming into this colony from Asia whether directly or indirectly, and whether wholly or in part, at the expense of the Immigration Fund or *otherwise* and includes any descendant of such person. "

There are other provisions as to marriages before a Magstrate; they are civil marriages and as such are governed by the Common Law of the colony.

Now how far have the provision of Section 151 ever been carried out ? I do not know nor have I ever heard of a case in which the personal law has come in. Perhaps there are some cases in which the marriage has been contracted under the provisions of this section. I know of one of very recent date. But I very much question whether any Asiatics are aware of the fact that their personal law can be invoked or if there is any decision as to the interpretation of that section of the Ordinance which deals with their marriage according to their religion and personal law and the effect such marriage has on their property.

I presume all Asiatics coming to the colony, even if first-class passengers by the Royal Mail, are registered at the Immigration Department. If they are not the records of that Department cannot fulfil the obligations of the law. If there is a real intention to benefit the Asiatic subjects of His Majesty the fact that they can be married according to their own religious rites and that their property can be administered according to their personal law ought to be made more widely known. It could be easily done by appointing duly registered Pundits or Moulvies, selected for their character and popularity, who would be required to keep in touch with the authorities and be responsible for the proper conduct of the duties entrusted to them.

Action of this kind would, I am sure, have a good effect and tend to the further advancement of those members of our population who have done so much towards keeping the colony from rushing down hill.

There are many who will disagree with me in my contention that the East Indian should have his own laws with respect to his marriage and inheritance, on the ground that as they are part and parcel of the community there should be one law for all and that if they come here they must take the consequences. That is all very well in its way, but we must not forget that in the British Empire there are many races and religions and that it is our proud boast that we have religious freedom. If we grant religious freedom is it logical to refuse the laws and customs which these religions entail ? In all our other possessions where Asiatics or natives form a large proportion of the population, they are safeguarded. Where other people occupy that position their rights are protected. Take of our other colonies, the Transvaal, Orange Free State, Natal, the

Cape, Ceylon, Mauritius, Straits Settlements, etc., we find this to be the case. Why therefore should British Guiana be single? If the idea is to coerce Hindus and Mohamedans to become good Christians all I can say is that the attempt will end in failure. There may be a fear that the heathen with their rites will attract the blacks and so militate against their Christian teaching. That such fear is not unfounded, one is forced to admit when one sees the black youths taking just as much delight in a tadjah as those for whom the ceremony is held; although they do not possibly realise the idea of a sort of scape-goat in it in the part taken by the Hindus in the celebration, or the deaths of Hassen and Hossein which are recalled by the Mohamedans. It is a religious ceremony nevertheless and has its effect in the same way that a kumfoo dance still has in some parts of the colony. As I have suggested a Tuskagee Institution for the blacks, so I will suggest village communities for East Indians in the interior. The details for these would necessarily involve a great amount of consideration but as there is a movement on the part of influential East Indians to bring their people more together, I do not think any inseparable obstacle exists, although East Indians look to the Sircar for assistance in all their needs. But this would vanish in time when once they were properly settled. Of course if a railway is ever really taken in hand the opening up and settlement of the interior will soon follow.

Referring back to the suggestion of laws it is interesting to note that in Ceylon there exists the Roman Dutch Law;

2. The Shesawalemai or customs of the Malabar inhabitants of the Northern Province. If this is silent recourse is had to Roman Dutch law;

3. Laws and usages of Mussulmans, and

4. Kandyan law. When it is silent Roman Dutch Law.

In Hong Kong:—

A provision for rendering valid wills by Chinese if proved to have been made or acknowledged and authenticated in accordance with Chinese law and usages.

In the Straits Settlements:—

Special laws applicable to particular races including intestate succession, etc.

In Mauritius:—

The Code Civil, Code of Civil Procedure and Code of Commerce by the eighth Article of the Articles of Capitulation of December 8th, 1810.

In Canada:—

Each Province is autonomous as to the law of property and civil rights save in so far as the law may be affected by legislation of the Parliament of Canada upon one of the subjects within its competence.

On the Gold Coast the law in force includes native customs not repugnant to native justice in suits between natives.

In Lagos there is the same provision, and in the Transvaal there is a native Court.

It will be seen, therefore, that due consideration is given to the people when they have laws of their own.

In India itself of course Hindu and Mohamedan law have a recognized position.

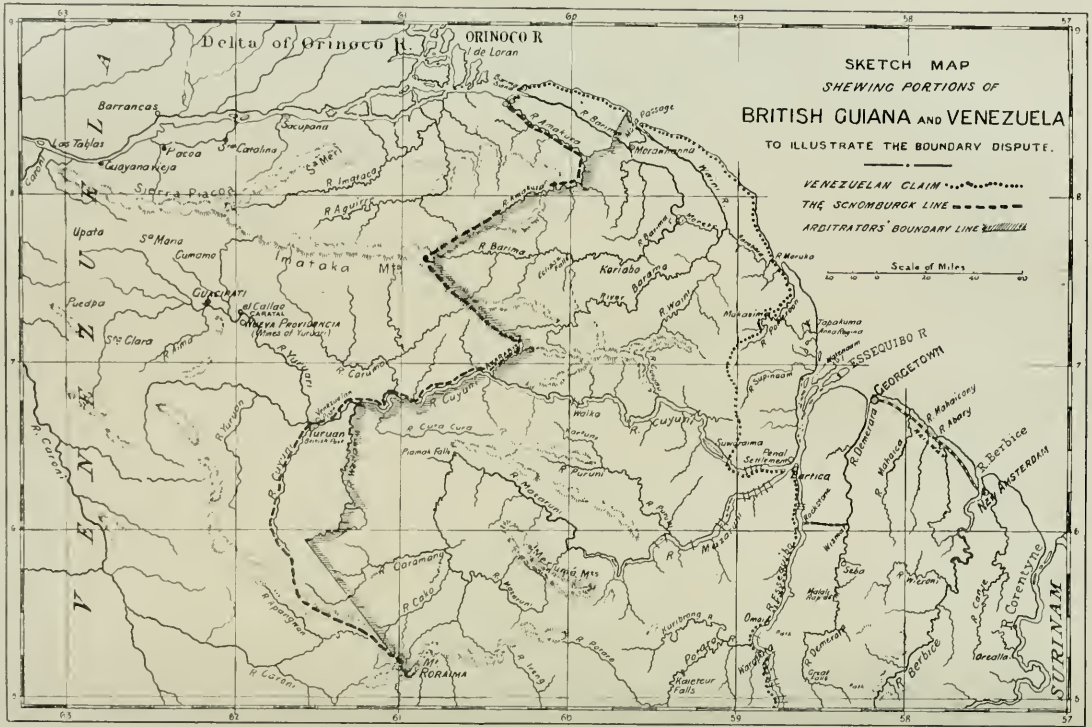
The Chinese in British Guiana are so few in number that they are hardly an element in the population. Few as they are, however, they have introduced gambling and opium smoking. Many are Christians and have very good characters from the ministers of their various denominations. Keen business men they are, shopkeepers as a rule. If an influx of Chinese labour should ever come about it will be as well to study their national characteristics.

The Portuguese of the colony by their thrift have done a great deal for the colony and for themselves. The only fault is that they keep so aloof even after attaining to prominent positions in " the street " as it is called or in the professions or even in the Legislature. At one time Portuguese immigration was a factor in the colony; now there are few who come here from outside—the descendants of the original incomers are the ones who so worthily carry on their name. If the interior was opened up I should imagine a few hundreds from Madeira and the other Portuguese possessions might think it worth while to come here—they would make invaluable agriculturists if put in places where the climate enabled them to work on the land.

The remaining inhabitants of the colony are the Buck Indians, an interesting people split up into tribes—Arawak, Caribs, Macusis, Wa rows Wapsianas and so forth. Fast disappearing by the touch of civilisation very little is seen of them in their original character. They seem to be losing their wood-craft and old customs also, and the time is not far distant when a real " buck " will be merely a tradition.

There are reservations but not enough people to occupy them. The Government holds out a hand to preserve them in the way of legislation for " Aboriginal Indians " but their numbers are decreasing and will go on decreasing. Much has been written of them and there is still much to be discovered. They are however, a negligible quantity.

In conclusion I would simply remark that the time has come when a real effort must be made, if it is desired to advance British Guiana. Putting off will no longer do. A strong, firm and felt guiding hand at the helm of the ship of State is necessary. The hand of a man with broad ideas, not hampered by a desire to please all, but one who will form fixed opinions of his own after a careful consideration of the past, one who will give proper encouragement to would-be investors and whose sole aim and object will be to direct the colony and its people surely and steadily into paths leading towards the development of the undoubtedly large resources of this long neglected but still important part f our beloved Empire.


SKETCH MAP
SHEWING PORTIONS OF
BRITISH GUIANA AND VENEZUELA
TO ILLUSTRATE THE BOUNDARY DISPUTE.
VENEZUELAN CLAIM
THE SCHOMBURGK LINE
ARBITRATORS' BOUNDARY LINE
Scale of Miles
Delta of Orinoco R.
ORINOCO R
de Loran
Barrancas
Los Tablas
Tucupana
Sta Catalina
Sta Mesa
Guayana Vieja
Sierra Piacoa
R Imataca
R Aguire
Upata
Sta Maria
Cumana
Imataka Mts
Guacipati
el Callao
CARATAL
Nueva Providencia
(Ruins of Tumeb)
Pueapa
Sta Clara
R Yuma
R Caroni
R Kanuri
R Curuan
R Kukenan
R Caroni
R Curuduri
R Yuruan
Yuruan
R Cuyuni
R Cuyuni
R Carib
Mahdia
Cuyuni
Waika
Fortuna
a Cuca Cura
Piamos Falls
R Puruni
R Mazaruni
Caramang
Mazaruni Mts
R Caro
R Aparaguas
Mt
RORAIMA
R Barima
R Amakura
Passage
Moraikabanna
R Waini
R Barima
Karibaa
R Barima
R Waini
R Waruba
Mahaisima
Topatuma
R Supinaam
ESSEQUIBO R
GEORGETOWN
R Mahaicony
R Abary
R Demerara
R Mahaica
R Berbice
NEW AMSTERDAM
Kartica
Tumatuma
Penal Settlements
Mazaruni
R Essequibo
Wariri
Seba
Mabaruma
R Cuyuni
R Cuyuni
R Barima
R Barima
Omai
Pakaraima Mts
Kaieteur Falls
R Berbice
R Corentyne
Corentyne
Orealla
SURINAM
VENEZUELA

OUR BOUNDARY WAR-SCARE.

By James Rodway.

On the 17th of December, 1895, President Cleveland startled the world by his message to Congress in reference to the Venezuela-British Guiana Boundary Question. A Commission was proposed to report without delay on the merits of the case :—

" When such report is made and accepted it will, in my opinion, be the duty of the United State to resist by every means in its power as a wilful aggression upon it rights and interests the appropriation by Great Britain of any lands or the exercise of governmental jurisdiction over any territory, which, after investigation, we have determined of right belongs to Venezuela. "

This was indeed a challenge that could only be justified by the well-known Monroe Doctrine. On the 18th the British papers spoke in very strong language, the *Times* said the message was of a very grave character, it conveyed a far-reaching claim. A rupture between the two great English-speaking nations would be a calamity to the whole civilized world. The concessions so imperiously required were such that could not possibly be submitted to by any self-respecting nation ; it would be incumbent to protect Imperial interests. The *Standard* said President Cleveland's position was preposterous, they must decline to humiliate themselves. Other London papers spoke in similar terms, but most of those in New York supported the President, only one saying he had made a serious mistake.

Punch's cartoon represented President Cleveland and Lord Salisbury with their hands on a map of Venezuela ; Cleveland says—

" Waal, Salisbury, Sir, whether you like it or not, we propose to arbitrate on this matter ourselves, and, in that event, We shall abide by our own dec sion."

President Cleveland is also supposed to sing a song of which these are the concluding lines :—

" And I skilfully laid my message
On good old spread-Eagle wings.
I watched them spread farther and farther,
(My Monroe doctrine to teach ;)
Farther than sense can follow,
Farther than right can reach
Far, far, farther !
And I know that at least *this* message
Will echo from State to State
For I've twisted the tail of the Lion,
And—well I'm content to wait !
As the Lion (I reckon) will wait !

On the 18th the English papers were less excited but the Americans were even more bellicose. Wall street was agitated and the disturbance of the money market no doubt led to the quieter feeling which soon followed. By

Christmas Day there was strong opposition to war in both countries and early in January the news of the Jameson Raid put Venezuela and the message in the background.

However, the American Commission was appointed and did some good work towards overthrowing Venezuela's extreme claims. Fortunately for peace the Commission was not required to report in the way suggested by the President, for the British Government agreed with Venezuela to submit the matter to arbitration. This, of course, ended all prospect of war.

I cannot here enter fully into the merits of the case but will only state that the evidence brought forward was of the greatest historical interest. How ever Venezuela could have persisted in her claim to the River Essequibo as a boundary it is impossible to imagine. Such was however the case, and the contention of the British Government that such a preposterous boundary could not be open to question was the cause of the whole trouble. Venezuela was first in bringing the matter before the American press, Mr. W. L. Scruggs being their agent. The British authorities on the contrary maintained a dignified silence until it became absolutely necessary in the interests of peace to wake up. Then came a flood of articles in newspapers and reviews, the result being that British Guiana was prominent for several months. No longer was Venezuela allowed to make her misrepresentations without contradiction, for historians in all parts of Europe spoke in our favour.

The dispute which reached such an acute stage had been chronic from Schomburgk's time when Venezuela objected to his layng out a line without her consent. Attempts were then made to come to a settlement but on account of the claim of our neighbours to the settled portions of Essequebo nothing was done. An arrangement was made in 1850 by which both parties agreed to leave the unoccupied portions alone, and under this the first gold company on the Cuyuni was refused a title. In 1874 a murderer named Garrett was captured in the North-West and on his trial here, his counsel objected on the ground that he had been taken on foreign territory, which objection was however disallowed. In 1880 gold discoveries led to a number of small expeditions, and in the following year Venezuela made concessions to a Manoa Company which appear to have included part of the disputed territory. The agents of this Company came over what was considered our line, and Mr. McTurk was sent to warn them off and to put up notices. These warnings were disregarded and the notices torn down. Then Robert Wells, who claimed to have been a Venezuelan officer, hung up a man by the heels for some alleged offence and on being captured and brought to Georgetown was sentenced to 30 days' imprisonment and a fine of $25 for assault.

These petty squabbles led to a publication by the British Government in October, 1886, stating that no titles from Venezuela could be admitted beyond a line shown on a Map at the Colonial Office, this being the final suggestion of Schomburgk after his survey, differing from the line hitherto published, which was a sketch before the actual survey.

This publication was a challenge to Venezuela and was followed by the appointment of constables and the assumption of jurisdiction within the disputed territory, on the ground that the agreement of 1850 had been broken by Venezuela. In December, 1886, Venezuela commissioned Dr. Tebar and Senor Rodil to enquire into the condition of things from the Barima to the Essequebo. They went in the small gunboat *Centenario* going into the mouth of the rivers and proclaiming the sovereignty of Venezuela. At Amacura they took the evidence of Robert Wells and reported that there was a station and two constables on the east bank. In the Barima and Waini Venezuelan Commissaries were appointed, and then the *Centenario* proceeded to Georgetown where the Commissioners communicated through their Consul with our Government, protesting against our jurisdiction in Venezuelan territory. They were simply referred to the Proclamation, a copy of which they took back, with the result that a letter to H. B. Minister at Caracas was written, demanding the evacuation of Venezuelan territory from the Orinoco to the Pomeroon, and arbitration.

The general result of this was to induce the Government to assume complete jurisdiction within the declared boundary, and the establishment of the North-West District under the superintendence of Mr. im Thurn. My historical studies, in which I received assistance from Mr. N. Darnell Davis, led to contributions to the local papers and an article in the West India Quarterly for July, 1887. On the 30th of June of the same year I gave, at the request of the Mayor, a public lecture on the boundary question which was well attended, and no doubt influenced public opinion in the colony. My contention then was that Venezuela had no more right to the unoccupied territory than British Guiana, and I suggested that the starting points be Bolivar and the Caratal region for Venezuela and Pomeroon for British Guiana, the area between to be equally divided. Venezuela's contention all through was that everything not actually settled was hers, and that the Dutch were squatters on Spanish territory.

From this time to the settlement by arbitration the question was of considerable importance to British Guiana. Gold washing had been initiated since about 1879 and the diggers were prospecting everywhere. These people were British subjects, with the exception of a few from French Guiana; Venezuelans took no part whatever. It followed therefore that something must be done to prevent lawlessness, for it would not do to have a no-man's-land at our back or on the west side. The declaration of the British Government was therefore quite justified.

Unfortunately for the British side our Government did very little to make known to the outside world the justice of our claim. Venezuela, on the other hand, called on her big sister republic the United States, to intervene in her favour. "She was poor and oppressed, the British were aggressors; John Bull was as usual land-grabbing." Her publications were circulated in America so that a wrong impression was made at the beginning; in fact it was such a case as is sometimes seen in a Court where the result of the prosecution or defence largely depends upon which side gets the first innings. The man who

was most prominent in misrepresenting the British claims was William L. Scruggs, who by means of pamphlets with such titles as "British aggressions in Venezuela," predisposed his readers in her favour. Not the slightest hint was then given that British Guiana had any rights; in fact Mr. Scruggs wrote as an advocate entirely for his own side. Whether the British authorities considered these misrepresentations as of no consequence or contemptible is not quite certain, but there is no doubt they had a great deal to do with the President's message and the consequent scare.

This scare woke up the authorities in England and immediately historians were consulted, maps brought forward and published, and every book that had any bearing on the subject bought up by one or the other of the three parties concerned. Here also there was the United States Consul, Mr. Andrew J. Patterson, who, on behalf of the American Commission, was at our library every day, searching, and when opportunity occurred purchasing any local literature that could be secured. Then came Senor Suarez from Venezuela, followed by Dr. Ernst who went over similar ground. Finally, when arbitration was settled, a Commission from the British Foreign Office came and made careful investigations not only of Colonial records but of the territory in dispute. Here and there an American could be heard boasting of what Brother Jonathan would do if Lord Salisbury did not back down, an insurance canvasser being especially prominent. However, the people of British Guiana were not much scared even when the possibility of a Venezuelan raid upon Georgetown was mooted.

If ever a country neglected its records more than British Guiana it would be hard to find. Current documents were of course properly kept and docketed but those of real historical importance were treated as rubbish. At the time when I was gathering materials for my history Sir Charles Bruce engaged me to catalogue the books in the Government Secretary's Office. Some of these were already falling to pieces and the most valuable, at my suggestion, were bound. But this was a small portion of the documents—the remainder were stored like bags of rice in a warehouse. When, however, it became necessary to search for evidence of a former control of the disputed territory these bags were taken to two sheds at the back of the Public Buildings and emptied on the floor one at a time. What a mess! Loose books, parcels and documents, and printed papers, all more or less rotted by damp or riddled by insects were thrown down and trampled on by the unskilled persons deputed to assort them. To Mr. Darnell Davis and myself this rubbish was intensely captivating and yet it was so dirty and fragile that in many cases it could hardly bear handling. The sorting had to be carried out in a dirty unventilated room where we crouched over a heap of rubbish, perspiring at every pore and wanting a bath after an hour's work, which was as much as we could stand at one time. Yet under these conditions I got some of the materials for the paper which I wrote at the request of Sir Cavendish Boyle who asked me to give the facts connected with the relations of the Government and the Indian tribes. This was issued in 1896 by order of the Governor under the title "The

Boundary Question : The Control of the Disputed Territory by Essequebo, by means of her Posts, Indian Captains and Protectors of Indians." It was found useful in preparing the case for the Arbitration Commission and I got the thanks of the Secretary of State.

It may be mentioned as a slight excuse for the mess which so many valuable documents were found, that it was probably due to the alarm of the Newtown Fire of 1828. The Government offices were then in what is now the Victoria Hotel and the documents from Essequebo, which had been brought to Georgetown in 1812, were stored there. The whole square of Newtown was burnt save only the Government building, which, however, was cleared out in anticipation that the flames would soon take it over. Everybody was asked to help and books and papers were no doubt pitched out in the same way as I once saw in England where a mirror was thrown from a second-floor window to save it from the flames. Afterwards, when the books and papers were collected, many could not be found and even when advertised for only a portion was recovered. This will account to some extent for the condition of the papers, which, however, suffered further from being stored for years in the dome of the Public Buildings, the roof of which leaked.

In 1892 a British Guiana police station was erected up the Cuyuni at Uruan, as a boundary post at the extreme point where the Schomburgk line crossed that river. On account of the distance and the number of rapids this post was isolated and it took about three weeks to carry the necessary supplies. Venezuela followed suit with another station on the opposite side with a view to observe what further "aggressions" might be made. For some time nothing further was done, but towards the end of 1894 the Venezuelans erected a new station about three-quarters of a mile below ours where they put up their flag. At that time our Uruan station had six men under Inspectors Barnes and Baker, who watched the movements of the other party but took no action. When, however, this second post was vacated at the end of December Inspector Barnes went over, hauled down the Venezuelan flag, and put up the Union Jack. This roused the Venezuelans at their "El Dorado" station and on the 1st of January, 1895, Captain Dominguez with 28 men came over to Uruan and demanded why their flag had been hauled down. Inspector Barnes replied that he had done so in compliance with his orders, but if the Venezuelans wished to occupy the abandoned station he would haul down the British flag. This did not satisfy the Captain who proceeded to arrest the whole party, who, no doubt, had orders not to resist as it might have initiated serious trouble. However, it appeared that the Venezuelan Captain must have felt almost at once that he had made a mistake, for after confining our men in a hovel for six hours they were set free on parole and after a few days told they might go back to their station. This, however, they could not do for their stores had been looted and their building damaged. Finally they were allowed to proceed to Bolivar, where compensation for the stores was offered but refused. They ultimately arrived in Georgetown on the 13th of February. Our station was re-occupied as soon as possible. In June, 1896 Mr. W. A. Harrison was deputed to make a survey for a road from Barima to the Cuyuni, and on the 15th of June while

at work on our side of that river he was ordered to desist by an armed body of Venezuelans. Harrison protested against interference with his work and in reply was arrested and taken to "El Dorado" where, however, having become ill, the dispenser from our Uruan station was sent for. He was ultimately allowed to go over and to proceed to Georgetown without further hindrance.

Whether these high-handed proceedings were intended as protests or provocations to war is not quite certain, but there is no doubt that only the dignified position of our Government prevented what might have proved serious trouble. By this time the people of the United States were beginning to see that Venezuela was in the wrong, and the publication of some British Blue Books quite upset the contentions for the Essequebo as a boundary.

One paper in the *Nineteenth Century*, March, 1896, struck a false note under the title "The Seamy side of British Guiana." The writer, Mr. Francis Comyn, spent three or four months here, in the course of which he appears to have suffered from a bilious attack. According to his jaundiced views there were only about 3,000 British subjects in the whole colony, and none in the trans-Essequebo region. Of the balance of the population, if not more or less "men in buckram," they were bovianders, half-castes, Indians in all but name, with a fair share of Venezuelans counted in to keep up the delusion. The climate was the worst of this "white man's grave," there was a sad freight of sick workmen who had to sleep on the ground, if British soldiers were sent there they would die like rotten sheep. To sum up, the cause was bad, the bone of contention worse, and the climate worst of all. His references to the outrages of Venezuela are as follows :—

"Another and equally important fact, namely, that England not Venezuela nor the United States has created the present critical situation. This has been done by our sending to Venezuela an ultimatum claiming 12,000*l.* and an apology for the arrest in, and deportation from, the disputed territory of two British Guiana police officers, Messrs. Barnes and Cox (!).

"Here it may not be amiss to mention that some years ago a similar 'outrage' took place, Mr. McTurk, an able energetic British Guiana police magistrate, having been similarly treated without aught beyond protest on the part of England."

This article, however, stands alone for the same review in January contained a paper by H. M. Stanley, who had just come over to England, "The issue between Great Britain and America." He spoke of the strong feeling everywhere and advocated conciliation. He was not in favour of abject submission to the "stupendous arrogance" and "audacious wickedness" of the United States. "If we are attacked we must resist those who attack us at no matter what cost."

Mr. Edward Dicey in the same number under the heading "Commonsense and Venezuela" also advised conciliation.

Mr. Moreton Frewen in the *National Review* said :

"Guiana is as much a State of our Union as Montana is a State of the American Union. Guiana, too, is for all practical purposes as near to Westminster as Montana is to Washington; suppose that for one moment that across the frontier from Montana to British Columbia, Canada kept open sanctuary for the criminal classes—the horse thieves and road agents who are 'wanted' from time to time in the United States; how long would it be before such a robber's nest was invaded from south the line by 'the boys in blue.'"

Mr. Carnegie wrote in the *North American Review* in favour of arbitration—he would even go so far as to enforce compliance by going to war. A striking remark in the paper is:—"To 'die for one's Country' sounds well; 'to die for one's Colony' does not *ring*."

His final summing up is applicable to other disputes as well as this:—

"No Government can live in Britain which dares squarely to persist in rejecting arbitration in a boundary dispute upon the American Continent. There is too much religion, too much conscience, too much sincere desire for peace and good will among men, and far too much genuine kindly feeling among the people from Queen to Peasant for their 'kin beyond sea,' to permit any Government to commit so great a crime."

The Arbitration Commission commenced its sittings on the 21st of June, 1899, and gave its decision on the 3rd of October following. The award was practically a vindication of our claims for though it gave two small pieces within the Schomburgk line to Venezuela these bits were of little importance. Previous to the difficulty offers had been made by Great Britain to compromise the dispute by withdrawing her claims to Amacura and Barima, the latest, Lord Roseberry's proposal being well within the line awarded. Mr. Reddan, of the Foreign Office, who collected evidence in Spain told me that the British side did not insist upon our full rights. In fact it was a compromise—the Venezuelans were conciliated with a piece of land at the mouth of the Barima, and a slice up the Cuyuni including the site of the Uruan station. No actual settlements or gold workings on our side were given up. The *Review of Reviews* said: "We have lost nothing that would not have been dear at a five-pound note, and we have gained substantially everything that we ever contended was our right." Gold findings at Wenamu go to prove, however, that even the slice up the Cuyuni was worth something.

Mr. Harry Whates, once editor of our *Royal Gazette*, wrote an article for the *Fortnightly Review* in which he laid stress upon the fact that there was no longer any risk to capital, for the Award laid the ghost of possible invalidity in our title. The development of the territory could therefore go forward without hindrance. Although no real boom has yet arrived there is no doubt that the colony has slowly progressed within the once disputed territory.

The work of the American Commission and the British and Venezuelan experts necessarily contributed a great deal towards the elucidation of historical questions. Nevertheless there was little to invalidate the statements made in my "History" and "Annals." Doubtful matters remained doubtful. Among

them was the establishment of Kyk-over-al ; Hartsinck gives 1613 and John Scott 1616, but there is little reliance to be placed on either. Then the question of its being built on the site of a Spanish (Portuguese) post is still unsettled. The American Commission was inclined to the opinion that it could not have existed until after the West Indian Company took over Essequebo about 1623. It is however quite certain that Dutch traders came to Guiana from about 1600, but the reported settlement in Pomeroon in 1580 may be safely put down as an error, for at that time the Netherlands were occupied at home in gaining their independence.

As the settlement of this matter is of some historical importance I have gone carefully into it and it may be well to see what can be gathered from the evidence. Hartsinck speaks of a Portuguese stone fort being occupied by the Dutch in 1613. It is, however, very doubtful if Portuguese ever came so far, and then again Portugal was under the domination of Spain at the time. There may have been a Spanish post at some time towards the end of the 16th century but there is no evidence ; possibly a temporary fort might have been erected. As however the Dutch traders were very weak, it is not to be supposed that they would occupy a strong fort of the enemy. We may therefore safely dismiss the Spanish fortification. That 1613 was near the date of Dutch occupation may be safely assumed but possibly three years later, as Major John Scott said is the more probable.

Scott's account of his capture of the Pomeroon and Kyk-over-al was written to show the damage he had done to the enemy in view to compensation for his expenses. There is undoubtedly some exaggeration in his statement of the value of the settlements but his account of Gromweagle (Van Groenwegen) has nothing to do with his claim and may therefore be put down as correct so far as hearsay evidence can be. His statement is virtually that Van Groenwegen had built Kyk-over-al and that he was an Indian trader in Essequebo. Of course he could only have been connected with one or more Dutch merchants, for the Company was not yet formed. There is, however, no record of such connection, nevertheless it is possible that he may have represented William Courteen, the founder of the English settlement in Barbados. The incident of Powell going to Essequebo and getting Indians to teach young Barbados how to plant is easily explained if Powell and Van Groenwegen worked for the same house. However that may have been there seems to be no doubt that private merchants were trading in Essequebo before the Company came into existence. These traders probably joined the Company, and being shareholders still kept their private transactions until at last the fort was handed over to the Company and Van Groenwegen at a later date became Commandeur. No doubt the fort was altered and improved by the Company ; we have records of repairs being done in 1627.

The most striking thing about this Fort is that it was so much more substantial than anything elsewhere ; the usual form was a block-house with palissades as in Berbice. To erect such a building of stone and brick would necessarily have required European workman and this meant a larger company than was necessary for a mere trading station.

As far as I can gather Major Scott may be right and his Gromweagle (Van Groenwegen) the real founder of Essequebo. He appears to have married an Indian woman, and a son, Amos Van Groenwegen, was Postholder of Demerara in the early years of the 18th century. The name still exists here as Van Groningen and perhaps Van Krunigen.

An interesting find was a secret proposal between Spain and Portugal to influence the Bush Negroes so that the Dutch might be entirely driven out of Guiana ; whether any of the raids on the plantations in Surinam was due to this is uncertain. As another result of the Boundary investigation we have just got from the Hakluyt Society the interesting letters of Governor Storm van's Gravesande.

The Atlases of the American Commission and the British case are very interesting to the historian and go to prove that neither Spain nor Venezuela knew anything of the disputed territory. In fact, our neighbours came to us for maps and other information to formulate their case. On our side we have records of exploration by Waterton, Hancock, Hillhouse, Schomburgk, and Sawkins and Brown, not to mention a host of more recent travellers ; but Venezuela knows but little of her Guayana. Now that the balata-bleeder has followed the gold-digger and there is no fear of interference from Venezuela or Brazil, every part of the colony is being explored. Nothing important has, however, been lately discovered and we may therefore presume that the work of Schomburgk and the others was well done. Little is now left unexplored and that little will probably soon be pretty well known, for already balata expeditions are working almost to the boundaries of the colony.

There is no doubt that the boundary settlement has put matters on a sound footing even though the exaggerated expectations of gold-diggers and diamond hunters have not been altogether justified by results. The balata-bleeder can now go through the length and breadth of the colony without risk of hindrance, and the colony has been saved the expense of boundary posts. Probably also the United States has learnt from the war scare not to be so hasty in her judgments.

THE SIMULIDÆ OF BRITISH GUIANA.

By K. S. Wise, M.B., B.S., B.Sc., D.P.H., Government Bacteriologist.

During the past few years much attention has been paid to the Culicidæ of this colony and as a result of the work of Ozzard (1) of Aiken and Rowland (2) and of Aiken (3, 4, 5) excellent and accurate descriptions of the mosquitoes of British Guiana are to be found in the local publications.

Other families of Diptera, however, which bite human beings and animals exist largely in this land and form in some parts at certain times of the year veritable pests.

In view of the fact that great attention is being directed in all parts of the world to biting Diptera other than Culicidæ, it has become necessary and of interest to examine the specimens of this colony.

The Muscidæ are represented by the ubiquitous *Stomoxys calcitrans*, the Hippoboscidæ by *Olfersia*. The Tabanidæ are very numerous and include species of the following families:—Dyspangonia, Chrysops, Diachlorus, Dichelacera, Bolbodimyia, Selasoma, Stibasoma, Tabanus and Lepidoselaga.

The Simulidæ which forms the subject of this communication are represented by two species, *Simulium amazonicum* described by Goeldi (6) and a new species described here for the first time.

The Simulidæ comprise only one genus, Simulium, which, however, is world wide in its distribution. In Lapland they are sometimes extremely abundant in May and July preying upon man and animals. "It is not rare to see calves and sheep succumb to their bites. The Reindeer only escape the torture by taking refuge besides glaciers and on the summit of mountains. The Lapps preserve themselves and their Reindeer from these pests by living in the smoke of large fires" (7).

The famous *S. columbatczense* is a severe and dangerous pest in the valley of the Danube. In May the swarms appear as dark clouds and woe betide man or animal which they meet. Thousands of bites, punctures and painful swellings, violent fever, asphyxia, convulsions and even death ensues.

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(1) British Guiana Medical Annual Vol. 12, 1904 p. 65
(2) ,, ,, ,, ,, ,, 14, 1906 p. 13
(3) ,, ,, ,, ,, ,, 15, 1907 p. 59
(4) ,, ,, ,, ,, ,, 16, 1908 p. 1
(5) Timehri (3rd Series), Vol. 1. Part II., p. 187, 1911.
(6) Memorias do Museu Goeldi IV. Os Mosquitos no Para, 1905, p 138.
(7) Parasites & Parasitic Diseases. Newmann & MacQueen, 1905.

In 1878 in Hungary 20 to 30 cattle were killed daily in this manner and there are records of several children having met their death in the same way. In North America they are known as Buffalo and Turkey gnats attacking numerous kinds of mammals and birds.

Travellers in Brazil speak of the Pium fly (*S. amazonicum*) with dread. Bates (8) writes "the wretched chamber was darkened by a sheet of calico being stretched over the windows, a plan adopted here to keep out the Pium flies which float about in all shady places like thin clouds of smoke, rendering all repose impossible in the daytime whenever they can effect an entrance." Also further he declares that the Pium "so worrying in the River Soliminos is probably the same mosquito of the Orinoco described by Humboldt and which he referred to the genus Simulium."

According to H. Smith (9) the Pium of Tapajos and the Pium of Carua behave differently, which leads one to suppose that there may be several species all named Pium.

Melville, to whom I am greatly indebted for the greater number of Simulium in my collection, speaks of these Pium flies as a very severe trial. "Pium" is the Brazilian name while "Cabouri" is the Arawak name applied to them in British Guiana.

Melville describes them as frequent on the upper reaches of the Essequebo River with its branches the Rupununi and Siparuni and also on the large hinterland savannahs. Swarms of these flies follow travellers, biting human beings and animals but also apparently sucking the sweat from the skin more particularly of native women. These insects have a voracious enemy in the nature of a black and white wasp (probably *Monedula signata*). This wasp follows the Aboriginal Indian to obtain the Pium which it reduces to unconsciousness and leaves with its eggs as a food store. Melville describes the bite as extremely painful followed by an irritating swelling which may subsequently develop into a kind of chronic skin eruption. Mégnin in France has described a type of chronic psoriasis with subsequent vitiliginous patches due to numerous bites of Simulium reptans.

One traveller who has spent much time exploring amongst the uplands in the interior of British Guiana tells me that these Pium flies at times are such a curse that it is absolutely necessary to wear face masks and gloves, moreover, it is impossible to perform any but the scantiest of a morning toilette and that only under great discomfort.

The material on which these notes are based consist of twenty-nine specimens of *Simulium amazonicum* (Pium fly) and eleven specimens of a new species of Simulium. Mr. Rodway, the Curator of the Museum of the Royal Agricul-

(8) The Naturalist on the River Amazons p. 364, 1895.
(9) Hubert Smith, Brazil, the Amazons & the Coast, p. 334.

tural and Commercial Society of British Guiana, very kindly allowed me to examine the specimens under his charge, viz., four S. Amazonicum and two Simulium of the new species.

In view of the fact that the early stages of the metamorphosis (viz., the larva and the pupa) are passed in swiftly running well aërated streams it is obvious that these flies are only met with well up in the interior and are never seen along the flat mud-formed coast lands where the only waterways are sluggishly moving streams. The well known sandflies of these coast lands belong to the family Chironomidæ (Genera Culicoides and Ceratopogon).

The Simulidæ are small obese flies usually of dark or subdued colour. They possess a very humped back, short legs and broad wings. They generally occur on or near waterways. No noise, hum or buzz announces their arrival, which is silent; they feed on vegetable juices but the female attacks men and animals viciously and readily sucks blood. They swarm more particularly about sunset but will attack during the whole day.

Simulium Amazonicum (Goeldi).

This Simulium has been described by Goeldi (10) in 1905 but as the original description is not of ready access to all a short condensed summary is added below.

Imago, female. Length 1.95—2.10 mm. Length of antenna 0.40 mm. Length of thorax 0.95 mm. Length of wing 1.15 mm. Depth of wing 0.90 mm. The whole insect is of a blackish colour but in special lights and looked at obliquely shows beautiful iridescent and interference colours. The antenna consists of ten joints of which the basal two are the largest and the apical is conical with a delicate bristle. It is of a general brown colour rather lighter at the apex. The head is united to the thorax by a short neck and is compressed dorsoventrally. The two large compound eyes are separated and composed of facets of two sizes, those of the upper part being the larger. The proboscis and mouth parts are of a light brown colour and in a general way resemble the Culicide proboscis being however much shorter and stouter. The proboscis is composed of a paired fleshy labium completed by a labrum with which is incorporated a grooved epipharynx. The labrum carries a pair of sharp, hooked and simple teeth at the end. The stylets include a single hypopharynx carrying a central duct, with paired mandibles and maxillæ. The mandibles possess a row of small sharp teeth while the maxillæ are furnished with fewer but larger teeth curving backwards. The maxillary palps are large and long and consist of four segments each longer than the proximal, the distal segment being ornamented with numerous closely set rings.

The frons and vertex are of a bluish tinge, have no ocelli and carry a few irregular fine bristles.

(10.) Memorias do Museu Goeldi Vol. IV. Os Mosquitos no Para pp. 138, 139.

The thorax is short and broad, the dominant colour being brownish blue with a bluish reddish iridescence ; there are many pretty golden yellow hairs specially on the outer margin. On this background is a prominent characteristic pattern of a deep black beautiful velvet appearance (see fig. 2). The metanotum and scutellum are of a bluish metallic colour.

The abdomen is dark, fuliginous, of a metallic appearance and without any definite markings. A few hairs are scattered on the 7-8 segments.

The wings are short and broad ; they show beautiful metallic interference colours more particularly green and rose.

The venation of the wings is that characteristic of Simulidæ and is shown in figure 3.

The first three veins are brown and prominent. The costal vein is stout and extends to the end of the wing. V. ii joins the costal one-third of the distance from the base. V. iii. 1. is well marked and joins two-thirds down the costal while V. iii 2 and 5 are united to one vein joining the costal at the apex of the wing. There is a stout cross vein between V. iii 1. and V. iii 2 and 5. Veins V. 1 and 2, V. 3, VII. 1, VII. 2, VIII. are represented but faintly. Vein IX. is stout at the beginning but becomes faint later when undergoing the characteristic S-shaped curve.

The above venation nomenclature is based on the following analogies :—

Costa—Vein I.	Cubitus—Vein VII.
Subcosta—Vein II.	1st Anal Vein—Vein VIII.
Radius—Vein III.	2nd Anal Vein—Vein IX.
Media—Vein V.	3rd Anal Vein—Vein XI.

The Halteres are yellowish white.

The legs have important distinctive characters. In the first pair the coxa, femur and tibia are light coloured, while the whole of the metatarsus and tarsus is brown.

In the second pair of legs the coxa, femur and tibia are light brown, but the metatarsus is white and the four segments of the tarsus brown.

In the third pair of legs the coxa and femur are brown ; the proximal half of the tibia is white and the distal brown, the metatarsus is white with a distal brown band ; the four tarsal segments are brown.

Imago, male. This insect very closely resembles the female imago. The following two important differences suffice to readily separate the sexes. In the head the large compound eyes are contiguous. The pattern on the thorax so characteristic in the female is equally characteristic in the male.

Figure 1 illustrates exactly the arrangement of the bands. In all other external respects the two sexes are very much alike.

The above description of the British Guiana variety of "Pium fly" corresponds closely with the description of the *amazonicum* "Pium fly" given by Goeldi.

Goeldi describes a characteristic pattern on the thorax "made up of 1. A median straight band; 2. Two curved lines in shape of a half moon combining with the middle one to form a T turned to the front (one could speak of five longitudinal thoracic lines)." The description though not identically similar to figure 2 yet shows a very close resemblance.

Again in the leg markings certain differences may be noted.

In the first pair of legs Goeldi describes the tibia as being fuliginous, in the second pair the tarsus is light coloured as well as the rest of the leg.

The differences are small and insufficient to create a separate species.

This *Simulium amazonicum* approximates somewhat to *Simulium quadrivittatum* (11), a species from Cuba but may be distinguished by the thoracic ornamentation and the leg markings.

Specimens of this Simulium have been sent to the British Museum, to the London and Liverpool Schools of Tropical Medicine.

Simulium Guianense. n. sp.

Imago, female. This fly was found by Melville on the Essequebo river and its higher branches in British Guiana and is known as the "Itanimi fly," this being distinguished by the Aboriginal Indian from the "Pium fly."

It is larger than *Simulium amazonicum* and is of a light silvery grey colour.

The length of the whole fly is 2.35—3.10 millimetres, the length of antenna is 0.55 m.m., the length of thorax is 1.25 m.m., the breadth 1.10 m.m. The length of wing is 1.35 m.m., the breadth 1.10 m.m.

The general colour is light grey with a silvery shimmer. No interference colours or metallic iridescence were noted except occasionally on the wings.

The antenna is composed of ten joints all of a yellowish colour and covered with short white hairs. The distal joints are brownish. The compound eyes are deep black and well separated and in this fly also the upper facets are larger than the lower. The proboscis is of yellowish brown colour and is composed of the same elements as that of S. Amazonicum. The labrum has at its distal extremity six well marked hooked teeth, three on each side.

The Maxilliary palps are yellowish brown of four joints and covered with many hairs. The first has an oval sac like a sense organ. The second to the fourth segments have numerous pitted surface markings giving the impression of rings.

(11.) Felt, Aquatic Insects in New York State, 1903, p. 354.

The face and cheek, are silvery grey with sparse white hairs. The frons and vertex are dark with a silvery grey shimmer due to scattered short white scales. The occiput and post vertical regions show short white hairs. A thin median indistinct black stripe traverses the frons and vertex.

The thorax is almost square and of a blackish colour with a silvery grey shimmer. It is decorated with sparsely scattered short white scales with a thin indistinct median dark stripe. The pleurae are bare and brownish yellow. The scutellum has black hairs projecting from the posterior edge and short white scales on the upper surface. The metanotum is bare with a fringe of white scales at the posterior edge.

The abdomen consisting of 7-8 segments, is reddish brown decorated on the three last segments by a few white hairs.

The halteres are light yellow.

The wings shew the venation typical of Simulidæ. The venation of S. guianense is identical with that of S. amazonicum described above. There are numerous short hairs and bristles on the costa.

The leg markings are very characteristic and are as follows :—

In the first pair the coxa and femur are light yellow. The tibia is dark yellow with a distal band of dark brown colour. The metatarsus is black, much swollen and covered with short, stout hairs. The tarsus is much enlarged in the second and third segments, the fourth and fifth segments are small and delicate. The second and third segments are covered with short, stout hairs, while the two distal segments carry thin and long hairs.

In the second pair of legs the coxa is light yellow, the femur yellowish brown, the tibia dark brown has a pair of spines at the distal end and is slender (not swollen like that of the third pair) ; the metatarsus is pure white with a distal black band and a long row of short, tough spines. The tarsus is dark brown with numerous stiff hairs.

In the third pair of legs the coxa is yellow, the femur brown with a proximal yellow band. The tibia is proximally yellow shading distally to deep brown. It is much swollen and is almost club shaped. The metatarsus is white with a black distal band, the tarsus is blackish brown with many fine and long hairs.

The male imago was not found.

This species of Simulium has some resemblance to *Simulium tarsale* (12) found in the West Indian Island of St. Vincent. In both species the fly is blackish with a silvery grey shimmer and in both various members of the metatarsus and tarsus are swollen.

(12.) Wellington, Tran. Entomological Society London, 1896, Pt. III., p. 268.

The characteristic legs of *S. guianense* readily distinguished it from *S. tarsale*. Williston describes the latter as follows :—

> " Legs reddish yellow ; tarsi black except that the proximal half of the middle and hind metatarsus are light yellow ; first and third joints of the first pair each with two long hairs ; second and third joints of the same pair dilated, fourth and fifth very small. Hind metatarsus elongate and stout, the following two joints a little dilated the fourth and fifth small."

I have to acknowledge my great indebtedness to Dr. Q. B. de Freitas of Berbice for his great kindness in translating the necessary parts of Dr. Goeldi's work.

ILLUSTRATIONS:

Fig. 1. Diagram of thoracic markings of Simulium amazonicum. Male.

Fig. 2. Diagram of thoracic markings of Simulium amazonicum. Female.

Fig. Diagram of wing venation of Simulium guianense.

BLOOD-SUCKING FLIES OTHER THAN MOSQUITOES.

By Harold W. B. Moore.

Just at present when mosquitoes are being held up before the public as responsible for many of the most serious physical disorders of man, it seems very opportune to remind people that the Culicidæ or mosquitoes, though the best known, are not the only flies which suck blood, the habit being found, too, in certain flies of other families.

The family of the *Chironomidæ* or midges, for example, furnishes us with the blood-suckers locally known as "sand-flies," which derive their popular name, I presume, from the fact that they are abundant only where there is plenty of sand, such as along the foreshore and on the sandy regions of the interior. In some other parts of the world similar flies are known as "punkies" or "no-see-um," the last name being singularly descriptive, the insects being indeed so tiny as to be very often rather felt than seen.

In spite of their blood-sucking proclivities sand-flies, when closely examined, as by a strong hand lens or a microscope, are seen to be very beautiful creatures, their wings being delicately mottled with grey and their antennæ prettily feathered. They belong to the genus *Ceratopogon*, and are among the smallest, if they be not actually the smallest, blood-sucking flies, being but about a twentieth to a sixteenth of an inch in size. Though they be the liliputians of the blood-suckers their pricking is exceptionally v rulent, due, probably, to a highly irritating salivary secretion. When a mosquito pierces our skin with her proboscis, the pang of the pricking ceases soon after the insertion of the proboscis, but with a sand-fly the case is different. Not only can we discriminate pretty readily between the painful sensation occasioned by the piercing of each of the two kinds of fly, but during the whole time the sandfly is drawing our blood we feel the pang of the operation, which is followed by a severely unpleasant itching.

Sand-flies are most annoying along the bushy parts of the seashore at dusk and at dawn, particularly if the weather be calm. During the sunny hours of the day we may frequently traverse the bush without being molested by a single one, even when they are in season. They are evidently in deep hiding, for they are scarcely to be found even when searched for. About an hour before sunset we begin to experience their characteristic smarting pricks, while by dusk they are upon us in such crowds that we bid the courida a hasty adieu. They cannot be driven off like mosquitoes, and being so microscopic readily find their way down our backs and up our sleeves. Their attacks often result in great ugly bumps on hands and face. Little chidren scratch the intolerably itching bumps, which then frequently develop sores that heal with some difficulty. At times, however, sand-flies will swarm out during the day, but this happens only during a calm following cloudiness or a shower.

Among the midges blood-sucking obtains only among the sand-flies. The green and grey mosquito-like midges, so common at dusk and early morning on our window-panes during the rainy season, are absolutely harmless, being utterly incapable of piercing our skins.

The family of the *Psychodidæ*, owl-midges or moth-flies, contains the genus *Phlebotomus* that includes certain blood-suckers, but I do not know if this genus or any of the blood-sucking species are represented in the colony. I refer to the family chiefly because Psychodidæ abound in latrines in the city, and perhaps some of them may be blood-suckers, and be also concerned in the carrying of disease germs. They are small, grey, hairy flies, resembling little moths. Their wings are broad, and at rest lie roof-like over the body. They are nocturnal in their habits, and often come into houses, where at dusk or dawn they may be seen running about on the window-panes. They breed from the sewage of cesspits, whence anyone bold enough to work out their life-history can obtain their larvæ and pupæ. Looking down at the liquid filth of any cesspit we may see their wriggling larvæ in abundance, while perched on the inner walls of the out-house itself there may be noticed dozens of the adult flies. I have seen the commonest species breed from animal and vegetable matter left to decay in water in a glass-jar.

All Psychodids, however, are not objectionable in their breeding habits, as there is a beautiful species, grey with an orange yellow thorax, which breeds in the water in bromeliaceous plants such as the wild pines that grow on many of our large trees. I have bred it from wild pines at the Botanic Gardens, Mocha, and Look Out, West Coast.

The *Simulidæ* variously referred to as sand-flies, buffalo-gnats, and sometimes mosquitoes, comprise a set of small flies that prick viciously, attacking the eyes, nostrils, and ears of man and beast, their puncture giving rise to severe inflammation. They are black, one-tenth to one-sixth of an inch or more, with a humped thorax, short straight antennæ, and broad and delicate iridescent wings. They are not plentiful along the coast. In my rambles aback of Grove, East Bank, I have two or three times come across a solitary one. In the interior, however, they are abundant, Mr. de Freitas, taxidermist of the Museum, once collected a goodly number from the Potaro district, and Mr. Melville some from the Rupununi. At Ida Sabina on the Berbice I observed several. They attack by day.

The *Tabanidæ* include the biggest blood-sucking flies, some of them measuring over an inch. They have many popular names, such as gad-flies, breeze-flies, dun-flies, horse-flies, cow-flies, brimps, cleggs, and stouts. Locally, they are known as cow-flies. They are noted for the wonderful beauty of their eyes, which have green and violet bands or markings, with a golden sheen. In the males the head is almost entirely composed of the eyes, which mee together above in the male but are separated in the females. They are active by day, and attack not only man, but cows, horses, donkeys, and mules, and in other places camels, and even elephants. Their pricking frequently causes blood to trickle from the animals attacked. Austen, in his "British Blood-sucking

Flies," mentions Portschinsky as stating that in the Gdov District of the St. Petersburg Government, in Russia, cow-flies are such a pest to man that agricultural operations have to be carried on at night, while in parts of Siberia settlers have to abandon infested zones.

One of our smaller cow-flies, *Tabanus trilineatus* is a frequent visitor in houses, blundering in and alighting on the window-panes. It is the commonest cow-fly on the coast. It is grey, and has three whitish lines on the abdomen. It cannot be described as blood-thirsty as regards man. On the other hand, cows, horses and donkeys suffer at times severely from its attack. Some months ago on the Craig public road I observed two donkeys, presumably mother and young, badly worried by scores of this fly. The colt was the greater sufferer, principally because it never went out of the district, being too young to be used in draft, and because lameness in a leg restricted its activity. I was then at work on the insects of that district, which I visited two or three times a week for several weeks, and on nearly every visit I passed the colt, which was always crowded with flies. It was plainly so tired and disgusted at contending with them that it had given way to despair, and now hardly troubled itself about them, but generally allowed them to exercise their blood-thirsty proclivities at their own sweet will. The flies attacked chiefly the central line of the face, the back of the ears, the shoulders and the lower parts of the feet,—just those parts of their bodies that could not well be reached by the tail. The colt was quite sore on the face, ears and thighs, while from both animals blood freely trickled at several places.

A cow-fly we have to dread is *Tabanus pellucidus*, large, nearly an inch long, thorax grey, abdomen chocolate brown with small grey spots on centre and sides, wings smoky. It is abundant in the interior and fairly plentiful on the coast. It is very blood-thirsty, is fond of attacking one's back and shoulders, and will follow us for considerable distances. It is very persistent in attack, returning again and again if driven off. Fortunately for the attacked, it betrays its approach by a loud hum, and with a little care and watchfulness one easily gives i its quietus by means of a slap or the killing-bottle. Its pricking is intensely sharp, as I know from personal experience.

More blood-thirsty yet, more persistent in attack, and more successful too, as it is almost silent in its approach, is a species of Chrysops, very common in woody and bushy places, such as the Botanic Gardens and the foreshore where the courida is dense. It is the exception if I go into the bushy parts of the Botanic Gardens, and am not dogged by this Chrysops. In fact, its low soft hum is generally the first insect sound to greet my ear. This is a brown fly, with four grey lines on the thorax, and three lines of grey spots on the abdomen. The wings are brown on the upper margin and across the middle, while the antennæ are long, brown, and taper to a point, which is blackish. It is fond of attacking the face and neck, quietly alighting on one 's hat and then c awling cautiously down to one's face or neck to indulge in a drink of blood. I never let it get so far as to drive its proboscis into me, for as soon as its hum ceases I know it is on my hat or shoulder, whence it has then got to take to flight in a great hurry, or pay the death penalty. Once only in the Ogle courida I allowed

one to crawl from my hat to my hand, and pierce one of my fingers with its proboscis, just to find out what the operation would be like. The pang of the prick was by no means as severe as anticipated from the zest with which the blood-robber drove in her lance. All the same I slapped her to death as she did so.

Another great blood-drinker is *Tepiselaya crassipes*, not found on the coast as far as I am aware, but common in the hinterland. It is black, covered with a sort of iridescent down. The legs are inflated, and have white tips. While journeying on the Berbice River in 1908 one of these flies flew on board the steamer when about 50 miles up, and a few weeks ago I observed one on board the Demerara ferry boat. In the latter instance the fly had doubtless been brought down from the upper reaches of the river by the Wismar steamer. In the interior the sand wasp *Moncdula signata* is said to feed its young on this fly, and to attend on persons to pluck the flies from their bodies, just as it deals with the Motuca fly of Brazil.

The colony possesses many other Tabanids besides those mentioned above, but they are not yet identified.

The family of the Muscidæ includes a few blood-sucking flies, but only one of these as far as I know inhabits this colony. It is an insect about the size of our common house-fly (*Musca domestica*) and having much the same appearance, save that it is more distinctly marked with grey and black, and has a little rigid black proboscis, which, when not in use, projects horizontally in front of the head, whereas the fleshy non-biting proboscis of the house-fly is carried drawn up in a cavity on the underside of the head. Indeed, at a casual glance, it so greatly resembles the ordinary house-fly that it has often been mistaken for the latter, with the result that the house-fly has sometimes been thought capable of pricking. Like the cow-flies it also attacks man, but not by any means to the extent to which it does mules, horses, and cattle. On these animals, particularly the mules on sugar estates, it may sometimes be seen in dozens at once. As it is very persistent in its attack, worrying the poor creatures from morning till night, whether they be in stable, pasture or harness, and as each fly can probably contain in its stomach as much blood as several mosquitoes put together, it will easily be recognised what a great loss of blood attacked animals must sustain. I cannot but conclude that this fly is none other than *Stomoxys calcitrans*, mentioned in works on natural history as being abundant in Europe and North America. It is not unlikely that *Stomoxys calcitrans*, like the house-fly and many other pests of man or domestic animals, is cosmopolitan. Its distribution certainly is very wide. Austen records it as occurring in Europe, North America, West Africa, Ceylon, Java, Hong Kong, and New South Wales.

I experienced its stabbing powers one morning shortly after sunrise while collecting mosquito larvæ from a canal running through Kitty village. On the water-grass before me there flitted a grey-striped fly which I supposed to be one of our ordinary innocuous Muscids. Its activity, however, was a bit of a puzzle to me, as well behaved Muscids are never thus early on the wing. I paid no further attention to it but continued gathering my larvæ.

Suddenly there was a sharp prick on the back of one of my hands. Turning round the hand I was not much surprised at discovering that the grey-striped fly was the offender. Knowing now what I had to deal with I attempted to kill it by a slap, but the blood-thirsty knave was remarkably agile and easily escaped, alighting again on the grass, where I let it alone. It soon stabbed me afresh, and I made a second attempt to take its life. Again it escaped, alighting on the grass as before. I now tried to catch it by a sweep of my hand, but did not succeed. These repeated attempts on its life proved too much for it. It flew off altogether, and never worried me again.

On every sugar estate I have yet visited I have observed this fly attacking the mules. It is much more abundant on some estates than on others. Its larvæ live in dung, and accordingly this pest could be considerably reduced on estates by doing away with dung heaps or by treating them in such a way that the flies would not be able to have access to them to deposit eggs.

The fly once in a way enters houses. Quite recently I took one on a window-pane of the house in which I reside.

Stomoxys calcitrans is interesting not only because it is one of the Muscids which suck blood, but because also it is a close ally of another blood-sucking Muscid, the famous tsetse fly of Africa.

The last blood-sucking family I shall mention is that of the *Hippoboscidæ*, horse-flies or forest-flies, but the only member of the family I shall notice is one which I take to be *Hippobosca equina*, the English forest-fly, so-called because, as stated by Austen, the principal home of this species in the British Islands is the New Forest in Hampshire. Regarding the distribution of the fly Austen says it occurs throughout Europe and in very many other widely distant localities, to some of which, at any rate, it has doubtless been carried with horses in recent years. He furthermore mentions that the British Museum has received specimens from Algeria, the Cape of Good Hope, Madeira, Canary Islands, Azores, Turkey in Asia, Bengal, Upper Burma, Celebes, Fiji, and New Caledonia.

I have now and then seen the fly on horses, but cannot say whether or not it be abundant in the colony, as I have not investigated it. I have twice observed one blunder into the Museum. In each instance it had doubtless come from a horse at the cab-stand in front of the building. The fly itself is flat, and has its feet furnished with toothed-claws which enable it to cling so tightly to the hair of an animal that it cannot be dislodged by a brush from the tail. Its movements are rapid and almost crab-like.

FIFTY YEARS' RECOLLECTIONS OF BRITISH GUIANA.

By Dr. J. S. Wallbridge, Late Government Medical Officer.

I commenced my life at a very early age by being born. I did not, like Topsy, just grow up, nor just appear like Adam, nor did I come down from a cabbage tree although tradition warranted such a belief. I was born in Georgetown, British Guiana. Most people know now where Georgetown is. A visitor to the colony some years ago described the ignorance which prevailed formerly as follows :—" The Colony of Demerara is supposed to be an island, Essequibo to be in Mexico," and in the Edinburgh Almanack of 1831 Berbice is placed among the Bahama Islands. My birth was not registered. There was no registration of births until 25 years after my birth. I have had to trust to hearsay evidence as regards the details of my infancy, but being only a " common or garden doctor," and not a lawyer, I have accepted the evidence. I have been told that years ago where now the Atlantic surf strikes the Sea Wall a beach a mile or more long stretched out to sea. Upon this beach as an infant I was carried by my nurse. In 1845 this beach no longer existed ; it had been washed away. At this time there was a good deal that was negative about Georgetown. There were no trams, no trains, no telegrams, no Colonial postage stamps, no postmen, no cabs, no electric light, no gas light. Georgetown was not yet a city There was no Town Hall. Few steamers entered the port of Georgetown, and the sailing vessels which traded here remained in port for long periods. In one of these vessels I left the colony in 1849. In another of these vessels I returned to the colony in 1855.

As a child I was duly vaccinated, castor-oiled and worm-medicined. My father had no conscientious objections to vaccination, and any objections I may have had were ignored, and accordingly I was vaccinated. Dr. Clifton was the operator. I remember him well, and so, I believe, do many of the older people in Georgetown. The doctor was a fine old gentleman, a popular doctor, and a Catholic. At one time in the local history of the Catholic Church here Clifton showed the courage of his opinions. Since being vaccinated by Dr. Clifton, I have been re-vaccinated twice. My father was inoculated in England.

When a child I went through the usual run of children's diseases ; I had measles, chicken-pox, and scarlet fever. The popular idea formerly was that everybody had to get these diseases, and that the sooner they were got the better. Thus much disease preventable—and sometimes fatal—was handed down from father to son, like an entailed estate. The people in this country are very fatalistic. A common saying was—" If you go get sick you go get am, and when you time come fo' go, you got fo' go." This fatalism was shown in connection with diseases other than those called " children's diseases." In the case of small-pox and yellow fever similar fatalism was exhibited and attempts at isolation and prevention were resisted and ridiculed. Having run

through my course of children's diseases I was taken to England, and there I spent some of the happiest days of my childhood.

When a child I saw the great Duke of Wellington riding through the Park in London, and I remember the day of his great funeral. When Queen Victoria went to open Parliament I saw her in the State Coach. The late King, then a boy of ten, stood by his mother's side. I saw the Great Exhibition of 1851. In 1848 I saw, in the Thames, a Chinese junk, which had sailed to London from China. This vessel excited considerable attention in London. Charles Dickens wrote an account of it at the time. I remember when the Princess Royal was married. At the time people thought her a very young bride, but very early marriages became more fashionable after this marriage. I remember when the Isle of Wight had no pathway running through it, and when Ventnor was a pretty little village.

After returning to the colony in 1855, I entered Queen's College. Dalton, who became afterwards Registrar General of Births and Deaths, and Registrar of the Supreme Court, was there, but he left at the time when I joined. Rev. George Fox was the Principal of the school, and I owe him a deep debt of gratitude. He helped me in studying for the Colonial Scholarship which I obtained. Another of my schoolmates was John Fox, who became Rev. John Fox, and succeeded his father as Incumbent of Christ Church. Dr. Conyers was another of my schoolmates. Conyers entered the Army and became Surgeon Lieut.-Colonel. He died here, and I attended his funeral. Others of my schoolfellows were McTurk who became afterwards a C.M.G. He is a grand old bushman and a man to whom a cataract is practically little more than a brook, Thomas who became manager of the B.G. Bank, Ledoux who became French Consul, Burrowes, the veteran ex-Commissary, John and George Bagot, and the Pearces. McFarlane was a black lad, and became the Rev. McFarlane.

While I was a boy at Queen's College in 1856 riots occurred in Georgetown. A man named John Orr was responsible for the outbreak, and paid the penalty of his crime in H.M. Penal Settlement where he died.

During these riots there was a great deal of religious animosity in Georgetown and offensive doggerels were sung in the streets. I was in Georgetown later on in 1889 and 1905 during the riots of these years.

In 1856 I was attacked with yellow fever. I recovered under the care of Dr. Houston. My sister, who was attended by Dr. Dalton, died shortly before I was attacked.

In 1857 cholera appeared in Georgetown. I had a great dread of this disease. The Rev. Thos. Henderson, a London Missionary clergyman, showed great kindness to the people at Beterverwagting. Mr. Henderson was somewhat eccentric as well as kind. On one occasion when holding a service in his church, the collection-plate was handed to him after it had gone the round of the congregation. Seeing the preponderance of copper coins in the plate Mr. Henderson upset the plate and while the coins rattled along the floor he indignantly

enquired if such an offering was fit for Almighty God. I have had some experience in collecting in church and I am under the impression that copper is still much used in contributing to church funds. After finishing my studies at Queen's College I obtained a Colonial Scholarship. There had been for some time a dearth of doctors in the colony, and the Government sought to rectify this state of things by instituting scholarships—to promote medical study. The other men besides myself who obtained scholarships were Van Waterschoodt and Gibbons. The former was uncle of the present Chief Justice of Trinidad, and brother-in-law of the former Chief Justice of Jamaica. Neither Van Waterschoodt nor Gibbons returned to practise in the colony. Gibbons died in Glasgow before his medical course was finished. Dr. Grieve was then a student at the Glasgow University and attended Gibbons's funeral. After getting the scholarship I walked the Public Hospital, Georgetown, under Dr. Manget for 15 months and I knew my skeleton well before going to London. I entered University College. I was for a time clinical clerk to Sir William Jenner.

One of the first sights I saw in England when I went to study was the Great Volunteer review at Brighton. Lord Clyde reviewed the Volunteers. Lord Clyde served in Demerara as Captain Colin Campbell, and did duty during the Insurrection of 1823. When I took over charge of the Buxton Medical District I met an old black man who had been a slave on the East Coast, and who remembered very clearly many facts about the Insurrection. He was 25 years old at the time. The Rev. John Smith suffered in connection with the Insurrection. He was put into the Colony House, and died there before his sentence was carried out. I am not going to enter into the details of Mr. Smith's case, but I will quote from Lord Brougham (then Mr. Brougham) who made an eloquent speech about the matter in the House of Commons. Speaking in the House with reference to Mr. Smith's case Brougham said: "I have no hesitation in saying, that from the beginning of those proceedings (the Court-martial) to their fated termination there has been committed more of illegality, more of the violation of ustice—violation of justice in substance as well as in form—than in the whole history of modern times, I venture to assert, was ever before." My father wrote a book called "The Demerara Martyr," in which he gave his views in connection with Mr. Smith's case. My father named me John Smith in memory of Smith, and he built a Church on the Brickdam which he called Smith Church.

To go back to University College. At the College three of my classmates were men who became very distinguished in after years. They were John Williams, Richard Douglas Powell and William Gowers Williams became Sir John Williams, Bart., and attended Royalty. Powell became Sir Richard Douglas Powell, Bart., K.C.V.O., and also attended Royalty. He was in attendance on the late King at the time of his death. Gowers became Sir William Gowers, and a very distinguished authority on certain diseases. While at the College I had the privilege of attending the annual distribution of prizes and there I saw several notabilities. Among them was Lord Brougham whose name recalls the Trial of Queen Caroline in 1820, and the Insurrection of 1823. Broug-

ham (I remember) was wearing his favourite tweed check trousers. Grote, the historian, was another notability, as also were John Bright and Lord Stratford de Redcliffe. In the streets of London I saw Garibaldi wearing his red shirt and driving in the Duke of Sutherland's carriage. I saw Princess Alexandra on her way to Windsor on the eve of her marriage to our late King. As the beautiful Princess passed through London a wave of loyalty swept across the great city.

In 1865 I returned to the colony, and in a few days more I shall have completed 45 years of practise in the colony. I have served in various capacities since 1865. I served in the Public Hospital, Georgetown, in several capacities. I have acted twice as Surgeon General of the colony, and I was Medical Inspector for nine years. I served as Assistant Surgeon of the Georgetown Militia, and afterwards as Staff-Surgeon of the Volunteer Militia. I served in several Medical Districts, including the three leading Medical Districts of the colony. When Medical Inspector I had occasion to visit Hog Island. The river was rough and when I heard the name of the boat in which I was crossing, *i.e.*, "Index Death" I did not feel encouraged. Ex-Magistrate Thorne mentions this boat in his "Haphazard Notes." While doing duty at the Public Hospital, Georgetown, I took my turn of duty. The other Assistant Surgeon of the Public Hospital, Georgetown, who exchanged with me at H.M.P.S. was Dr. Anderson. When leaving H.M.P.S. in 1872 I left in the Prison Hospital, Massaruni, a man named Lawrence. After getting my pension I happened to do duty at H.M.P.S. through my acting for Dr. Irving, and I met Lawrence again. From 1871 to 1905 Lawrence had been more or less all the time a prisoner. He was a typical specimen of the habitual criminal.

For 28 days I was in medical charge of the Imperial Troops at Eve Leary, and the War Office paid me at the rate of $10 per day for my services. After getting my pension I was a Town Councillor for a time, and I shall never forget the courtesy I received from the late Mr. Gonsalves under whose mayoralty I served.

It can well be understood that I met many medical men in my time. Of course I can never forget Dr. Manget. To Dr. Manget I owed much. He was a genial old gentleman, and full of life and energy. Hackett in Berbice was a vigorous man, and fond of sport. I remember his telling me how hard he felt it not to be able to get away from the colony, and run a blockade during the American Civil War. Alexander was a great tiger-slayer. Dr. Hutson the elder was the Beau Brumell of the doctors, and he would rather lose a cash fee than soil his well-polished shoes. His son was called young Hutson up to the day of his death in contradistinction to his father. The younger Hutson was keen on the cash. The people had a way of wrapping up the fee in paper. The doctor unwrapped the paper, and if the fee was short he demanded the "percentage," *i.e.*, the bitt on the two dollars saying that he wanted that for his breakfast. Dr. Ward was a very striking personality. Before he came here he was Member of Parliament for Galway, and he could talk a great deal about London society and London politics.

There are others whom I may mention other than members of the medical profession. Among these were the King who visited the colony when a midship-

man. I met Brown the discoverer of the Kaieteur Fall, while I was on duty at H.M.P. Settlement. I met there also Sir George Young who was a Commissioner in the Des Vœux Enquiry. Sir George Young became afterwards a Charity Commissioner. Mitchell is another member of the Des Vœux Commission whom I met there also. I remember how Des Vœux was boycotted at the time of the Commission. A man not easily forgotten was Imlach, Crown Solicitor. He was one of those men who call a spade a *b*—shovel. Some distinguished clergymen came to the colony on an official visit. They brought a letter of introduction to Imlach. One receiving it he said, "Yes, I am the *b*—," using a word which the dictionary describes as a word of endearment among sailors. In the Supreme Court on one occasion a witness mentioned that he (the witness) went to the cane-carrier. The question was asked," And what did he say?" Imlach *sotte voce* exclaimed, "It's no damned *he*. It's the *thing* that carries the canes." Imlach was a great authority on roast plantain. He liked a long deep glass which seemed to have no bottom. With him every day was an *anniversary*, and he and a certain Receiver-General daily celebrated the event in genial fashion. Seon, a Magistrate, was very much addicted to the use of expletives. On one occasion he placed himself in the dock, and after seriously speaking on the great impropriety of using profane language he fined himself with costs. Fitzgerald was an Irishman full of humour and patriotism. He wrote to me just before his death. His letter was in his usual jocular style. He died suddenly a few minutes after writing this letter. One of the most interesting personalities was Russell—the Sugar King. Russell was really a statesman. Trotman had a curious way of taking his drinks in a lump, so to speak, in the afternoon. He took them one after the other with very short intervals between. I remember the severe Judge, the lenient Judge and the facetious Judge. The stern Judge on one occasion paid a visit to H.M.P.S. It is said that he was much impressed with the sadness of prison life, and that after this visit his sentences were not distinguished for severity as they had been before. I remember the talented and distinguished Dr. Beauperthuy. He lies buried at H.M.P.S. I met Trollope the writer; I travelled with him in the Berbice steamer. Trollope said that in this colony the men do not get angry and the women do not get cross.

I may say something about some of the old gold-diggers. The custom among this fraternity in former days was to put a good shot of brandy in a tumbler and to fill up the glass with champagne. Beer was taken as follows—a barrel of beer was called for and the assembled gold-diggers stuck to the barrel until all the liquid contents were consumed. On one occasion a leading member of the fraternity bought up the beer, and free drinks were distributed on board the Bartica boat. Bartica was then the great gold-diggers' depot.

I would say a few words about yellow fever. Since 1865 I have seen a good deal of yellow fever. On my return to the colony in 1865, I found yellow fever prevailing in Georgetown, and immediately after my arrival I did special duty at the Public Hospital. Later on in 1881 a case was admitted into the Public hospital, Georgetown. I was on special duty there at the time. This was the first case of the Epidemic of 1881-1888. It so happened that I saw the last case of the epidemic in 1888 the patient being a private patient in Georgetown.

Since then I have seen no case of yellow fever. Most people, I believe, have heard of the old treatment of 20 and 24, *i.e.*, 20 grains of calomel and 24 grains of quinine. I had two cases of yellow fever in one house. I treated them with the 20 and 24 dose. They recovered. I had a third case in the same house, and I adopted the same treatment. There was a question of having a nurse. I was very anxious to maintain my reputation, and I solved the nursing problem by paying the nurse out of my own pocket. This patient recovered. The nurse was very devoted in her attendance. Nursing is a matter of paramount importance in yellow fever. I was called in to a case that was under the care of a nurse, but not of a doctor. I found the case progressing so favourably under the care of the nurse that I complimented her on her skill, and after a few remarks I left the case without prescribing. The patient recovered. I had another case of a very different character. This case had two doctors, for before its close I was superseded in the charge of it. The poor patient was very ill. It was a hopeless case, and I made no secret of my unfavourable prognosis. The other doctor did not appear altogether to agree with me. It was the worst case of yellow fever I ever saw; I need hardly add that he died. Although I had some success in the use of the 20 and 24 dose I was under the impression that a less heroic treatment might succeed. I had an opportunity before long of testing the question. A sea captain died in Georgetown, and left a young son. I thought that it was very likely the lad would contract the disease, and I got permission from my father (with whom I stayed at that time) to take him to my father's house. I watched the lad closely and I remember well when he showed the first symptoms of the disease. I gave the lad my own bed-room, and made a close study of the case. This patient had no calomel—I am not sure whether he had quinine—but whether he had quinine or not is a matter of no importance—quinine is not indicated in yellow fever and as regards controlling the disease is useless. In this respect yellow fever is quite different from malarial fever. Quinine is useless in yellow fever although it is a specific in that fever. I had a yellow fever patient who told me that he would recover if he got his swizzle. He got his swizzle and he recovered. Many people have a great dread of yellow fever. I remember a young doctor who came here, and when he found that yellow fever was prevailing did not land, but went back in the vessel in which he came. I mentioned my father in connection with the young lad who had yellow fever. Perhaps I may say a few words about my father. His action in the case of the sick lad was in keeping with his action generally, ready to help the suffering and the weak. He was a firm friend of the black people, and lost no opportunity of rendering them all the assistance in his power. My father was a parson, but above all he was a politician. He was an example to all politicians. He had the courage of his convictions, and he showed his courage boldly and bravely and he did not talk nonsense. He took a deep interest in all that concerned the black people, and used his influence on their behalf. My father and I did not see alike in religious matters, but I had a great respect for him. He was a Director of the R. A. & C. Society.

A few more words about practice in Georgetown. At one time I had the largest share of the Portuguese practice. In Georgetown some persons paid

the doctor by the year to attend their family. There was a family whom I attended on these terms. When the contract time had lapsed and there had been scarcely any sickness in the family the head of the family thought it hard to pay the amount due for my attendance. There used to be a great fashion of crowding up a sick room. On one occasion, which I remember well, I came into a sick room and found every seat in the room occupied, and the spectators gazing at the patient as people gaze at a criminal in the dock. I told them that they were like a lot of carrion-crows, but that they would not get the carcase, as the patient would recover. She recovered.

I may mention a few customs of the people. The Sunday funeral is a great institution. I have heard of an old man who was likely to die before Sunday. Every effort was made to prolong the old man's life until Sunday. The wedding is a great function in this as well as in other countries. The essential requisite is that bride and bridegroom shall *drive* to church. The wake is very popular here. At the wake the grief of the bereaved is mitigated by a resort to stimulants and amusement. There is a festive air about the proceedings. I have heard of a wake at which the widow received a proposal of marriage, and told the candidate for her affections that she had already made other arrangements! The Burial Society is a very favourite institution. The greater the mortality the greater the prosperity. When a member dies the surviving members subscribe. The amount subscribed exceeds the immediate requirements, and the amount in excess is deposited with the treasurer to the credit of the fund. I will say a few words about the belief in *Kinna*. This is a very general belief in this colony—one family cannot eat fowl, another family cannot eat pork. I remember one person who could not eat pumpkin. The origin of the belief is totemism. Every family has a totem. Those who have the same totem are said to be akin to each other, hence the term *Kinna*. This belief extends far beyond the borders of the colony. It is believed that those who consume their totem are visited with the penalty of disease, which may be *death*. Totemism is closely allied to the customs of tattooing. Tattooing shows the totem class to which the tattooed person belongs.

Obeahism is firmly believed in by many people in this colony. Under cover of obeahism, poisoning is supposed to have occurred here, and Berbice had a bad name in former days in this respect. Obeahism and Voodism are closely allied. The word Voodooism is not generally used in this colony as it is in Hayti. Hayti is the hot-bed of Voodooism. Voodooism is serpent worship. In the Voodoo Temple a non-venomous serpent is kept and worshipped. Voodooism is obeahism in full force. In Hayti the sacrifice of the "goat without horns" takes place. In his "Haphazard Notes" Mr. Magistrate Thorne says—"When I was a Magistrate in Leguan, obeah was a great institution."

The Water Mamma. In this colony it is called knife-mamma. In Grenada it is called Mamadjo. The Grand Etang in Grenada is supposed to be the home of a water-mamma. A favourite dance in this country was the Water-Mamma Dance. There used to be a Water-Mamma society. The Cen-cen of Paris was very properly compared with the Water-Mamma Dance.

The "Old Hag" is a very wide-spread superstition here, and it is believed in

far beyond the limits of this colony. When I went to the Buxton District one of the first cases brought to me was a child supposed to have been sucked by an Old Hag. The basis of the superstition is a belief in the existence of vampires.

The people are very musical. When the foundation of the Stabroek Market was being dug, the work was found to be very laborious and the labourers showed a disposition to shirk it. The plan was adopted of playing merry tunes on a fiddle while the people worked. The result was the speedy completion of the work.

Dr. Edghill was in the colony some years ago; he was a master of the piano and the banjo. He set some of the songs sung by the river boatmen to music and sang them to his own accompaniment.

I will mention here an interesting feature of the colony. The colony has long been famed for its hospitality. Dr. Dalton says in his History—"The virtues of hospitality and generosity were practised to a higher degree perhaps than in any other country, every comfort and luxury that wealth could procure was lavished on him (the guest), his wishes anticipated, his desires excited to be directly gratified, and the very passions of the guest were as much pandered to as his tastes and feelings."

A few remarks about phrases commonly used by the people. The word *mash* has several meanings: A masher is a gay young spark. You tread on a man's toe, you mash his toe. You mash a girl, you flirt with her. A man massages your skin, he mashes your skin.

Brackish. Water half salt and half fresh is brackish. A person convalescent but not yet *fully* recovered is *brackish.*

Mind. "You must mind me good." "The mind gie me to work."

An Orphan. A man of fifty will speak of himself as a *poor orphan* (his mother and his father being dead), and he has no one to mind him.

Teetotal Curse. The people have a great dread of getting a teetotal curse. I remember a man in authority who did not swear, but he found fault with those under him in plain terms, and did not mince matters. The people thought such scolding worse than when "swear" words were used.

"*Wicked*" means mischievous.

Proverbs. Cervantes described proverbs as "short sentences founded on long experience." "Younga gal hart like san' a seashore, you write yeu name deh, fust wave come wash am out," is an expressive proverb. "Silk and scarlet ah sin mamma."

A dignitary in London said to a lady: "Remember, madam, that the wages of sin is death." The lady replied, "No, sir, in London it is diamonds." This may illustrate the idea of the latter proverb.

There are many proverbs, but the limited space at my disposa wlill not allow me to enlarge on this part of my subject.

SOME COLONY BIRDS.

By Rev. Charles B. Dawson, S.J., M.A.

I.

In this article and in others that may follow under the same title, I propose to give an account, colloquial rather than scientific, of such birds of our colony as have fallen, or may fall under my observation while within the bars of a cage.

It is only when creatures are studied in this way that their full character can be determined, though the student must by no means confine himself to this method alone. He must also go abroad into the wilds and visit the haunts of the birds he would study; and then, diligently and carefully, bring all his powers of observation, and all his scientific knowledge into play, adding trait upon trait and line upon line until the full character is portrayed. This is what I have attempted to do; and though I do not flatter myself that I have yet acquired a complete knowledge of any one species, I think I may have gained sufficient new information to make this article interesting to the readers of *Timehri*, and to stimulate research in similar directions.

Such scientific research will well repay the student of Nature here in British Guiana where so many fields of zoological knowledge lie open to him. Several eminent zoologists indeed have worked in the colony for many years; but there is still an immense amount of work to be done before the last species of insect or bird has been discovered or the last word of science said.

In spite of all that has been said or written, ignorance of the ways and habits of even the common forms of our bird and animal life is widespread, and wrong notions prevalent. How many persons, for instance, as they walk down Brickdam or Main Street are able to give the right name to every bird they see? While the birds they do not see, but which, secure behind their leafy bower, scan them closely with their bright black eyes, number many more. And yet an untold delight may be derived from a personal knowledge of our feathered friends, as the initiated well understand.

This knowledge must be personal. Zoological facts as stated in scientific manuals are very dry until they are verified and confirmed, by one's own observation. A single scientific truth acquired by one's own industry quickens a thousand kindred ones however baldly stated in the pages of a book; and even bare fact becomes absorbingly interesting as soon as it is viewed in real life and in its own natural setting. And the mines are inexhaustible!

A long experience of the ways of beasts and birds leads me to the conclusion, with Descartes, that these lower animals, in contradistinction to man, must only be regarded as very highly complicated, living machines: living automata, in fact. Not, however, that I agree with those who hold that the ordinary agencies which operate upon matter sufficiently account for animal manifestations; or that mere mechanical, physical, and chemical forces make the sum total of animal existence; I maintain with Suarez, S.J., that in generation and

development some higher interference is postulated. As to the nature and manner of this interference I am not yet prepared to give an opinion. For the present it will suffice to use such familiar terms as instinct, heredity and the like with which to designate it. But the distance between this instinct—call it what you will—and human intelligence is in a manner infinite ; in short, animals and men, as regards their motive power, live on an entirely different plane. A well-known modern zoologist writes : " . . . the habit many people have of uncritically attributing purely human feelings to dogs, cats, horses, etc., is apt to lead us into serious error. "

We should do well to keep this sane warning in mind for it would save us from a good deal of disappointment in our dealings with the lower animals ; and we shall then not be inclined to treat them harshly when they fail us. Speaking generally, a little discreet punishment is useful as a deterrent in training an animal, say a horse ; but to treat a horse if it were as culpable as a servant when it fails to do what is required of it, is almost as insane as it would be to horse-whip a motor-car for casting a wheel.

Books have been written, and well written, to describe and portray the intelligence of birds and animals : an equal number might also be written to expose their stupidity. But the task would not be a gallant or pleasing one, and we are glad we are not concerned with this at present. However, I must observe by way of explanation, that when hereafter I shall use the word " intelligence " or any equivalent of it in reference to birds, I only do so in a relative, analogical or metaphorical sense. Let me also say that no scientific order is followed. I simply treat each bird as it comes to hand, though where possible I have grouped together birds that are akin. This method will be more pleasing to many of my readers than the text-book plan.

We shall find in our study of living animals that each species moves along a narrow groove and that the characteristics of each are, more or less, stereotyped ; so that, under similar circumstances, one individual will act almost precisely the same as any other individual of the same species. Consequently, generally speaking, to know one is to know all. There are, however, occasional pleasing variations to this rule sufficient to show that the slow but powerful forces of evolution are still active. That these forces have accomplished all that many scientists would give them credit for, remains still far beyond the region of things proven. In all cases the wish has been father to the thought, and the thought, once cleverly expressed, has been adopted by willing disciples as if fully demonstrated. But I must not pursue this question further. What I have written will suffice by way of preface.

White-Throated Humming-Bird.

I had been but a few months in Demerara, when one of the boys brought me a tiny humming-bird, slightly wounded in the wing. All my zoological instincts were aroused at the touch of this tiniest and most wonderful of Nature's handiworks in the shape of a bird. It was a white-throated emerald (Agytria leucogaster) which is common enough in Georgetown. As I write, one has taken up its position on one of the bare twigs that hang down from the mass of

foliage of a gum tree, just outside my window. From time to time it sallies forth to visit the flowers of the garden, and thence returning well pleased and satisfied, plumes its feathers with its awkwardly long bill, and utters a low, chattering warble that sounds like the jingling of small pebbles. They may often be seen chasing each other with lightning speed uttering a scarcely audible scream. The courtship of the humming-bird is a truly interesting study.

I hardly expected to keep my little stranger alive ; but I extemporized a cage : a chalk-box fitted with miniature perches and surmounted with a piece of perforated zinc in the shape of a gable. It soon banished all fear—this bird with the soul of an insect, as someone has so aptly described it—and when I presented a little syrup made of brown sugar and water, the tiny creature put out it forked tongue and drank with avidity. So it lived for several weeks and by then was able to make short flights about the room. But it always required me to put its bill into the narrow tube containing the syrup, before it drank. It had not the sense to help itself. One day when I was busy with my Mail letters, it took a higher flight than usual and disappeared through the open window and I saw it no more.

This tiny bird is about four inches from the tip of its bill to the tip of its wings, the wings stretching out quite half an inch beyond the tail. The bill is fully an inch in length, and slightly curved ; and the wings from shoulder to tip, two and a half inches. The colour of the bird, as the name implies, is an emerald green with a charming bronze skimmer as the feathers catch the light. The chin, throat and breast are white : the short tail-feathers and primaries of the wing, dull black. When the wing is closed the primaries are seen to be graduated : the proximal feather being about one-fifth of an inch longer than the next, and so on. The wings, so proportionally long, are shallow ; but are thus perfectly adapted to the bird's method of flight. There is no flapping of the wings in the humming-bird. It whirls them rapidly round like a school-boy doing arm exercise ; but, of course, with lightning speed. Viewed against the light one sees a narrow spindle, at right-angles to the body, and a blur of wing ; the narrow spindle showing that parts of the wing in rapid succession are continuously opposed to the same zone of light. It is the rapid rotation of the wings that produces the "hum" from which the bird has acquired its name. In short its manner of flight is like that of a dragon-fly, and its utility is two-fold. The first is obvious : it enables the bird to extract the nectar from delicate flowers with the least trouble to itself and without detriment to them. I discovered the second as I was being rowed, early one morning, along the bank of the Mazaruni River. A cloud of mosquitoes were dancing in a patch of light that streamed through the foliage of the mangrove, and in the midst was a humming-bird taking its breakfast at leisure. A swallow, be it observed, would have been obliged to fly backwards and forwards through the cloud of insects and might eventually have dispersed it ; a fly-catcher, to have made sallies from a perch taking infinite trouble to make a meal on prey so small ; but my humming friend slowly mounted his airy stair and picked off his tiny victims as he chose. Needless to say, the body of the bird, like that of an insect, remains stationary at will, despite the rapid motion of the wings. It is well known

now that small insects form the staple food of humming-birds, so that in captivity it is necessary to supply an equivalent food ; and this may be done in the form of white-of-egg. We occasionally see a humming-bird flying about the wall of a house, and searching in the crevices for its insect prey.

Jacobin Humming-Bird.

Another humming-bird I acquired, a Jacobin (Florisuga mellivora) exhibited similar characteristics to the one I have described ; except that he was even more remarkably tame from the moment I picked him up. He temporarily disabled himself by dashing through one open window and against the pane of another. This is a much more gorgeous bird than the foregoing, and much larger. Its head and breast are ultra-marine blue ; its body and wing coverts, metallic-green ; the vent feathers white, the tail which in flight it expands like a fan, pure white, the feathers being edged at their tips with black ; its flight-feathers are also dull black. Where neck and back join there is a half moon of pure white ; but this is only fully visible when the neck is stretched. I placed his little box at one corner of my large cage and there he would remain content on his tiny perch until I appeared periodically to feed him. This I did by putting the tip of his long bill into the glass containing the syrup. It was some weeks before he learnt to help himself. I also gave him exercise by holding him slightly by the point of the beak when he would "hum" in a charming manner. He came to an untimely end as many charming captives do. After meals he would clean his long tongue by drawing it in and out of his bill like a sword from its sheath ; the tongue is forked and hollow, and he, unfortunately, picked up some fine sand on the tip of it. I washed it as well as I could, but several grains of sand got inside the tongue and whenever he drank the syrup through it, these grains were sucked up into his throat and eventually choked him. It is clear that to keep these delightful birds, one must design a special cage and bestow a continual personal supervision upon them. They are just the kind of birds for a lady's boudoir. Twenty-six species are indigenous to the colony.

The Blue Sacki.

Of the common birds of the colony none is more sriking than the Blue Sacki, or Blue Tanager (Tanagra episcopus), and it is often seen in a cage ; unfortunately the cage is generally too small and in consequence it is not seen to advantage. It was but natural that a beautiful specimen should soon come into my hands. The bird is almost the size of a thrush, with a shorter but stouter tail. The body of the bird is light cobalt blue and the feathers are of such a texture that the bird seems to be made of soft Berlin wool. The primary feathers and the tail are darker blue and hard and shining ; the wing shoulders are white, edged with purple. The bold, strong flight of this bird is striking ; one sees a flash of blue and hears a cheerily drawn-out note of greeting : "Well ! well ! Well ! here we are !" Its song is not unlike that of our sky-lark, though not so varied, nor so poetic. The Blue Sacki is a lively bird flying continually from perch to perch and making itself completely at home in a short time. It is distinctly a town bird loving to be in the proximity of human

habitations ; but retires to quiet places for nesting purposes. It feeds on fruit, as all tanagars do, and occasional insects. No aviary can be quite complete without apair of these good-mannered, peaceable and, if I may say so, lady-like creatures. But I have never seen them exhibit any particular mark of intelligence.

The Palm Sacki.

First cousin to the above is the Palm Sacki (Tanagra palmarum). This, in shape and habit, is almost identical with the Blue Sacki, but is in no wise so striking a bird ; it is distinctly a "poor relation." In colour it is generally a dull sage or earth-green with very dark, almost black, primaries. It varies considerably both in size and colour and one I have is a light, purplish blue, almost like a Blue Sacki ; but its feathers have not the soft, wool-like, appearance. Like its more refined cousin, it frequents towns, and will often make a tour of inspection within houses and other buildings. It's note is louder ; it is a cry of surprise, as if it were saying : "Oh ! what is all this fuss about ?" But it has no song. Like its cousin, it is also a lively cage bird, making full use of the place at its disposal and often springing in a dancing kind of way upon the perch.

The Cashew Sacki.

Closely allied to the foregoing is the Cashew Sacki (Rhamphocælus jacapa). The hen bird is dark, dull, brick-red with a stouter beak and longer tail than the former, the primaries and tail a darker hue. But the cock-bird ! The body is a deep maroon red with a texture like plush velvet, the back, wings, and tail being very much darker and at a distance might be taken for black. The iris is bright red and the lower bill, which is remarkably broad at the base, is a striking bluish white, the top bill, or to speak scientifically, the maxilla, being, in strong contrast, narrow and jet black. The bird is fairly common in the town and its sharp, short, crisp ringing note of alarm is unmistable. It is shy, however, and hides behind the palm leaves ; but the strikingly white under-bill of the cock and the deep, rich plush-like breast when the light strikes it, makes him a conspicuous object. I suppose the reason why it is never seen in a cage is because it has no song. Someone sent me a young specimen and what a noise he made when taken in the hand, fighting and pecking ! He soon made himself at home in the cage, and showed decided intelligence in the way he imitated the other occupants, taking food and water and a bath, and sometimes, in his good humour, poking the other birds with his bill. It was amusing to see the look of dignified surprise with which the Blue Sacki received this token of good will. He opened his uplifted bill as if he would exclaim : "Well, I never !" but was too gentlemanly to return the familiar onslaught. I lost this promising youngster ; I had him in my hand to sketch him more accurately when he fluttered and escaped. Later on, however, another was sent to me, and I had the good fortune to capture both parents, for the young bird, though it had left the nest, was still, so to speak, in leading strings and the parental instinct to feed it still was strong. The father bird when caught made a great ado, dashing about the cage and making his indignation known by loud cries. "What ! What ! What's this ?" he seemed to be demanding in imperious tones. The hen, after

vainly endeavouring to force her way through the bars of the cage, simply sulked. They fed the youngster, who had been the innocent cause of their capture, no more. Once indeed I saw the father forget himself. He took some banana in his bill to his erring son, but when he was about to give it to him, he seemed suddenly to recollect that he was in a cage, and swallowed the morsel himself. In a week's time they were taking their bath with the rest of their future companions : a sure proof of comparative contentment. The process of taming, with regard to the cock at least, was much accelerated by the good humour and attention of another bird, whose character I shall portray later on.

The Olive-Green Tanager.

No less than thirty-nine species of these fruit-eating tanagers belong to our colony. The next to fall into my hands was the olive-green tanager (Saltator magnus) commonly known as " Tom Pitcher, " an account of a fancied resemblance of its note to the name. Many local names of birds and animals in the colony are onomatopœic. To me, the bird seems to say : " Sweet, sweet Brickdam, yo' know. "

The bird is the largest of the group, and much larger than all the preceding tanagers ; the bill is shorter and blunt, giving the bird something of a chubby look ; the tail, proportionately longer. Its colour above, as its name implies, is olive-green ; below, it is lightish grey with undefined downward streaks of a darker colour ; it has a bright yellow eye-brow and a corresponding mark below the eye. It is a plump, sturdy bird, quite a handful, and rather stupid.

A young specimen which had fallen out of the nest was brought to me as a young thrush. That it was not a thrush was very apparent. I fed the youngster forcibly for twelve days on bread and milk, and banana, and at last the bird realized that it was much more pleasant for it to open its bill when I presented the food than wait till I had gently but firmly prised it open with my finger-nail. Of the many birds I have reared by hand I don't remember any one of them to have acted so foolishly.

The bird is common generally, and is often mistaken for a thrush, two species of which are counted here, and that probably on account of its somewhat thrush-like breast. It does much damage to gardens by nipping off succulent buds. In a cage it seems to take life with a stolid, tolerant, selfish and sometimes querulous indifference, and so will never be taken up as a pet.

Black-Faced Tanager or Bucktown Sacki.

A common and more beautiful bird is the black-faced tanager or, as it is generally known among schoolboys, the Bucktown (Calliste cayana). It got its vulgar name from the fact that it is common in buck-Indian villages. It is easily caught in a trap and as easily tamed. It is a much smaller bird than Tom Pitcher being only about five inches from tip of bill to tip of tail. It is a pretty bird of more than average intelligence and makes an admirable cage-bird.

"What is the name of that bird," asked a friend of me, "which seems to be a cross between a blue sacki and a canary?" This is a fairly good description of the bucktown. The wings and tail, like that of the blue sacki, are bright cobalt blue changing into green according to the light; the back and belly are yellowish white or dull indigo; the cap and vent reddish orange; the chin and throat, light indigo; and there is an almond-shaped patch of black on the face of which the eye is the centre, and from this it derives its awkward name. I have noticed that the yellow feathers are subject to great variation accordingly as the light falls upon them, and sometimes the colours are not so clearly defined as I have described, particularly in the hens. In my cage I have an open wheel and these birds take delight in turning it round by flying upwards from one transverse perch to another. The bird has a simple, short, sweet song. As in most tanagers the sexes are much alike, the cock being slightly large and brighter.

Icteridæ.

Closely allied to the tanagers and like them confined to the New World, is a large genus, the Icteridæ. They have affinities with our English starling and also with the Fringellidæ, or finches. Many of them are exceedingly intelligent and therefore make interesting pets. Their affinitiy to starlings is at once noticeable in their stately walk and in their spirit of inquistiveness. Most feed on seed like finches; some prefer fruit, and all are ready to vary their diet with insects.

Fifteen species are to be found in Demerara.

My personal introduction to this class was a young cock corn-bird (Molothrus atronitens). It is variously named oats-bird, rice-bird and, from its cuckoo habit of placing its eggs in the nest of another bird, and chiefly in those of wrens, the lazy-bird. Much confusion prevails in the colony in the nomenclature of birds, at least among the common people. Few, for instance, will admit that the corn-bird and lazy-bird are identical. The corn-bird is the size of a starling and, as its specific name implies, is glossy black, or, perhaps I ought to say, blue-black. The feathers are delightfully hard and trim and there is a satiny sheen, blue or purple on the head and body and dark green on the primary feathers and tail. The head is almost snake-like, being narrow, and the beak is sharply pointed; the tail is long and inclined to be bi-furcate. I know no bird which has such a sleek, slender, and glossy appearance, and so stately a gait. He seems to have been bred in a drawing-room. But the hen is a uniform brown. He is the polished gentleman who married his cook and so will not concern himself about domestic affairs; and she, slighted by her mate who will not call her spouse, will not trouble her head either, and so she cunningly deposits her egg in the nest of the good-natured godbird.

The corn-bird has two distinct kinds of song. The first is a rehearsal. There is an internal gurgling sound, which one might even compare to a bark, and it seems to escape in a squeak; the bird all the while puffs out his feathers and droops his wings, and if he has room enough, tumbles about like a drunken man. One might compare this preamble to a kettle boiling, the steam eventually

escaping through the spout. Then he pulls himself together and sings his real song which is a very different thing. It is a thin, sweet song ending in a trill and not unlike that of our English robin ; but not so pathetic.

It is a very good-tempered bird making friends with others who may share the same cage. The one I have has an inordinate desire of being caressed, and it is amusing to watch him sidle up to another bird and hold down his head to be gently pecked ; at the same time he keeps his beak slightly open as if to say : "Scratch my head, but take care you don't hurt me or I shall peck." When the cock cashew sacki, as I have mentioned above, flew about the cage uttering cries of indignation, the corn-bird followed him about, and when he rested, would sidle up to him, feet apart and head down, and feathers muffled in an absurd manner and one could imagine him saying : "It's all right, old fellow ! What's the use of making a fuss ? Just scratch my head and be friendly !" So I say that every aviary should have a few corn-birds.

When staying in New Amsterdam awhile ago, I caught six of these birds, all cocks, outside my window. They seem to take captivity in a most philosophical manner and make no mad attempts to escape. I kept the first and let the others free. This bird actually began to warble on the very first day of his capture and was very soon in full song. I have never handled a hen and one can never really know a bird without doing so. This bird is bold in the hand and picks vigorously at one's fingers.

The American Redbreast.

Of very different temper and degree of intelligence is the next of this genus I acquired, the American red breast or robin, as it is called (Leistes Guianensis). It has no affinity to the English bird of that name. Its flaming red breast—the colour of Tommy Atkin's scarlet tunic—however, fully justifies its first title ; the second might well be dropped. There are also patches of red on the shoulders of the wings. The colour of the rest of the bird is dull black, the feathers being slightly edged with light brown which give it the appearance, when close at hand, of being clad in scales. This full breast of flaring red, set-off as it is by the black of the rest of the bird, makes it a beautiful and conspicuous object in flight. But in compensation Nature has given it but little intelligence, and the only reason for keeping it in an aviary is the colour it lends to the whole ; for its breast in the light is like a ruby lamp, delightful to the eyes. Like the lark in England it lives in the fields, though unlike that bird, perches on shrubs and the low branches of trees. But it is an ungainly bird on a perch and often, at least when in a cage, tumbles off.

At certain seasons whole flocks of these birds congregate together ; but I am unable to say whether there is any migration. It has a curious note, somethinglike a yellow hammar, or like the noise of the brass reel of a fisherman when the line is rapidly spun out. It has a curious habit of rising into the air and then, half closing its wings, shooting down like an arrow as it utters its wierd cry. It stail is short and stiff and it has a way of spreading it out fan-wise, and then whisking it in a business-like manner from side to side. When pur-

sued it will often squat like a quail taking care to turn its back to the aggressor and not its glaring breast. Taken into the hand, it fluffs out its feathers as if it were going to faint and makes no attempt to defend itself. It seems to submit to its fate with a sigh.

"You will not be able to keep it," said the friend who brought me the specimen I still have. "Why not?" said I, looking at its bill which is almost exactly like that of the corn-bird. "It ought to be a seed-eater," I added, "by the shape of its beak, and therefore easy to accommodate in the matter of food." So it proved. But the bird dearly loves a grasshopper when I can get one. How is it, I may ask in passing, that grasshoppers are so comparatively scarce in this tropical country? It is possible that this bird, put into a small cage, might fret itself to death; but being put into one of moderate size, and with other birds, it takes a new thought of life and hope. I have never heard it utter its cry in captivity though it takes it bath with the others, and thereby shews that it is tolerably contented with its lot.

The Caduri.

The common Caduri (Icterus chrysocephalus) was my next acquaintance; and it is an acquaintance well worth cultivating, for this bird has as much excess of intelligence as the Redbreast has lack of it. The Caduri will become very tame going about the home and making itself generally friendly and mischievous. It has a much varied song and is, in fact, generally considered to be the best songster we have. It is a slenderly-built bird like the corn-bird and a little larger; the beak is longer and slightly curved like a starling; the tail is full and rounded at the end. It hops rather than walks; and feeds on fruit and insects, not seed; except occasionally, when it swallows it whole like a fowl. The colour is dead-black with yellow patches. It wears a yellow night-cap with strings—or perhaps some would prefer to call it a mob-cap; it has yellow epaulettes upon its wings; a yellow rump and vent. In an aviary it is inclined to be too interfering with others from sheer inquisitiveness and not maliciously, let us hope. When my young olive-green tanager was put into the cage it would open its mouth to my caduri to be fed; but the latter merely looked into it like a dentist and gave an occasional peck. Later on, I found these birds actually feeding each other. The Caduri would bring Tom Pitcher a morsel of food and then apparently relent his generosity and take it back again; and then Tom Pitcher cried so piteously that he gave it back again and so the game went on.

The Kiskadee.

No stranger remains many minutes in Georgetown without encountering the Kiskadee (Pitangus sulphuratus). Its loud clarion note: "Kee-Kay, Kee-Kay, Kee-Ka-Dee," will probably be the first sound that reaches him from the shore, and following its direction he will see a bold yellow and brown bird with a large head and a bill like a King Fisher or Barbet; or rather, perhaps a pair of them for they are seldom seen singly. They are flying about the sheds of the stelling, shaking their wings and uttering this piercing challenge, and it is

uttered as if the bird were saying ; " Who's there ? Get away, get away, get away ! " From a fancied resemblance to the French, it is often written : " Qu'est-ce qu'il-dit ; but the bird does not pronounce the s. Spaniards assert that it says, " Christofué ! " On first sight I put it down as a Barbet, but it is really one of the large family of tyrant birds, of which thirty or forty species are found in the colony. It is a sturdy, pugnacious bird with a large head and measuring seven or eight inches from tip to tip of beak and tail. The breast, vent and under-wing feathers are bright sulphurious yellow, the wings, back, and tail are warm brown, the primaries and tail feathers being edged with russet-red. The head is black with a white corona, reminding one of a Carthusian Monk's tonsure, and the chin also is white, merging into the yellow of the breast. The under-feathers on the crown of the head are silken yellow-orange, and sometimes a feather or so escapes from beneath its sombre covering. On the whole it is a handsome bird, but its manners are plebeian.

No one ever thinks of keeping it in a cage and the general impression is, that it is impossible to do so. It is the sparrow of Demerara, and like the sparrow it has taken possession of the town and keeps the other birds in order, going aboutas if the whole place belonged to it. It is often to be seen chivying the chima-chima hawk or any other suspicious characters. Unlike the sparrow it is never seen in flocks but always in twos or families. It is a domestic bird and holds all family ties sacred. As I say, it owns the place, and its nest, a big affair roofed in, is built high on some tree without any attempt at concealment. No one interferes with him, the yellow-waistcoated tyrant, and the brazen-faced malapert. His self assurance is amazing. When caught or shot at and wounded, he screams with surprise and anger, fighting tooth and nail for his deliverance. A school-boy brought me one wounded in the breast and minus his tail. " You will not be able to keep him, Sir, " he said. I tended the wound and put him into a small cage on the floor without food or water. After an hour or so I offered some strips of cooked meat. He eyed it and me : made a step nearer : took a piece and swallowed it and his pride ; then looked at me humiliated, and took another. The battle was won. I kept him for a few months but his note was too loud for my room ; even when I put the cage in a corner with a cloth over it, he would not be silenced. Besides he had visitors. One morning returning to my room I heard a perfect din. Another couple were paying him a call. They perched upon my electric-light wire and the room echoed with their greetings. I had had enough of the Kiskadee. So I let him go.

The Kiskadee will eat anything that any other bird will eat, or nearly so. He may be seen hovering over the water like a hawk to filch fishes from their watery element. He will dart into the air and catch big beetles on the wing. He will gorge himself with palm fruit. He will haunt your backyard for kitchen stuff. . . . As I have said there are about forty species of tyrants in the colony and quite five other species that might be taken for our friend.

Grey-Headed Tyrant Bird.

One of these is the grey-headed tyrant-bird (Tyrannus melancholicus) and looks like a Kiskadee in mufti. But he is a bird of lighter build and feels like

a handful of feathers in the hand. His head and neck are grey, his tail is longer and is forked. He has a more varied and more musical note. He seems to say : "Scissors in it, scissors in it, scissors in it ! it's absurd, it's absurd, it's absurd." His bill is more decidedly hooked at the end. He is a shy and melancholy bird as his specific name indicates. I kept one for several weeks ; but he moped in a cage and had all the bearing of a person much injured and offended. So I let him go again. I judge it to be a simple and inoffensive bird, justifying its specific name. But he is a perfect catcher of flying insects and may often be seen, generally alone, plying his craft from the telephone wires. If anyone should wish to keep this bird in a cage he should rear it from the nest. There are some birds which can only be kept in this way.

Kiskadee Minor.

A small brown tyrant bird, which I have been unable to identify with any of the specimens in the Museum and which was brought to me with a much damaged wing, proved a more interesting creature. He soon made himself at home in my aviary and occupied the floor. The wing that was broken dragged and he stumbled over it, so I cut the feathers close and arranged low perches for him. This bird is, so to say, a cheaper edition of the Kiskadee and for the present I have dubbed him "Kiskadee Minor" : he is not so brightly clad. His head and back are russet brown with a greenish tinge ; his crest, which he raises on occasions, is redder so that one might call him "carrots" ; his breast is faded yellow with brown markings ; the white corona does not meet behind, nor is it so well defined, and there is also a yellowish white streak below the eye. But the bird is not a whit inferior in spirits and intelligence. He seems to have a sprightly, cheerful, little soul, and is quite worth studying. My specimen, as I said, grew tame ; but, unfortunately, he grew to consider that the whole floor of the cage belonged to him, and when the other birds came for their legitimate share of food, he resented it as an intrusion and fought them off. Eventually he got a peck from the Caduri that laid him low. But he fought death as valiantly as he had fought his bigger companions, eating his food to the end and keeping a bright, cheerful eye. But death was too big a monster for him and put him on his back. He struggled and recovered his upright position again and again, so that I thought he would recover. But it was not to be. He turned his head and seemed to wink at me ; then turned over and died with a chirrup of good-bye. I must leave the other tyrant birds to another article.

We may now turn to the finches of which the colony possesses some twenty-one species.

The Twa-Twa.

At the head of the finches we will place the twa-twa (Oryzoborus crassirostris), a typical cage bird. It is the size of a large canary but it is jet-black, with just a narrow bar of white upon the wings, just below what is called the "bastard wing," reminding one of the ribbon of a military decoration, except that the bird wears it on both sides. And certainly the bird has a military bearing with his great Wellingtonian beak. Its beak, as its name implies, is a very

formidable instrument. It is wedge-shaped and broader at its base than it is long ; the head in consequence looks flat. The beak, being slaty-white, is very conspicuous. I know by experience that the bird can give a sharp nip with this vice-like weapon, and it hangs on with all the tenacity of a bull-dog. The hen bird is a uniform brown as are also the young until the first moult.

The twa-twa never shows any signs of strong affection ; he is too much of a reserved, courtly gentleman for that ; but he has his own way of making known his sense of gratitude for kindness. He will spread his tail fan-wise and jerk it from side to side ; or he will flit joyously from perch to perch ; or he will pour forth his song. His song is masculine : some say it is harsh. I don't think so. It invariably begins with two staccato notes and from this, his colloquial name is perhaps derived. Each song consists of two parts, each much alike. We may call them the octave and the sestette. On the whole, a bird somet after the type of Michael Angelo. The song is not so sweet as that of the canary ; but I prefer it. It has more of the touch of wild untampered Nature.

With this bird we may conveniently close this present article.

RICE FIELDS AND MALARIA.

By C. P. Kennard, M.D., Ed., M.R.C.S., Eng.

The connection of Malaria with rice-fields is no new theory, so long ago as 1899 and 1900 Professors Celli and Koch laid great stress on the part the cultivation of rice-fields plays in favouring the multiplication of mosquitoes, and Celli then observed that it is well known that the formation of rice-fields causes the re-appearance of malaria where it has become extinct, and where it already exists they are a very active focus of production.

It may, however, be of interest if I trace the connection between the two as shown in the colony, my observations being chiefly connected with the Corentyne Coast, which I have known intimately for years.

That the anopheles is the carrier in the malaria-mosquito process of infection is now so well known that it is unnecessary for me to dwell on it. What I propose is to trace the connection of the rice-fields with the anopheles and the anopheles with man.

Of late years there has been a marked increase of malarial fever on this coast, coincident with the great extension of the rice industry there; beyond this increased rice cultivation there has been little change, drainage, other agricultural pursuits, and methods of living remain much the same. This alone is suggestive of a connection. and it has evidently not escaped the lay mind for an old driver remarked to me sometime back, "Doctor, we never had so much sickness before the rice-growing was started as we get now."

The ordinary preparation of the land for rice-fields begins when the ground is covered with water, the people then cut down the bush and weeds, some of this is put at the sides of the plots to form meres, the rest is ploughed in, in new land some levelling off before the land is covered with water may be required, but practically, anyhow, after the first year all the land is worked up under water; the land is then planted up with the young rice and remains in this submerged condition until the rice is nearly ready to be cut, when the water is drained off, the land then dries rapidly and the rice is cut with the land usually in a dry condition; the most desired condition of weather during the last period of the rice growth is that of frequent light showers, when this happens the land is not kept under water, as the rain is enough for the growth and favours the ripening, and if the rice falls to the ground, as it frequently does if high winds are on, it is no destroyed as it is when falling into the water; this weather, however, is perhaps exceptional. To keep up the supply of water irrigation is required, this is more or less under control and when it is pumped in and out of the trenches, as on the estates, the supply can be better regulated than on other places which have to depend on gravitation from the savannah waters. If all the rice plots, in a field, or set of fields under the same irrigation and drainage, were planted up at the same time, the water supply could be much better regulated,

but it is not unusual, especially outside the estates, to find rice plots in the same field varying up to three or four months in growth, and some parts of the land in varying conditions from being submerged to quite dry.

The anopheles require shade to breed in, I have seen pools teeming with mosquito larvæ in the open but no anopheles larvæ there, although anopheles were in the neighbourhood ; they also require more or less clean water and absence of fish, fish will soon eat up any mosquito larvæ they come across. When the rice is growing and the land is submerged fish are all about, and I have never been able to find larvæ among the growing rice in this condition.

Some time back I was in a field which was covered with water and the rice nearly ready to cut, in this part of the field I could find no larvæ, but many small fish, I also came across no anopheles ; in a part of the field where the water was drying up preparatory to the rice cutting small pools had been left in the depressions, and from two or three of these pools among the growing rice I was able to collect anopheles larvæ (from which I developed later on an anopheles of the usual variety seen here, *A. argyrotarsis or A. albitarsis*), at this spot I also came across two or three adult anopheles ; in a couple of days these pools were dry so most of the larvæ did not develop, but a little rain falling would have kept up the pools so that the larvæ would have reached maturity. We have in that field a natural exhibition of what occurs in the rice-fields generally ;—land submerged, fish present, no anopheles—land drying up, clear pools with shade, no fish, anopheles. We have therefore about the rice reaping time a great increase of anopheles bred under the favourable conditions above mentioned, and I need not point out that the absence of rains, heavy rains, irregular irrigation or drainage, or irregular level of land, will all make a difference in the formation of pools suitable for or against anopheles breeding, and so varying local circumstances and effects ; as for instance, land drying up with enough rain falling to keep up the pools but not to flood the land, would be the most suitable for anopheles breeding. Anopheles can also breed in the trenches connected with the rice-fields if these have much weeds and growth, the fish prevent their multiplying much but a few of the larvæ may escape to develop to maturity. I have found a stray anopheles larva with other mosquito larvæ in such trenches ; the trench on one side of my field is connected with the rice-fields which surround it on two sides, at the early part of the year I had the trench weeded and all rushes cut down, and whereas previously I could nearly always find anopheles in the house, since then they have been distinctly rare. It may be thought that, as the water drains off, enough fish would be left in the pools to destroy the larvæ, but this is not so ; when the water is going off the fish go with it mostly, they leave these small holes but may remain in the larger ponds and depressions.

The question now arises, Do the people living among the rice-fields suffer more from malaria than elsewhere ? This is undoubtedly so. On one estate the excessive number of people affected with malaria which come from a settlement among rice-fields, has been known to us for years ; on another estate coincident with a new settlement among new rice-fields, there was a very markedly large number of malarial cases from the settlement, and each year shows it.

The great increase in malarial fever is at the time of rice reaping : we see the increase commencing in these settlements about two or three months before the cutting, and when the rice cutting is on we have also the people from the healthy part of the estates going into the rice-fields ; working excessively they lower their natural resistance, often being in the field day and night as well, and thus they give every opportunity for infection ; our hospital charts show at the rice-cutting season a general marked running up of cases.

When the rice is cut there is no shade, and the land either dries up or is flooded, therefore the anopheles lose their breeding places and diminish greatly, although of course the previous generations do not die off at once, the people other than those living about the rice-fields have left and we find a rapid fall in the fever rate.

The old creole saying, " July, you may die ; August, you must ; September, remember ; October, all over ;" expresses from experience the unhealthy times in years gone by, but now circumstances have altered ; true in these first three months we often get some increase of sickness, the weather is hot, dry and close and gives rise to irregular (not malarial) fevers, bilious attacks, etc., and drying up of the swamps independent of rice-fields may favour the facilities for anopheles breeding in suitable localities and so there may be some increase of malarial fever. We find now, however, that the maximum rise of malarial fever cases does not occur in these three months, August the bad month is often with us a healthy one, July usually healthy. In 1908 and 1909 the maximum rise was in September and October when the rice was reaped ; in 1910 the rice was reaped later than usual in October and November, these months then showed the maximum rise of fever. The old theory was that the absence of trade winds from July to September, and correspondingly depressing weather, was the cause of the increased sickness ; it cannot now be connected with trade winds, which are present in October and November and usually more or less in September. The increase of fever about the time of rice-cutting, the occurrence of a great increase of malaria on an estate where new rice-fields have been put in, and the observation that settlements in the rice-fields are specially affected with malaria, are facts too strong to prove other than that malaria is connected with the rice cultivation.

In taking in new fields, when the work is done before the surface of the land is covered with water, levelling, etc., pools may be formed or exist, and if there is shade would be good breeding places for the anopheles ; this may explain the occurrence of malarial outbreaks which occasionally occur at that time.

I give figures of cases admitted to the hospital on one estate, and in dealing with these figures we must take into consideration the fact that, when the rice reaping is on, the free people will not come to hospital unless they have bad fever, especially if quinine is being distributed generally, which not only prevents the occurrence of fever in many people but reduces the severity of an attack, If even a daily dose only be taken, they will remain at home, take the quinine, and do some work if possible ; after the reaping is over they come much more

readily to hospital so that the returns of cases then are higher in proportion.

	1908	1909	1910
July	71	153	16
August	72	198	73
September	132	260	77
October	111	311	118
November	95	336	159
December	58	133	107
January	46	66	66

The marked rise in 1909 is attributed chiefly to a new settlement among some new rice-fields, and the rise commencing early was probably due to some plots of land not being taken in, so that when irrigation occurred over the rest of the fields, with the rain, suitable pools were kept up in these plots among the bush, and in the immediate neighbourhood of the houses.

There is some consolation in the fact that the people who have lived for some years in the rice-field settlements become more or less immune from malaria ; it is noticeable that we do not get the number of cases at present that we did some years back from one of these settlements above referred to, but this immunity is by no means complete, the rate still keeps higher than the healthy part of the estate, and new comers are very liable to be affected ; it must be remembered that not only are these settlements a danger to themselves but to the general community ; although a man may not show symptoms of malaria or appear to be suffering from its effects the germs may be still circulating in his blood. anopheles therefore may get the germs from him and so be ready to convey it to outside people who come into the neighbourhood at the time of rice reaping ; enlargement of the spleen is considered a sign of malaria, we find that there is a considerable greater proportion of enlarged spleens on the rice settlements than on the healthy parts of the estate.

I have referred more particularly to the estates, as my knowledge of them and their people is greater than in the case of the villages, the villages show a corresponding rise of fever in the rice reaping time but the exact details are more difficult to obtain.

Having now I think shown the connection between malaria and rice-fields the deduction of means to minimise the disadvantages which this important industry has given rise to are, I think, easy to make :—Firstly, no settlement should be allowed in the rice-fields.

Secondly, no rice-fields should be within 200 yards of the houses to the leeward, or within a quarter of a mile to the windward. The anopheles is not a strong flyer but is said to be able to travel at least over 100 yards. In Italy I believe there is a law preventing rice-fields near the houses.

Thirdly, the trenches connected with the rice-fields should be kept clean and free from weeds, and the excess of water be properly conducted away from the fields and not swamping the surroundings, as is frequently seen and is one of the

worst features in the rice-fields near the villages ; some of the villages are kept in a bad state of drainage owing to this, and thus local foci for anopheles breeding may be developed and kept up.

Fourthly, the rice should be planted in each field or fields under the same common drainage or irrigation at the same time, so that it would be reaped at the same time, and the water could be regulated accordingly ; thus there would be fewer pools about and these would exist during shorter periods.

Fifthly, at the time of reaping everybody working in the rice-fields should take a daily dose of quinine, and in the rice settlements, if not abolished, they should commence this earlier and continue for a little time after the rice-reapmg.

These methods I am sure would do away with a good deal of malaria in connection with the rice-fields ; they would not do away with it altogether as there would still be the other influences unconnected with the rice-fields in operation. I think, however, they would have the effect of restoring the Corentyne Coast to its previous reputation of having little malaria, and with an increased population, better drainage and other general anti-malarial precautions, this should be one of the first parts of the colony to get rid of the disease. As I have already said, I have dealt with the Corentyne Coast as it is particularly known to me, the other parts of the colony must be affected by their rice-fields in the same way and require the same precautions.

NEVIS AS A WEST INDIAN HEALTH RESORT.

By N. Darnell Davis, C.M.G.

Famed as the birth place of Alexander Hamilton, the master builder of the Constitution of the United States; statesman, soldier, lawyer and publicist; the island of Nevis is also identified with the glorious name of Nelson, from the fact of that hero's marriage there with the widow Nisbet, the bride being given away by Prince William Henry, afterwards King William the Fourth. It was when in command of the *Boreas*, on the Leeward Islands' station, that Nelson displayed such zeal in enforcing the *Navigation Laws* against American vessels, that he made himself very unpopular with the colonists, whose commerce was affected by his patriotic action and his deep sense of duty. On one occasion he was arrested at Nevis by the islands' Provost Marshal, and was required to give bonds for £10,000 for his release. Then it was that he foretold that he should one day have a *Gazette* all to himself.

Honour has been done to Nevis by the American author, Gertrude Atherton, who, in *The Conqueror*; the subject of which is the career of the brilliant Alexander Hamilton; and, in *The Gorgeous Isle*, which describes Nevis in its palmy days, has given pictures of West Indian life in the times when the Colonies of the American Mediterranean, as the late Professor Angelo Heilprin called the Caribbean Sea, were a source of wealth to the parent State. As *The Gorgeous Isle* is being dramatised by its author, the former glories of the West Indies will ere long be revived on the London stage—for Nevis was for some years the seat of the Government of the Leeward Islands, where lived the Governor-in-Chief, and where gathered many of the planter families of the Leeward group.

One attraction Nevis had for its neighbours in its healing waters, which have long been known to fame, though for many years they have been little used.

The first English writer who bore testimony to the virtues of the waters of Nevis was an ancestor of the present Secretary of State for the Colonies. Later on, Captain John Smith, renowned in Virginian history, wrote of their healing properties. Both the forementioned authorities are quoted by Sir Hans Sloane, who himself visited the island in 1687, when on his way to Jamaica, as the personal physician of the second Duke of Albemarle, then going as Governor to the latter island. The following extracts from Harcourt, John Smith, and Davies of Kidwelly will suffice to illustrate how much the springs were appreciated in the seventeenth century.

The first English account of the healing nature of the waters of Nevis is to be found in *A Relation of a Voyage to Guiana*, published in London in 1613, and written by Robert Harcourt, of Stanton Harcourt, who, according to Anthony à Wood, had a "geny inclining him to see and search out hidden regions." Harcourt was a warm admirer and supporter of Sir Walter Ralgeh in the

latter's project for colonizing Guiana, where he spent some months in 1609, trying to found a plantation on the River Wiapoco, or Oyapok, in the region now forming part of French Guiana. On his return from Guiana, Harcourt, in the *Rose* of 80 tons, with a pinnace of 36 tons called the *Patience*, put in at "Nevis," to take ballast and more water, for the ships were very light. Here they stayed from the 12th to the 16th of October, 1609, during which Harcourt himself took the waters, of which his experience is thus recorded.

"In this island there is a hot bath, which as well for the reports that I have heard, as also for that I have seen and found by experience, I do hold for one of the best and most sovereign in the world. I have heard that divers of our nation have there been cured of the leprosy, and that one of the same persons, now or lately, dwelled at Wolwich near the river of Thames, by whom the truth may be known, if any man desire to be further satisfied therein. As for my own experience, although it was not much, yet the effects that I found it work, both in myself and others of my company, in two days space, do cause me to conceive the best of it. For, at my coming thither, I was grievously vexed with an extreme cough, which I much feared would turn me to great harm ; but, by bathing in the bath, and drinking of the water, I was speedily cured ; and, ever since that time, I have found the state of my body (I give God thanks for it) far exceeding what it was before, in strength and health. Moreover, one of my company, named John Huntbach, servant to my brother, as he was making a fire, burned his hand with gunpowder, and in doubt thereby to lose the use of one or two of his fingers, which were shrunk up with the fire ; but he went presently to the bath, and washed and bathed his hand a good space therein, which soppled his fingers in such a manner, that, with great ease, he could stir and stretch them out ; and the fire was so washed out of his hand, that, within the space of twenty-four hours, by twice or thrice washing and bathing it, the soreness thereof was cured ; only the eye-sore for the time remained. Furthermore, two or three others of my company, having swellings in their legs, were by the bath cured in a day. This can I affirm and boldly justify having been an eye-witness there.—" [*Harleian Miscellany*, Edition 1810, Vol. VI., p. 512, British Museum 2082*d*.]

To the curative properties of the waters of the bath at Nevis the following testimony is given in Captain John Smith's *General Historie of Virginia, New England and The Summer Isles*, and published in 1630. From a statement made therein, it appears that the famous colonizer, when on his way to take part in founding a colony in Virginia, put in at the "little Isle of Nevis," as he writes the name of the Island. Of his stay there (probably in January, 1607) Smith gives an account from which the following mention of *The Bath* is taken :

"In this little Isle of Nevis, more than twenty years ago, I have remained a good time together, to wod, and water and refresh my men ; it is all woddy but by the sea side southward there are sands like downes, where a thousand men may quarter themselves conveniently ; but in most places the wod growth close to the water side, at a high water marke, and in some places so thicke of a soft, spungy wood, like a wilde figge tree, you cannot get through it, but by making your way with hatchets, or fauchions. Whether it was the dew of the

those trees, or of some others, I am not certaine, but many of our men became so tormented with a burning swelling all over their bodies, they seemed like scalded men, and were mad with paine. Here we found a great poole, wherein bathing themselves, they found much ease ; and finding it fed with a pleasant small streame that came out of the woods, we found the head half a mile within the land, distilling from a many of rocks, by which they were well cured in two or three days." [Pp. 198, 199 of *John Smith's Travels :* Glasgow, 1907. James MacLehose and Sons.]

In his *History of the Caribby Islands,* published in 1666, John Davies of Kidwelly says of Nevis : " There are in it divers springs of fresh water, whereof some are strong enough to make their way to the sea. Nay, there is one spring whereof the waters are hot and mineral. Not far from the source there are bathes made, which are trequented with good success, in order to the curing of those diseases for which the waters of Bourbon are recommended. "

The comparison with the waters of a French spring is, no doubt, due to the fact that the author's work is really founded upon that of the French author Rochefort.

Let us now listen to writers of the eighteen century.

In his first edition of *The British Empire in America,* Oldmixon says (Vol. II. p. 195), under the head of Nevis : " One spring here is a mineral, and the waters hot. Baths were made not far from the source, and frequented with good success for the cure of those distempers that the baths at the Bath in England, and Bourbon in France, are famous for curing. "

The Reverend William Smith, at one time Rector of St. John's in Nevis, and afterwards Rector of St. Mary's in Bedford, published, in 1745, *A Natural History of Nevis,* from which the following particulars relating to *the Bath* are taken (pp. 54 to 59) :—

" 32. N.B. In my parish of St. John, in the island of Nevis, there is a considerable spot of sulphurous ground on the south side, at the upper end of a deep rupture in the earth vulgarly called Sulphur Gut, which is so excessively hot (like that near the *Devil's Coppers* in St. Christophers) as to make us immediately feel it through our shoe soals. And I must further assure you, that two doctors (my particular acquaintance) were so curious as to bury some eggs about an inch deep in that spot for the space of three or four minutes, in which small time they were full as hard quite thorough, as boyling or roasting could make them.

" 33. At the foot of a declivity adjoining to the south side of Charlestown, our Metropolis, we have a little hot river called the Bath (supposed to flow from the aforementioned sulphur-ground, which is not above three-quarters of a mile higher up in the country), that runs half a mile or better before it looses itself in the sea-sands. I knew a negro boy who was sent down from Barbadoes to Nevis for that very purpose (after being twice salivated in vain), cured of a very bad leprosy by using it ; and, indeed, all distempered people, both Whites

and Blacks, find great benefit by it. The salivations had caused the boy to break out in running sores or ulcers all over from head to foot, and they being added to leprosy, made him a sad (rueful) spectacle. However, by drinking and washing three or four times a-day, for an hour at least each time, in the water of this river, he went back to his master sound and clean at two months' end. This is a confirmation of what Sir Hans Sloane says, in page 45, of his voyage to Jamaica, viz.: The bath is here taken notice of by some travellers, as Harcourt and Smith. The first says it cures the leprosy, and is good in coughs, it curing the author, who drank and bathed. It also remedies burning with gunpowder, and swelled legs (*Harcourt, Purchase*, 44). The second tells us that it cured men in two or three days, who were tormented with a burning swelling, as scalding from the dew of trees (*Smith's Obs.*, pag. 57). I guess that Smith means here manchineal trees, under whose shade some of his men had inconsiderably lain down for repose, or stood to escape a shower of rain, or perhaps cut down wood for firing.

"34. I myself bathed in it once a fortnight, and own that it contributed not a little to my health and vivacity. I usually went in at nine o'clock at night; and observed that in two minutes time the sweat was ready to blind me, and, that in about three minutes more, I was obliged to quit it through faintness of spirit. Upon stepping out of it upon the green bank, the wind blew so exceeding cold that I should almost have fancied myself instantaneously transported to Nova Zembla, or Greenland; that is to say, we have a perpetual breeze of the trade wind that runs from East to West, which refreshes us in the day, but is cool enough in the night, and of course must prove intensely cold when we just come out of so hot a bath. I do not mean that it blows directly from the East point; for it varies from the North-East to South-East, according to the place and position of the sun; and, in October, it generally blows directly from the North. We have no land and sea breezes as is usual at Jamaica. However, half a pint of strong Madeira wine enabled me to cloath, put on my riding coat, and go briskly home. The next morning I was almost as nimble as a Mountebank's tumbler. When I lived at Charlestown, which I did for the last nine months of my stay in that country, it was my custom to walk to this river every morning, at sun-rising, to drink a pint of its water, which I found operated both by stool and urine Some of my acquaintance would drink of it till they puked, and say they found great benefit by so doing; but, as I have an aversion to puking, I never cared to use it in that way.

"35. Towards the sea-side is a particular spot of ground in this river where a man may set one foot upon a spring so wondrous cold that it is ready to pierce him to the very heart, and at the same moment fix his other foo upon another spring so surprisingly hot, that it will quickly force him to take it off again. But the water there being full my chin deep, and I no swimmer, I durst not venture so far in, as to feel the springs by way of experiment. However, several of my friends, whose veracity might be depended on, assured me of its truth.

"36. At another place about two miles and a half to the southward of Charlestown, is a very sharp point of land that jets out a considerable way

into the sea, leaving a small sandy bay on each hand ; upon the rocky extremity whereof I stood, whilst a tall negro man stepped down off it into the water, which was rather above his chin deep there. He then stooped down, and took up some sand that was very warm when he gave it into my hand, affirming the spring at the bottom of the sea under him to be so wondrous hot, that he could scarce venture to set his foot upon it. And give me leave to acquaint you, that the negro's feet are grown so callous by constantly travelling over hard rocks, that they can have little feeling in them. In short, that stream must be hot indeed.

" 37. A new hot spring was, in 1718, discovered in windward parish, upon clearing of a wood in order to plant the ground with sugar canes, just above camp ground ; but I was never at the trouble of paying it a visit hearing that it was nothing extraordinary. It was, no doubt, always before known to the negroes who frequented those woods. Black-Rock Pond is about a quarter of a mile distant northwards from Charlestown : the water whereof is milk warm, occasioned, no doubt, by a mixture of these hot with cold springs, and yet it yields excellent fishes in their kind, viz., silver-fishes, slimguts, and the best eeles in the world perhaps. Silver-fish has a bright deep body of about eight inches long, which tastes like an English Whiting. Slimgut has a large head, in too great size to its body, which may be from two-and-twenty inches long : it eats like our gudgeon, and is not unlike them in colour. Their eeles have no rank taste at all, which makes them so much admired. For a further account of this pond, see paragraphs 9, 10, 11 and 12 of my first letter. "

Coleridge and Dr. Davy inform us that the waters still ran on in the nineteenth century, though the Bath House was gradually losing its power of attracting visitors to the island.

Henry Nelson Coleridge, who accompanied his kinsman, the first Bishop of Barbados, to the West Indies, in 1825, visited Nevis in that year. In his delightful little volume, *Six Months in the West Indies in* 1825, Coleridge makes mention of the mineral springs in the following terms :

" To the south of the town, at half a mile's distance, are situated the mineral baths on a rising ground near the margin of the sea. The establishment is very large, and can afford, as I was told, accommodation for forty or fifty boarders. An invalid with a good servant might take up his quarters here with more comfort than in any other house of public reception in the West Indies. At present the thing does not answer, the building being in fact too large and the depreciation of colonial produce rendering it difficult to afford a mineral spring illness. There are three spacious plunge baths on terraces one above the other, and varying in their temperature from 50° to 100° Fahrenheit. The lowest and largest is now given up to the boarders and others as a turtle crawl. There the poor, flat, gawky creatures flounce about till they become sulphuretted to a certain culinary degree, which is known by the eatable beginning to lose his equilibrium, and, instead of lying level on the water, to sink half his body edgeways under, and leave the other half an upright semi-

circle in the air. When this sign of the times appears, the fortunate owner impatient of the joy, erects his head and snuffs the coming soup :—

"*Genialis agatur. Iste dies!*"

cries he, "and now turtle cannot reasonably expect anything better than death and dressing."

Dr. John Davy, F.R.S., a brother of Sir Humphry Davy, and Inspector General of Army Hospitals, visited Nevis when he was stationed in the West Indies, mostly at Barbados ; from July, 1845, to November, 1848. In his book, *The West Indies, before and since Slave Emancipation*, published in 1854, Dr. Davy said, under the head of Nevis :—

"In St. Kitts, excepting in the Soufriere of Mount Misery, there are no indications of the proximity of subterranean fire, not a single hot spring or spot the temperature of which is known to exceed the average of the locality. In Nevis there are both. About two miles from Charlestown is a ravine where, in a very limited space, sulphur is pretty abundant, and also alum incrusting variously coloured clays ; and where in a fissure or cavity, the temperature is sufficiently high to roast an egg. The baths, about half a mile from the town, are an instance of the warm springs. The temperature of the highest I found to be 108° Fahrenheit.

"From information I collected, the temperature appears to be variable, lowest in dry weather, highest after rain. I was assured that after a continued rain it had been found as high as 115° Fahrenheit.

"They hold in solution in small quantity, potash, lime, magnesia, and silica, with carbonic acid and traces of other ingredients, derived no doubt from the rocky bed from which they rise and through which they percolate."

In a foot-note, Dr. Davy adds :—

"I have given an account of the water of these springs or spring—for it is doubtful whether there is more than one—in a letter to Professor Jameson, the Editor of the *Edinburgh New Philosophical Journal*, to which I beg to refer for particulars. It is to be found in the number for July, 1847.

"According to the analysis I made, the waters of the highest temperature, collected as it flowed from the pipe, that used for drinking, of specific gravity 10,019, contained about its own volume of carbonic acid. Forty-four cubic inches of it, equal to about 11,12 0 grains, yielded 1.8 grain of saline matter, readily soluble in water, chiefly bicarbonate of potash with a trace of muriate of magnesia, 1.3 grain of carbonate of lime, .77 grain of carbonate of magnesia, 1.5 grain of silica, a trace of phosphate of lime, sulphate of lime and of vegetable matter. I stated, in the letter alluded to, that I could not detect either iodine or bromine in the water. Afterwards, experimenting on a larger quantity, I satisfied myself of the presenc of a minute quantity of the former.

"The baths, of which there are two, each sufficiently deep and spacious to swim in, are supplied with water of the same quality as that used for drinking, and probably derived from the same source. One is warm, of the temperature 98°; the other tepid, is 10 degrees lower.

"Taken internally, that used as a drink has been found serviceable in many instances of derangement of the stomach and intestines resisting ordinary treatment, and externally in the form of a bath in the cases of obstinate rheumatism.

"On exposure of the water to the air, when the carbonic acid it contains in part escapes, some of the carbonate of lime and silica dissolved—and, it may be inferred, by the agency of the acid—is precipitated, forming incrustations —which are found about the baths and also in the bed of the small stream, chiefly fed by the bath spring.

"A building well constructed of stone, of three stories, with a spacious verandah or open gallery, in front, erected by a philanthropist, a Mr. Huggins, for the use of invalids adjoins the baths. The middle story alone is now open as an hotel. It is capable of accommodating about 15 persons, has eleven bed rooms, a large common room, and a drawing room. Standing on a rising ground, it commands a pleasant view of part of the island of St. Kitts and of the intervening sea, and is considered healthy."

In view of Dr. Davy's acount of the nature of the waters of the bath, it is interesting to read the following report by a modern expert of his analysis of a sample of them.

Report on samples of water from the bath spring, Nevis, West Indies, by

JOHN C. THRESH.

November 26th, 1908.

Received duly sealed from Messrs.

GILLESPIE BROS. & CO., LONDON.

"The water closely resembles that from the Wildbad Thermal Springs of Wurtemburg, which are extensively used for chronic rheumatism and gout.

"There is no constituent which would render this water deleterious for drinking purposes. It is free from any signs of pollution."

"(*Signed*) JOHN C. THRESH.

Respecting a sample of water from the bath spring, Nevis, West Indies.

Particulars of Source: Spring.

PHYSICAL EXAMINATION.

TURBIDITY: Clear and Bright. Slight sediment of Sand.

COLOUR: Slight Yellowish Green. ODOUR: None.

CHEMICAL EXAMINATION.

Determinations.	Results in Grains per Gallon.	Parts per 100,000.
Total solid matter dried at 130°C.	44.1	63.0
Chlorine	5.7	8.2
Equivalent to Chlorides (60% Cl.)	9.5	13.6
Nitric Nitrogen	0.37	0.54
Equivalent to Nitrates (17% N.)	2.2	3.2
Nitrites	Absent	Absent
Hardness : Permanent 8.4 : Temporary 9.6 ; Total 18.2		26.0
Lead, Copper, Zinc, Iron	Absent	Absent
Free Ammonia	0.0004	0.0006
Organic Ammonia	0.0014	0.0020
Oxygen absorbed at 98°F. in 3 hours	0.0189	0.0270

Nov. 26th, 1908. (*Signed*) JOHN C. THRESH.

So highly have the inhabitants appreciated their mineral springs that they adopted them in designing the Arms of the island, and as the device on their postage stamps. At the British Museum is a proof impression, in red wax, of the Great Seal of Nevis in Queen Victoria's reign [xcviii, 20]. On it is a group of three figures emblematical of succouring a colonist in distress. In the background is a spring of water issuing from a rock. In the *Stamp Collectors' Magazine* for January, 1867, Mr. I. B. Brown, then Postmaster of Nevis, thus described the design on the Island's stamps :—"The device on the Nevis postage stamps is a facsimile of the Great Seal of the colony, and represents issuing out of the sides of a hill a stream of water which, falling to the ground, forms a pool wherein a sick female is reclining supported with one hand by a companion, who extends the other to the presiding genius or nymph of the stream for a bowl which the latter is filling from a pitcher of water drawn from the stream."

The baths, like the Island itself, fell upon evil times ; and about 1870 the Bath House became unfit for habitation and was closed as a guest-house. Thanks to Mr. Chamberlain, however, a revival of the prosperity of Nevis has followed upon the abolition of the Bounty system, and, as a consequence, the proprietors of the land on which the Bath House stands, Messrs. Gillespie, Bros. & Co., of 23, Crutched Friars, London, E.C., and of 4, Stone street, New York City, U.S.A., have felt justified, after forty years of disuse, in restoring the old hostel. This enterprising firm have issued a pamphlet telling of the virtues of the mineral waters, and illustrated with pictures of the Bath House from within and without. The following extracts from the pamphlet, which bears the simple title—*Bath House, Nevis*, will give West India health seekers some idea of the comfortable, and even luxurious, sanatorium that is within easy reach of their respective colonies.

" It is stated it cost £40,000, and it speedily became the chief health resort of these islands, drawing visitors in large numbers rom both England and America. The engraving on page 4 gives an excellent idea of the building, although from the photo following, it will be seen to be more massive in outline than the engraving shows. Its massive walls of stone were built by masons specially brought from England, and its principles of construction, one arch buttressing or counterforting another, rendered it so strong that it has stood, not only the earthquakes and hurricanes of over a century, but the attacks of pilferers with crow-bar and pick in search of a quarry where they could obtain ready-dressed stone for their own use. The architect's main idea appears to have been to combine strength with coolness ; and with the lofty-vaulted roofs and stone corridors, he has succeeded so well, that despite its being very little over a hundred feet above sea level, it is one of the coolest places in the West Indies. The eastern design of flat stone flagged roofs and broad verandahs provides excellent promenade or lounging places, and from these one of the most beautiful views in the world may be seen seawards towards S. Kitts. The rooms are lofty and spacious, light and airy. The building has lately been fitted with hot and cold baths and a thoroughly sound drainage system.

" Last year its restoration was decided upon by Messrs. Gillespie Bros. & Co. of London and New York, who are now the owners of the property, and the upper flat with its charming verandahs and spacious ramparts is now ready for visitors. The natural thermal spring has been restored and the water ' wells ' up under the feet of the bather at a constant temperature of 108° Fahr. These springs have a long record of success in the treatment of rheumatism, gout, sciatica and kindred disorders. A cooling lounge with open verandah is provided immediately above the Bath, where coffee and cigars or cigarettes can be obtained if desired. Riding ponies or vehicles can be hired and the following places visited :

" Lord Nelson. Fig Tree Church ; distance 2 miles, where the original Certificate of Nelson's marriage with the widow Nisbet can be seen. Montpellier Estate ; about $2\frac{1}{2}$ miles from Bath House, on which are the ruins of the dwelling house in which the wedding was actually solemnized. Saddle Hill Peak and Battery ; about $2\frac{1}{2}$ miles. Tradition asserts that Nelson could be seen any day early in the morning with spy glass in hand, looking out from this peak for the enemy. Nelson's Watering Place ; about 3 miles to the North. A rather uninviting creek that could only have appealed to the blunt sanitary sense of the time as a suitable source of supply for the drinking water of the fleet, and one does not greatly wonder that deadly diseases were so prevalent among their crews.

" Alexander Hamilton. Among the ruins on the Northern outskirts of Charlestown may still be seen portions of the walls of the house which is said to be his birthplace. The ancestral estate of the family is situate about $1\frac{1}{2}$ miles to the South East and still retains its name of ' Hamiltons,' although

its connection with the family has long been severed. Mrs. Atherton's novel 'The Conqueror,' contains an interesting account of Hamilton's early life in Nevis.

"There are many beautiful walks and charming drives and climbs in the island and on the calm waters of Charlestown roads good boating and fishing can be enjoyed. An excellent 9-hole golf course is now being laid out, and tennis and croquet lawns on the private grounds which are extensive and gradually being restored to order."

PHYSICAL CULTURE IN THE TROPICS.

By H. A. Frere.

Strength of body and strength of mind: the reason of the sage and the vigour of the athlete exhibit the most perfect model of a man and the highest refinement of the mind.—Rousseau.

Physical culture is a modern term applying to the daily exercise of the body on scientific lines. There are many excellent forms of exercising the body nowadays that need not be referred to in detail: we have the gymnasium with all its apparatus for developing the muscles and teaching agility and intrepidity of action, we have numerous games for exercising hand and foot, eye and limb; we have the bicycle for testing the endurance, if necessary, or for gentle relaxation from business or mental occupation. But none of these forms of exercise is understood by the term physical culture, the exact meaning of which I shall now endeavour to explain.

Physical culture may be divided into two separate groups of exercises :—

(a) those that develop the muscles to abnormal proportions; and

(b) those that promote the circulation of the blood and give tone to such organs as the liver, heart, lungs and stomach.

The first group of exercises should only be attempted by the naturally strong and even then only in moderation as they are very apt to be practised to excess causing serious injury to the heart, the lungs and nervous system.

The second group may or should be used by all except those with organic disease as they undoubtedly tend to keep one physically fit, a most desirable condition to aspire to and to continue in, especially in these days of keen competition in every walk of life when the delicate man soon discovers that his services are not indispensable, and that there are dozens of more fortunate persons quite sufficiently educated to take his place.

With regard to the first form of physical culture, its utility is doubtful though its results often give striking proof of the power of the mind over matter and furnish living examples of the superb physique possessed by the ancient Greeks serving as beautiful examples of manly strength and figure so much to be desired and admired by both men and women. Such men as Sandow, Inch and Hackenschmidt are ever before us as ideals of strong and healthy manhood, but none of us need feel a spark of shame or regret in not possessing a single muscle that can compare with the same one of theirs. With all of these renowned strong men it is generally a case of *nascitur non fit* whatever they may tell us to the contrary, and both their strength and development is abnormal. What we in practical life want is to be normally developed in both mind and body since only strong men, geniuses and poets are born. There is a divinity

in origin and the gods are frugal in their gifts to us struggling mortals who must help ourselves with the knowledge and means at our disposal, and indeed this we most of us can do in an enlightened age like ours.

Coming to the second aspect of physical culture we are face to face with a most interesting problem; it is the physical development of the race along rational and normal lines within the reach of every class of the community and of both sexes. The problem is presented for our consideration not a day too soon. The lesson lies at our very door here in Demerara.

Let us take a stroll down Water street. What do we see? There are shops, tram-cars and donkey carts in plenty, but the chief claim on our attention is, I am sure, the human element and to the critical eye, which is not necessarily uncharitable, how much do we see that is deplorable. There is the skinny, ill-nourished East Indian, the emaciated, opium-eating, or pot-bellied Celestial, the stalwart Negro, many of them of both sexes with very fine physique, others of a degenerate type, and the diseased of all classes with regard to whom it need scarcely be observed that, ill-nourishment, opium-eating and other vices are mainly, if not entirely, responsible for their defection from the normal physical standard. It is useless to teach physical culture to the masses for most of them have no time for it, some of them do not require it and the vast majority would not be bothered with it. But in spite of disease and vice and every other drawback physical culture amongst the masses would, in my opinion, rid our cosmopolitan streets of at least twenty-five per cent. of the unsightly objects that pass for men and women leaving the ill-nourished, the diseased and the mendicant who, after all are like the poor always with us in every city in the world. It is not the purpose of this article to apply physical culture to the above human aspect of Water street but rather to the self-respecting members of our community who are engaged in business or mercantile pursuits or who fill the ranks of the Civil Service. In Water street this class is a numerous one and the effect of physical culture thereon is one that leaves no doubt in the mind of the writer.

In the first place there is no question of expense whatever in connexion with physical culture nor is there of time or inconvenience; it is solely a matter of will-power and determination and an elementary knowledge of human physiology and anatomy such as every sensible person should possess.

What are the chief things that the self-respecting man or woman most dislikes to advertise in public and in person? Surely—bottle shoulders, a pot-belly, a slouching gait, and an ungainly figure. Now all these defects can be easily remedied by physical culture, and the habit of exercise can only lead to a shapely figure and handsome gait and bearing.

There are well known stereotyped exercises for the weak shouldered, the adipose man or woman, and for the person whose spine or lungs are weak: simple exercises with or without apparatus described in little books published at a shilling or so that can be purchased at "The Argosy" Coy., Ltd., in the very centre of the Water street that I have chosen as a concrete example of the need for physical culture in this colony in particular and in the tropics in general.

Having seen these exercises you will naturally want to know how often and how long they should be continued. Opinion is very varied on this point and as this article stands in my name I shall not confine myself to opinions other than my own. I have tried both the hard and gentle form of exercise and I am quite convinced that in a climate like this the gentle form is the only one advisable. In cold healthy climates a more vigorous form of exercise is permissible but even here there is the danger of overdoing it with the gravest results. Physical culture is by its nature exercise in a concentrated form, that means a tax on both our energy and will-power. The brain and the body cannot be overtaxed with impunity; therefore be moderate in physical culture as in everything else. But there is another aspect of the question of overdoing it in this particular direction. No good can result from any form of exercise unless it is indulged in heartily, and if we wish to derive any benefit from private exercise with dumbbells we must concentrate the will-power on every movement that brings each muscle into play and into the muscles themselves, otherwise the brain will not do its work of supplying the necessary amount of blood to each muscle for its growth and nourishment. This is a physiological fact which must be accepted in order to understand the importance of will-power in exercise of this sort. In games or exercises in association apart from the pleasure of associating with others the chief benefits that arise are from an improved circulation of the blood. You will easily see therefore that the chief danger of overdoing physical culture lies in the brain. Introspection or concentration on self is bad at all times. The egoist is voted a nuisance and is left severely to himself. In a physical sense the egoist is as apt to grow as diseased in body as he is in mind only with more material degeneration. To be practical I should say ten minutes a day first thing in the morning or last thing at night followed by or preceded in the former case by a cold shower is the correct regimen in the tropics. The simple course I go through every day a couple of hours before breakfast is directed mainly to the development of the lungs and chest and abdominal muscles with a few additional calisthenics to make the body erect and supple. This is all that is necessary to keep the lungs, heart and stomach in a vigorous healthy condition; unless there is any inherited or acquired organic disease of either organ.

But a word or two of warning is necessary both to the regular physical culturist and to the beginner. First, never attempt to exercise if you do not feel well or if you are tired. It should be borne in mind that everyone wakes up daily with a given quantity, more or less, of physical energy — one's *opsonic index* or personal equation. This energy has to last till bedtime: it can be used up before breakfast through indiscretion or it can be husbanded till the day after to-morrow and is to a certain extent accumulative. The wise man is he who uses his energy equally for the improvement of brain and body and so acquires *mens sana in corpore sano*—the motto of the physical culturist.

Ten minutes brisk exercise in a climate like this produces every desirable result. *Generally* perspiration and increased respiration and circulation and *particularly*, determination of blood to the parts or organs exercised. All this is good.

The second important warning is the regulation of one's breathing during exercise. A good deal has been written about breathing of late years and references to diaphragmatic, abdominal and intercostal breathing are quite familiar to some of us.

I do not myself believe that the involuntary act of breathing on which the very life depends should be interfered with at all. But I have learnt this much from my friend, Mr. Sandow, and others, that to put any strain, violent or persistent, upon captive air in the lungs is a dangerous practice that may lead to an unpleasant pulmonary ailment termed emphysema, which is a condition brought about by loss of elastic tissue in the air cells of the lung. Most of us remember in our school days being instructed to take a deep breath before doing any feat of strength in the gymnasium or on the field. This advice was faulty and if persevered in regularly in the practice of lifting heavy weights or in dumb-bell exercise might lead to emphysema. Eugene Sandow whose heart and lungs are in perfect condition, as duly attested by the fact that he was recently passed for a very large sum for insurance as "a first-class life," makes a special point that no one under his instructions shall, whilst breathing deeply, maintain the dilatation of his air cells at all, but on the contrary after having taken a deep inspiration, which is so valuable to the development and maintenance of a good condition of the lungs, he shall immediately exhale without undue resistance to the escaping breath. "The method of exhalation, I adopt," Mr. Sandow writes, "certainly necessitates some slight contraction of the lips, but the object of this is not to resist the exhalation, but to prevent the soft palate from unduly vibrating during the exhalation because if there was no slight resistance to the exhalation, a vibration of the palate would be set up which might ultimately produce relaxation and discomfort of the throat."

There is a third and seemingly superfluous injunction in the enervating climate of the tropics where the inclination to both physical and mental exertion is so largely discouraged by the damp and the heat, and that is—*do not overdo it.*

I have only prescribed ten minutes a day or at most fifteen minutes as being a safe period to devote daily to physical culture but the warning is none the less necessary as experience frequently shows. A certain fascination grows upon the ardent devotee that is apt to bear him beyond the bounds of moderation at the expense of much nervous energy. More especially is this warning imperative in the tropics where the climate alone exercises no inconsiderable demands upon the nervous system. Moderation in all things is the secret of a happy life and just as you can have too much of a good thing (such as a swizzle) so can physical culture be very easily carried to excess.

The moral aspect of physical culture is even more important than the material side of the question. We are largely governed in life by our habits and the habit of exercise if only for ten minutes a day is a very beneficial one. Such a habit must tend to promote self-respect. No man or woman who has acquired the habit of improving the shape of his or her body and caring it as he or she would naturally care their own home, is likely to cultivate evil propensities. Such a person would be a house or home divided against itself which we know

must fall. All good habits are stronger if persisted in than evil ones and I say without hesitation that the physical culturist though he may often commit indiscretions of diet, clothing, bathing, etc., will never allow himself to become the victim of vice in any shape or form. Life is a continual battle between good and evil. The mind is the arbiter between the heart and the body. If the heart desires evil the healthy mind decides in favour of good and the body which ought to be the servant of the mind acts accordingly ; *Mens sana in corpore sano* makes the ideal man, and as the mind controls the body so will the body control the mind. In healthy persons, persons of good moral standing vice can make no progress, but woe to the man or woman who allows vice to control the body for it can only end in destruction both moral and physical. The habit of exercise as denoted by physical culture means a daily mastery of the body with corresponding reflex action on the mind. It keeps men up to the mark, it encourages determination of purpose, conquers slackness and promotes the healthy quality of self-respect, for no one can fail to lift up his head amongst his fellow men who knows that his coat covers arms and shoulders and back that can give a good account of themselves in a tight corner or come to gallant assistance where needed.

It is the strong man who is humble, the strong man who is kind and gentle and brave as a rule when courage and not bluff is indicated : it is in the strong man so often that the tender heart is found, the humble human expression of a God who is all powerful as well as all-loving. We cannot all be born strong and healthy and many of us have to fight against inherited taints and diseases ; but we can all hold up our heads fearlessly provided that we know hat we are trying to keep ourselves fit by moral and physical exercises which I have tried to prove in the limited space at my disposal are summed up in the term *physical culture.*

I am fully aware that the subject is an unpopular one, also that the exigencies of space in a volume of this sort are particularly rigid in this case, but I "do not fear to sow because of the birds." These are strenuous days it is true but that is no reason why physical culture should assume the aspect of a solemn ritual any more than our meals. We want the man with forcible and amiable elements of character equally balanced, and rational physical culture has, it may be frankly asserted, a tendency to produce him.

Before closing this article I cannot help screening my own opinions behind those of the great Japanese Reformer, Fukusawa. The Japanese we know as a race are renowned for physical culture and endurance that a few years ago stood the severest test that a nation can be subjected to. Fukusawa says in his Moral Code amongst other things :—"Taking care of the body and keeping it healthy is a duty incumbent on us all by reason of the rules that govern human existence ; both body and mind must be kept in activity and in health and anything calculated to impair their health even in the least degree must be rigidly avoided."

To which let me add, in all humility, *verbum sap.*

WIRELESS TELEGRAPHY.

By C. Keyte.

"Wireless Telegraphy" is undoubtedly an interesting subject to most people principally on account of its apparently bordering on the unknown.

To the average mind there seems to be something marvellous—I might almost say unnatural—in the fact of communicating between places a thousand miles apart without any visible connection. It is this invisibility that causes "Wireless" to appear so wonderful. We see nothing very wonderful in the wires that, crossing mountain and desert, keep us in touch with our most remote outpost; or in the cables that, lying deep in the ocean, enable continent to converse with continent; or even in the telephone which most of us use daily.

We fail to appreciate the wonder in these things—not so much because of our familiarity with them as from the fact that there is something tangible—something that we can see—connecting the points.

In the case of Wireless Telegraphy there is also a connection, though an invisible one, in the all-pervading substance known as ether. This natural connection, unlike the telephone or telegraph wire that is liable to interruption at any point in its length from the most trivial cause, cannot, so far as we know, be interrupted by anything, though the apparatus by which we utilize it may be, and at times is.

I do not propose to go very deeply into the subject, or to compare the merits of the many systems in vogue, but simply to run briefly through the history of "Wireless," note the progress that has been made, and give some idea of the methods of working.

The advent of electricity in its application to telegraphy increased the distance over which it was possible to communicate so enormously and was such a great improvement upon the methods of signalling in vogue previously, that for a time no other method was looked for; and scientists contented themselves with improving telegraphic apparatus in order to obtain greater distances and more speed and accuracy in transmission, on these lines.

The idea occurred, though, as to whether it might not be possible to utilize either the earth or water as a conductor in case of a breakage of the wire or cable. This idea resulted in the conduction and induction systems of Morse, Lindsay, Edison, Preece, and others, which were the first examples of what is now generally, though erroneously, described as "Wireless" Telegraphy.

As a matter of fact a vast quantity of wire is utilized in connection with every "Wireless" installation—in some cases more than would suffice to reach from the transmitting station to the receiving station. The term "Wireless," though, in its general sense—as meaning without connecting wires—serves

its purpose very well, and although not now used officially, will doubtless continue to be used generally for a long time to come.

Sir William Preece proved the practicability of his induction system by maintaining communication with the island of Mull during the time that the cable between that place and the mainland was interrupted; and I believe two of his installations are in use to this day.

In the year 1864 Professor Clerk-Maxwell advanced the theory that an electrical discharge caused the formation of electro-magnetic waves in the ether, just as the vibration of a tuning fork causes the formation of sound waves in the atmosphere. By various scientific assumptions Maxwell was able to predict the action of these waves, their rate of progression, etc., but he never succeeded in actually producing them.

It was more than twenty years later before his theory was experimentally confirmed by the scientist Heinrich Hertz, who, by means of his Oscillator and Resonator, produced and detected what have since been known as Hertzian waves.

Hertz found that to produce the waves it was necessary to obtain exceptionally rapid vibrations. If the prongs of a tuning fork are pressed together, then allowed to regain their normal position slowly, no sound is heard. To produce sound waves it is necessary to release the prongs of the fork suddenly. Similarly to produce electro-magnetic waves in the ether, the electrical discharge must be sudden.

Hertz obtained this sudden discharge by means of an oscillator which consisted of an induction coil with the addition of two capacity areas, one being joined to each of the opposite poles of the coil. From each of these areas ran a brass rod terminating in a small knob. These rods were so arranged as to leave a small gap between the two knobs. The induction coil charged the areas with electricity, one positive and the other negative, while the air gap prevented their discharging across the rods. The difference of potential between the two areas increased, until a point was reached, when the insulation of the air suddenly broke down and allowed the areas to discharge across the gap by means of a spark. This spark caused a train of electro-magnetic waves to be propagated in all directions from the gap.

To detect the waves, Hertz used what he termed a resonator. This consisted of a circle of copper wire, broken at one point so as to form a minute spark gap. This resonator was placed in the vicinity of the oscillator, the waves from which set up a disturbance in the circuit resulting in a tiny spark across the gap. This resonator, however, was not sufficiently sensitive to detect waves at any distance, and before Wireless Telegraphy could become practicable a more delicate instrument had to be found. The French scientist Branly supplied this want with his coherer. This consisted of two plugs of metal fitted tightly into a glass tube and connected to a circuit containing a battery and galvanometer by means of wires led through the ends of the tube. The gap between the plugs was partly filled with iron filings. In their normal

state these filings did not make contact between the plugs and consequently the circuit was not complete ; but as soon as an electrical discharge occurred in the neighbourhood of the coherer the filings cohered and made contact with the plugs, thus completing the circuit and allowing the current to flow and so cause the galvanometer needle to be deflected.

We now come to the advent of Marconi and the birth of practical Wireless Telegraphy. Many people have an idea that wireless was a thing unthought of, until suddenly discovered and perfected by Marconi, whereas, as you have already seen, it was the work not of one man, but of a long line of scientists, each, so to speak, forging his link in the chain, then stepping aside to make room for his successor. Maxwell developed the theory of ether waves ; Hertz experimentally confirmed the theory. Righi improved upon Hertz's oscillator and Branly produced a practical instrument for detecting the waves. Sir Oliver Lodge, in 1894, actually sent and received messages by "Wireless," but does not seem to have fully realized the importance of his achievement at the time, and it was not until some few years later that the scientist in collaboration with an eminently practical man, in the person of Dr. Alexander Muirhead, made his system a success. Sir Oliver Lodge's coherer is on a different principle from that of Branly. It consists of a steel wheel revolving over a tube containing mercury. The wheel rests very lightly on the mercury but does not make metallic contact with it, owing to a very fine film of oil separating them. The coherer is connected in a circuit somewhat similar to that already described, the wires being connected, one to the steel wheel, the other to the mercury, instead of to the two metal plugs. The oscillations break down the insulation of the film of oil, and the wheel and mercury making metallic contact complete the circuit, so allowing a local battery and telegraph instrument to come into play. The circuit is broken when the oscillations cease by the revolving wheel causing the oil to regain its position.

Captain Jackson, R.N., working independently, succeeded, in 1895, in sending and receiving messages between ships at sea but his results were made known only to the naval authorities.

In 1896 Marconi took out his first English patent, and carried out a long series of tests with the co-operation of Sir William Preece, at that time the Engineer-in-chief of the Post Office, and "Wireless" began to be looked at from a commercial point of view.

Marconi's coherer was on the same principle as Branly's, but, in the hands of the younger scientist, it became a far more reliable and sensitive instrument. Marconi replaced the metal plugs used by Branly with ones of German silver, and the iron filings with a mixture of nickel and silver. By withdrawing the air from the tube, he made the coherer more sensitive and rendered it capable of adjustment, by making the gap containing the filings V-shaped.

This coherer was joined in circuit with a battery and relay, and in the local relay circuit was placed a telegraph instrument. The terminals of the coherer were also connected to two metal plates or capacity areas. The radiations from the transmitting station affected the coherer, and the filings m kin··

contact between the plugs allowed the current from the battery to flow round the circuit and close the relay, which in turn actuated the telegraph receiver. When the oscillations ceased, the circuit was broken by means of an instrument known as a tapper. This was very similar to an ordinary electric bell, but the hammer instead of striking a bell struck the coherer and so caused the filings to fall into their normal position and cease making contact with the plugs.

For transmitting, Marconi at first used the oscillator designed by Righi, but found that by raising one of the capacity plates of this, and one of the plates of his receiving circuit, to a height, he could receive messages at a greater distance. Later he discarded these plates, substituting for them the antenna or aerial wires, which are now usually placed at a height varying from 150 to 250 feet above the ground, The other capacity area, at both the sending and receiving stations, he also did away with, utilizing the earth itself in its place.

There were several reasons for heightening the upper capacity or aerial, one of them being in order to avoid screening of the waves by buidings, etc., the others of a technical nature too deep to go into here.

In the Lodge-Muirhead system, the lower capacity is still used, in the shape of a second antenna placed below the first, a short distance above the ground. The advantage claimed for this is that the instruments are not so liable to be affected by atmospheric disturbances as when connected to the earth.

Marconi succeeded in establishing communication across the English Channel in March, 1899. By 1901 several ships had been fitted and were working successfully at distances ranging up to about 100 miles. About this time several other systems came into prominence, notably the Lodge-Muirhead, De Forrest, Fessenden, and the Telefunken, but to go into details regarding each system is out of the question. Each has its particular advantages and each seems to have its particular disadvantages.

In 1902 Marconi brought out a new form of receiver known as the magnetic detector. This instrument depends upon the property of "hysteresis" in iron for its action ; and has proved a far more reliable and delicate instrument than the coherer. It increased the distance over which it was possible to receive messages enormously, and, by the end of 1903, it was found possible, by means of a 40 H.P. station in Cornwall and a similar one at Cape Cod, to keep always in communication with vessels crossing between England and the United States ; and early the following year a daily newspaper service was inaugurated on some of the more important liners on this route.

In the same year Marconi succeeded in sending a message right across the Atlantic but owing to the various difficulties it was not until four years later that so great a distance became really practicable. On October 17th, 1907, however by means of a 500 H.P. station near Slyne Head in Ireland, and another at Sydney, Cape Breton, a commercial transatlantic service was inaugurated, and it then fell to my lot to receive the first message from Cape Breton—the second message ever sent right across the Atlantic.

Before leaving this part of the subject I should like to draw your attention to the difference—and the similarity—between Hertz's oscillator of 25 years ago and the transatlantic transmitting station of to-day. In place of Hertz's simple battery for generating the primary current, we see a huge alternator driven by engines of 700 H.P. The induction coil of possibly 1-20 of a kilowatt has been replaced by a set of transformers of 400 kilo-watts. The spark knobs have been replaced by specially cooled metal discs revolving at 600 revolutions per minute. For Hertz's capacity areas have been substituted the specially arranged aerial wires, huge condensers and the earth itself. Hertz's oscillator would pack into a box a couple of feet square, whilst the transatlantic station with all the necessary buildings, masts, etc., occupies several acres of ground.

Hertz detected the waves from his oscillator some few feet only whilst messages have been received from Marconi's station at Clifden at a distance of 5,600 miles.

The principal disadvantages to which wireless installations are liable are electrical disturbances in the atmosphere, which at times interfere with the working of the apparatus, and occasionally—as in the case of severe thunderstorms—temporarily interrupt the service. Improvements are constantly being made though, and it is now possible to work during electrical storms which a year or two back would have rendered communication impossible.

Of the advantages of Wireless Telegraphy very little need be said. Undoubtedly its greatest sphere of usefulness has so far been proved to be in connection with shipping both from the commercial and life-saving points of view. The corporation of Lloyds were quick to realize its usefulness in this respect, and had it installed at all their more important signal stations, and I believe there is an appreciable difference in the insurance premiums charged for vessels that have installations aboard and for those that have not.

At the International Wireless Conference, held a few years back, it was agreed that the emergency call from ships at sea should take precedence over all other wireless signals and it is now compulsory for ships and shore stations of whatever nationality, or with whatever wireless system installed, to comply with this.

The part played by wireless in the case of the collision of the liners "Republic" and "Florida" some two years back is no doubt well known, but the following statistics may prove interesting.

During the past five years no fewer than ten thousand six hundred and forty persons have been rescued from ships in distress through the agency of wireless telegraphy, and over 4,000 lives have been saved from five vessels which were lost, three by sinking after collision, and two by fire.

I personally have only twice heard the emergency call used—once while in charge of the installation aboard a steamer which became disabled by the breaking of the propeller shaft, when we were able to get into communication with another ship and make arrangements for towing, etc., and once, some five

or six years back, while in charge of a station on the West Coast of Ireland when a serious fire broke out on board a large liner, homeward bound from the United States—then only about 80 miles from shore. The message asking for assistance was received just after 1 a.m. and exactly 26 minutes later we were able to inform the ship that tugs were being sent to her assistance and that one of H. M. cruisers had been communicated with by wireless, and was then proceeding to the scene, with all speed, in order to take off the passengers and mails should the fire become unmanageable. In this case, fortunately, the assistance was not required. the fire having been got under; but such cases show the value of wireless on ship-board and the fact that close upon nine hundred passenger ships now have it installed shows that ship-owners have realized that value.

The matter has already engaged the attention of politicians of various nations, and, without doubt, the time is not far distant when every passenger-ship will be compelled by law to have the necessary equipment.

ON THE HYMENOPTERA OF THE GEORGETOWN MUSEUM, BRITISH GUIANA.

By P. Cameron.

Part II.

BRACONIDAE.

Braconinæ.

Bracon ingratus sp. n.

Rufo-testaceous, the legs paler coloured than the body, the apical abdominal segments infuscated, the flagellum of antennæ black, wings very iridescent, the basal half infuscated, the stigma dark testaceous, the costa and nervures black, the 3rd abscissa of the radius as long as the basal 2 united, the 2nd transverse cubital nervure faint. There is a smooth elevation, a little longer than wide, on the base of the 2nd abdominal segment, in the centre; there is a transverse curved furrow across the 4th segment near the base. The abdomen is longish oval and is as long as the head and thorax united. Male. Length 2.5 m.m.

Bracon mediatus, sp. n.

Rufo-testaceous, the antennæ, centre of occiput, broad bands on the 3rd and 4th abdominal segments, extending laterally to the outer fourth, that on the 3rd transverse at the apex, on the 4th rounded, the other segments are entirely black. Legs coloured like the body, the middle tarsi infuscated, the apex of the hind tibiæ and the hind tarsi black. Wings hyaline, slightly tinged with fuscous, the stigma and nervures fuscous; the recurrent nervure is received at a distance from the transverse cubital, the 3rd abscissa of the radius is longer than the basal 2 united Male. Length 2.5.

Smooth, shining. Stemmaticum black. Temples sharply, roundly narrowed, the occiput transverse. Parapsidal furrows distinct on the basal three-fourths.

Bracon consonus, sp. n.

Testaceous, the antennæ, apex of hind tibiæ (about the apical fourth) and the hind tarsi, except the base of the joints, black; wings fuscous hyaline, the apex lighter coloured, the stigma and nervures fuscous; the 3rd abscissa of the radius shorter than the basal 2 united; the 2nd transverse cubital nervure faint. Smooth shining, the 2nd abdominal segment with a clearly defined area, triangular, wider than it is long, ending in a short keel and bordered by wide furrows, the sides is an irregular longitudinal furrow, the apex of which is broadly rounded inwardly; before this curved part it is dilated; the 1st transverse furrow is curved, crenulated, except on the outer part, there are distinct furrows on the 3 following segments. Female. Length 3 mm.; terebra 1 mm.

Bracon docilis, sp. n.

Testaceous, the abdomen darker coloured, the antennæ, apical joint of the tarsi and the apex of the hind tibiæ black; wings hyaline, iridescent, the stigma and nervures pale testaceous, the apical nervures darker coloured; the 1st abscissa of the radius fully half the length of the 2nd; the 3rd longer than them united, the 1st transverse cubital nervure sharply oblique; the recurrent nervure received distinctly before the transverse cubital. Parapsidal furrows indicated on basal slope only. The 2nd abdominal segment without an area or keel; the suturiform articulation weakly crenulated. Female. Length 3; terebra 1 mm.

Smooth shining, thickly covered with white pubescence.

Bracon inculeatus, sp. n.

Testaceous, the antennæ, apical fourth of the hind tibiæ and the hind tarsi black; wings light fuscous, the costa, stigma and nervures black; the 1st abscissa of the radius one-fourth of the length of the 2nd, which is as long as the 3rd, the recurrent nervure distinctly distant from the transverse cubital. The apical part of the 1st abdominal segment with 2 large areæ, their base rounded, the central part irregularly reticulated, the bordering outer part transversely striated; the base of the 2nd segment with a wide, smooth triangular area, bordered by a wide, obliquely striated depression, the outer part of the segment finely rugose, more finely towards the apex, there is a clearly defined oblique furrow near the apex; the furrow on the 3rd is crenulated, especially the central part; the space beyond it is finely closely striated on the innerside; the lateral branch is broadly roundly curved; there is an oblique roundly curved furrow on the sides of the 4th segment.

Bracon curvisulcatus, sp. n.

Ferruginous, the abdomen darker coloured, the antennæ black, the apical 14 joints white, tips of mandibles black, about the apical third of hind tibiæ and the hind tarsi black, the base of the tarsal joints narrowly testaceous, wings fuscous, paler along the apical basal half of the anterior; there is a narrow hyaline streak along the anterior basal half of the 1st cubital cellule and a wider one along the basal abscissa of the cubitus, continued more faintly, widely and irregularly; into the discoidal cellule outside the recurrent nervure; a large hyaline cloud extends from the apex of the stigma half way to the apex of the wings, extending across to the anal nervure; there is an irregular cloud in it on the hinder part of the radial cellule along the stigma and a faint irregular one in the base of the 2nd cubital cellule. The 1st abscissa of the cubitus is broadly roundly curved; the recurrent nervure is received in the 1st cubital cellule, clearly separated from the transverse cubital. Female. Length 7; terebra 2 m.m.

Smooth and shining, covered with moderately long white pubescence. There is no keel on the 2nd abdominal segment, only a slight elevation in the middle of the base, from which a curved furrow runs to the apex; there is a curved furrow on either side of the base of the 3rd, enclosing almost a semi-circle; there

are shallow furrows along the base of the 3rd and fourth segments. Sheath of ovipositor stout, thickened towards the apex.

Bracon longicanaliculatus, sp.n.

Black, the basal 4 abdominal segments and the sides of the 5th narrowly at the base, bright red ; the 4 front legs testaceous, the anterior paler, more yellowish than the middle, their apical tarsal points black; the hind legs black; the trochanters, apex of femora narrowly and base of tibiæ more broadly (about the length of the shorter hind spur) black; the short hind spur black, the outer dark red. The apical half of the last abdominal segment is pale yellow, wings yellowish hyaline, a fuscous cloud runs from the hinder part of the transverse basal inside of which it is rounded, continued along the outerside of the transverse median (which it does not touch) to the parastigma, then obliquely along the basal abscissa of the cubitus to the posterior part of the wing, outside the recurrent and discoidal nervures there is a large apical cloud, commencing at the end of the stigma and roundly curved at the base ; the hind wings have the apical half fuscous, with an irregular hyaline cloud near the apex, the stigma and nervures in the hyaline parts fulvous yellow ; the recurrent nervure is received close to the apex of the 1st cubital cellule. The abdomen is more than twice the length of the thorax, the basal 2 segments are narrow, the 1st not quite one-quarter longer than the 2nd ; there is a triangular depression in the centre of its base ; there the sides are broad and rounded ; the broad furrow along the sides of the apical two-thirds ; there is a broad, deep furrow along the sides of the 2nd, from the base to the apex, and an oblique one on the basal two-thirds of the 3rd ; the 3rd and following segments form a longish oval.

Bracon fuscinervis, sp.n.

Ferruginous, the antennæ, head, palpi, lower part of propleuræ, prosterum, the 5th following abdominal segments and the legs black : wings fuscous, the costa and fore-part of the stigma black ; the hinder part of the stigma and the nervures fuscous ; the base of the cubitus straight, angled at the junction with the apical part, which is oblique and slightly rounded ; the recurrent nervure is received close to the apex of the 1st cubital cellule. Smooth, shining. The keel on the 2nd abdominal segments well defined, smooth, broad, gradually narrowed, the base twice the width of the apex, bordered by wide, deep furrows ; the lateral furrows wide, deep ; at their apex is a short, narrow oblique furrow. The 1st transverse furrow smooth, bifurcated on the sides, the enclosed area triangular ; there is a narrow, smooth furrow on the base of the 3rd mesonotum flat.

Bracon obscurilineatus sp.n.

Black, the thorax rufo-testaceous, the prosternum and lower part of the propleuræ—almost three-fourths—to near the apex, black ; the basal 4 segments of the abdomen distinctly tinged with rufous ; the 4 front legs rufo-testaceous, the anterior femora infuscated at top and bottom ; the middle black rufous, in the middle ; the hind legs black, the trochanters rufo-testaceous, the tibiæ and tarsi lighter in tint, the spurs testaceous ; the apical joint of the 4 anterior tarsi black ; wings yellowish hyaline, a fuscous cloud at the

base of the stigma extending narrowly behind the transverse basal and transverse median nervure to the apical third extending obliquely along the outer side of the basal abscissa of the cubitus in the form of a longish triangle and filling the discoidal cellule, except narrowly along the recurrent nervure and more widely at the apex, the cloud there being roundly narrowed at the base; the apex is clouded from there shortly beyond the 2nd transverse cubital, and there is a sub-apical and an apical cloud in the hind wings. Male. Length 12 m.m.

Smooth, shining, the face, pleuræ, metanotum and legs thickly covered with white pubescence. The keel on the base of the 2nd is smooth; it is a longish triangle at the base, the narrowed part reaches to the base of the apical fourth and is bordered by a wide furrow; the lateral furrows are wide, curved, and not very deep; the 1st transverse furrow is narrow, moderately deep, with indications of obscure striæ in the centre, the lateral apical branch is wide and shallow; there is an almost similar furrow on the base of the 3rd and a similar, but narrower one on the 4th, there is an obscure longitudinal keel down the basal half of the 4th. The basal half of the mandibles rufous. Palpi, except the basal joint of the maxillary, pale testaceous and covered with white pubescence.

Iphiaulax obscuricarinatus, sp.n.

Black, the basal 4 abdominal segments and the 5th with a triangular mark on the basal half laterally, bright red; the 4 front legs and the tegulæ yellowish testaceous, the hinder black, their trochanters, basal fourth of femora and basal half of tibiæ and spurs testaceous, wings fuscous, the base to the transverse median and to near the transverse basal and the middle from the parastigma to the end of the stigma, the cloud extending to shortly beyond the 2nd transverse cubital; in the hind wings there is a cloud beyond the middle at the commencement of the radius. Male. Length 9 m.m.

Head and thorax smooth and shining, covered with white pubescence, which is long on the face and metathorax. Basal 4 segments of the abdomen closely, distinctly striated, the striæ becoming gradually weaker; the dilated base of the keel on the 2nd segment small, bluntly dilated, the prolongation stout, reaching close to the end of the segment; there is a broad curved furrow on either side of it, going down the outerside; there is a transvers furrow on the base of the 3rd, curving forward at the sides; there is a similar, but less distinct one on the 4th. The 3rd abscissa of the radius is about one-half longer than the basal 2 united, the recurrent nervure is received near the apex of the 1st cubital cellule.

Iphiaulax dolens, sp.n.

Dark rufous, the legs of a darker tint than the body, inclining to fuscous, the antennæ, head, palpi and prosternum black; the head and thorax covered with white pubescence, which is longest on the face and metathorax; wings fuscous, the stigma ochraceous yellow, its apex black; the 3rd abscissa of radius nearly twice the length of the 2nd, the recurrent nervure received close to the transverse cubital. The bordering furrows on the 1st abdominal segment

irregularly transversely striated ; the keel on the 2nd longish triangular , smooth, the narrowed part continued to the base of the apical fourth ; the part on either side of it depressed and closely irregularly covered with large round foveæ ; there is a large oblique lateral furrow. Suturiform articulation curved, weakly crenulated, there is a narrower, smoother furrow on the base of the 4th ; there are no apical furrows.

Iphiaulax medianus, sp.n.

Ferruginous, the antennæ, head, and apical half of mandibles black, palpi testaceous ; the tarsi infuscated, wings fuscous, the base to near the transverse basal and to the transverse median almost hyaline, the stigma ochraceous, paler behind, the parastigma black, the costa rufo-testaceous ; there is a narrow hyaline cloud along the stigma, the apical three-fourths of the 1st cubital cellule, except for a longish triangular cloud near the middle of the apex, a large one of almost equal width outside the recurrent nervure and a narrow one on either side of the 2nd transverse cubital nervure, hyaline, the recurrent nervure is almost interstitial Abdomen smooth and shining, almost bare, the keel on the 2nd segment is smooth, extends to the base of the apical fourth, becomes gradually narrowed and is bordered by a deep crenulated furrow ; the lateral furrows are large, wide and deep. Suturiform articulation deep, weakly, closely crenulated behind ; the basal lateral furrow shallower, more curved and smooth ; there is a distinct, finely crenulated furrow on the base of the 4th segment. Female. Length 9 ; terebra 7 mm.

Face densely covered with long grey pubescence, the temples more sparsely so ; the mesosternum, pleuræ and metanotum covered closely with white hair. Legs closely covered with short white pubescence. Mesonotum trilobate, the middle lobe not reaching to the scutellum, the part in front of the latter being flat.

Iphiaulax villosus, sp.n.

Dark ferruginous, the antennæ, head, the apex of the mandibles broadly, the sides of the first abdominal segment and the base of the second broadly black, the palpi, except the basal joint of the maxillary, pallid testaceous, the tarsi darker coloured than the rest of the legs ; wings hyaline, to the transverse median and transverse basal nervures, fuscous beyond, except the base of the radial and the basal 2 cubital cellules which are almost hyaline, the parastigma black, the stigma pallid ochraceous ; the transverse median nervure not quite interstitial, being received shortly beyond the transverse basal ; the recurrent nervure is received quite close to the 1st transverse cubital ; the 3rd abscissa of the radius about one quarter longer than the 2nd. Abdomen smooth, shining ; the area on the base of 2nd segment longish triangular, smooth ; the keel reaches to the base of the basal fourth ; the lateral furrows large, wide, oblique, deep ; suturiform articulation closely crenulated, more strongly in the middle than on the sides, the furrow on the base of the 4th segment is strongly, closely crenulated, that on the 5th is distinctly, but much more weakly crenulated. The entire

insect densely covered with white pubescence. Parapsidal furrows distinct on the basal two-thirds of the mesonotum. Male. Length 12 mm.

Occiput transverse, the temples wide, obliquely narrowed There are 2 longish foveæ in the centre of the 1st abdominal segment, separated by a stout keel which projects beyond them.

Iphiaulax rotundinervis, sp.n.

Black, the basal 4 segments of the abdomen tinged with dark red ; the 4 anterior tibiæ and tarsi suffused with red, very densely covered with grey pubescence; the hind tibiæ and tarsi densely covered with stiff black pubescence ; wings hyaline, the base tinged with yellow ; the discoidal cellules, the greater part of the 1st cubital, the base of the radial cellule and the apex of the wings from shortly beyond the 2nd transverse cubital and the hinder pair from the base of the radius, fuscous ; the 3rd abscissa of the radius twice the length of the second ; the recurrent nervure received close to the apex of the 1st cubital cellule. Male. Length 13 m.m.

Abdomen smooth, shining ; the 1st segment with wide smooth lateral furrows, the centre with obliquely sloped sides. The basal area on the 2nd segment longish, gradually narrowed to a point and it is bordered by wide furrows, not very deep, the lateral furrows are curved, not very wide, clearly defined, and reach to the apical fourth. Suturiform articulation closely crenulated to near the outer edge ; the lateral branch is smooth, roundly curved and is widely distant from the outer edge ; there is a smooth, narrow, not very distinct, furrow on the apices of the 3rd and 4th segments. The transverse median nervure is not quite interstitial ; the basal abscissa of the cubitus is broadly roundly curved towards the stigma, which is fuscous on its hinder half.

Lasiophorus fortispinus, sp.n.

Rufo-testaceous, the thorax paler, more yellowish in tint than the abdomen, the antennæ, head, palpi, apex of mandibles, the middle of the 4th abdominal segment broadly and the whole of the following black ; as are also all the coxæ, the basal joint of the 4 anterior trochanters, the hind trochanters, the femora, apical half of the hind tibiæ and the hind tarsi, black. Wings yellowish hyaline, a fuscous cloud filling the 1st cubital cellule the 1st discoidal except for a triangular space at the base, the narrowed end in front, behind extending to the apical third, an irregular cloud in the apex of the 2nd discoidal an irregular cloud outside the recurrent, becoming obliquely widened to the apex, beyond the anal nervure, it occupying the basal third of the anal nervure and being indented by a conical hyaline cloud at the junction of he recurrent with the cubitus ; the apex is clouded from shortly beyond the 2nd transverse cubital nervure, which is roundly curved outwardly in front and having a minute stump on the outerside there ; the recurrent nervure is interstitial ; the apical third of the hind wings fuscous. Female. Length 18 m.m. ; terebra 36 m.m.

Smooth and shining ; the face, metanotum and base of metanotum thickly covered with long white pubescence, the rest of the body much more sparsely, and darkly pilose. The facial spine is about 4 times longer than wide, is

opaque, shortly pilose and with a triangular tooth in the apex; it is of equal width except that it is slightly narrowed at the extreme base. The lateral furrows on the 1st abdominal segment unite at the base; there are two transverse keels on their apex; there is a clearly defined keel, of equal width, on the basal half of the 2nd segment, which is as long as the 1st and has a curved shallow furrow down the basal half of the sides; the other segments become gradually shorter. The base of the mesonotum is roundly raised in the centre.

Cyclaulax. gen.n.

Abdomen smooth, without lateral furrows and without an area or keel on the 2nd segment, which is, in the centre, half the length of the 3rd; the suturiform articulation is narrow, smooth and is broadly, roundly curved backwards in the middle, the 4th is half the length of the 3rd, the 5th as long as the latter, the 6th of the same length, the 7th half as long as it; the hypopopygium projecting, plough share-shaped. Head cubital, the temples almost as long as the eyes, not much narrowed, the occiput transverse. Legs shorter and stouter than in *Iphiaulax* or *Bracon*; the fore tarsi a little shorter, the hinder as long as the tibiæ. The abdomen becomes gradually narrowed from the suturiform articulation; it is hardly so long as the head and thorax united.

This genus may be known from *Iphiaulax* by the absence of oblique furrows and by there being only one transverse one; from both it and *Bracon* by the small 2nd and large 5th segment of the abdomen, as well as by the absence of a longitudinal keel or area on the 2nd segment.

Cyclaulax grandiceps, sp.n.

Ferruginous, the antennæ, head with palpi, prosternum, the 7th and 8th abdominal segment and legs black, the anterior coxæ, trochanters and tarsi rufo-testaceous; wings fuscous, tinged with violaceous, the costal cellule, the 1st cubital cellule, the apical half of the 2nd discoidal and an irregular cloud beyond it darker coloured, the costa and nervures black. Smooth, shining, the sides of the face coarsely, irregularly transversely striated, the centre finely transversely aciculated; the inner side of the antennal tubercle more strongly obliquely aciculated; almost striated, the front aciculated in the middle, furrowed down the centre. Female. Length 12 m.m.; terebra 8 m.m.

Spathinæ.

Lissophrymnus, gen. nov.

Wings with 3 cubital cellules, the 3rd much longer than the others; the radius issues almost from the middle of the long stigma. Transverse median nervure received shortly beyond the transverse basal. Anal nervure issuing from near the bottom, almost interstitial. Head cubital, the occupit and cheeks margined; temples wide; eyes large, oval; malar space short. Mesonotum trilobate. Metanotum keeled down the centre. Mesosternum furrowed laterally on the basal half, the furrow widest at the base. The 1st abdominal segment is slightly narrowed at the spiracles, the base not much narrower than the apex; it is as long as the following 2 segments united; the 2nd one-third longer than the 3rd; the last segment is a little shorter than the penulti-

mate. Legs covered with stiff hair ; the spurs minute, as are also the claws. Antennæ shorter than the body ; the 3rd joint longer than the 4th. The thorax appears short as compared with the abdomen, it being not much longer than the basal 2 abdominal segments. The hind coxæ are 3 times longer than wide. The radial cellule in hind wings undivided.

Lissophrymnus annulicaudis, sp.n.

Black, the palpi, an oblique mark, longer than wide and of equal width, on the outerside of the malar space and a broad band near the apex of the ovipositor—longer than the terminal black part—white, the tarsi tinged with testaceous ; wings hyaline, iridescent, the stigma and nervures black. The face, pleuræ and legs thickly covered with white hair ; the base of abdomen more sparsely with white erect hair. The base of the 2nd abscissa of cubitus, the posterior part of the 1st transverse cubital nervure and the 2nd transverse cubital widely, bullated. Female. Length 12 m.m. ; terebra 12 m.m.

Front and vertex strongly closely transversely striated, the occiput smooth and shining ; the striæ on the front weaker and closer than on the vertex ; the face finely rugose, the sculpture hidden by the long white dense pubescence. Te nples obliquely striated above, the rest smooth ; the occiput distinctly margined. Pronotum at the base with a raised piceous margin ; the apex broadly raised clearly separated from the mesonotum ; it is, as is also the upper, apical part of the pleuræ, strongly striated, the striæ clearly separated. Base and sides of the mesonotum rather strongly striated, the striæ more or less rounded, the apical central part is more strongly reticulated, at the apex strongly longitudinally striated. Scutellum closely, not very strongly, but distinctly punctured. Metanotum transversely reticulated ; stout keel down the middle of the basal half ; the part bordering the base of this coarsely aciculated and with some curved longitudinal striæ at the apex and sides of the aciculated part. Metapleuræ reticulated, the base of the inner part coarsely aciculated, the rest closely, strongly, obliquely striated. Upper central part of propleuræ shining, depressed, strongly striated, its apical part below is bordered by a stout keel, above it is irregularly reticulated, with 2 or 3 stout keels at the base. Mesopleuræ at the base above finely, below more strongly, irregularly striated. Basal half of the 1st abdominal segment finely, closely reticulated, the rest finely longitudinally striated ; the 2nd and 3rd segments are more strongly, regularly longitudinally striated ; the 4th segment aciculated, the other segments shining, smooth, bare, except for a few long white hairs on the apices. The antennæ have the apical half brownish.

RHOGADINÆ.

Rhogadini.

Rhogas rufithorax, sp. n.

Black, the thorax red, a large irregular blackish mark on the apical two-thirds of the metanotum, and the greater part of the metapleuræ black ; wings blackish violaceous, tinged with violaceous, especially towards the apex, the stigma an nervures black ; the 2nd cubital cellule in front as long as the 2nd transverse

cubital nervure, behind as long as the 1st, the basal abscissa of the cubitus is roundly curved; the 1st transverse cubital nervure is bullated in front and behind, the 2nd with a bulla extending from near the base to the apex. Male. Length 8 m.m.

Scutellum stoutly keeled laterally to the beginning of the apical slope, which is finely, closely striated. Post-scutellum stoutly keeled laterally and with a narrower keel down the middle; the space between the keels depressed. Base of metanotum at the most aciculated; on the apex are 2 keels on either side of the central, the inner longer and more distinct than the outer, the apical obscurely, irregularly striated. The basal 2 abdominal segments are closely regularly, longitudinally striated, the 1st more strongly than the 2nd, the base of the 3rd still more finely striated; the keel on the 1st segment has a smooth dilatation at the base and apex; that on the 2nd at the base. Tibiæ and tarsi densely covered with short stiff black pubescence. Mandibles dark rufous, the teeth black, palpi black.

Rhogas fortipalpis, sp. n.

Black, the thorax and basal 2 abdominal segments red; the middle of the mandibles red, the basal 2 abdominal segments are closely strongly striated with a stout keel, narrowed at the apex down the middle; the suturiform articulation finely crenulated; the keel on the metanotum is slightly thicker than the abdominal one. Wings fuscous, the stigma and nervures black, they have a slight violaceous tinge. Female.

The 2nd joint of the maxillary palpi is dilated; it is as long as the 3rd; the last joint is fuscous and is one-half longer than the penultimate; both the palpi are densely pilose. Both the abdominal keels are slightly, triangularly dilated at the base. Length 8 m.m.

Rhogas forticarinatus, sp. n.

Black, the thorax red, the basal 2 segments of the abdomen distinctly tinged with red; the mandibles dark red, black at the apex; the wings fuscous, the stigma and nervures black; the 2nd cubital cellule of equal width, about twice longer along the longitudinal than along the transverse nervures, the 1st transverse cubital nervure bullated in front and behind, the 2nd almost entirely bullated; the recurrent nervure received at two-thirds of its length from the transverse cubital. The keel on the metanotum is stout; there is a short curved keel on either side of its apex. The 1st and 2nd abdominal segments are closely longitudinally striated, the 1st more strongly and uniformly than the 2nd, on which the striæ become finer towards the apex; the suturiform articulation is finelycrenulated. The 1st joint of the maxillary palpus is of equal thickness, twice longer than thick, the 2nd is much swollen, 3 times longer than wide, narrowed towards the apex, the 3rd half its thickness; the other 2 distinctly thinner. Female. Length 7 m.m.

Mesonotum trilobate, the middle lobe not reaching much beyond the middle, from its apex a keel runs to the scutellum; the part on either side of the base of the keel is finely striated. Scutellar depression large, deep, a stout keel

down its middle, with 2 or 3 short stout keels on either side of its apex. The keels on the 2nd and 3rd abdominal segments are smooth and longly dilated at the base.

Megarhogas melanonotus, sp.n.

Testaceous, the abdomen darker coloured, especially towards the apex; the vertex, mandibular teeth, the pro-and metanotum, the propleuræ, except at the base and apex irregularly above, the upper part and base of the mesopleuræ black, the mesosternum fuscous; antennæ dark rufous, lighter coloured at the base; basal 2 joints of the maxillary palpi blackish, the others testaceous; they are thickly covered with white pubescence; legs (and especially the tibiæ and tarsi) lighter coloured than the body; wings hyaline, the costa and stigma rufo-testaceous, the nervures, and especially the anterior, lighter coloured; the 3rd abscissa of the radius longer than the basal 2 united; the 2nd cubital cellule distinctly narrowed towards the apex; the 1st abscissa of cubitus broadly roundly curved; the recurrent nervure received near the apex of the 1st cubital cellule, the anterior two-thirds of the 1st transverse cubital nervure obliquely bent towards the radius, the lower third, the cubitus beyond it broadly and the 2nd transverse cubital nervure, except at top and bottom, bullated. On the centre of the metanotum are 2 irregular keels which converge towards the base; from near their apex run 2 irregular transverse ones. Face pallid yellow, covered with longish white hair; the mesonotum more densely covered with short, dark pubescence; the metanotum with longish pale hair; the abdomen densely with short pale pubescence. Female. Length 13 m.m.

The apical half of the 1st abdominal segment irregularly striated, more strongly towards the apex, the second more strongly striated, the basal half much more strongly than the apical: there is a narrow keel down the centre of the 1st and 2nd: that on the 2nd becoming gradually fainter.

This is a smaller species than *M. fuscipalpis*: it may be known by the 2nd cubital cellule being narrowed towards the apex, by the black propleuræ and base of mesopleuræ.

Megarhogas fuscipalpis, sp.n.

Testaceous, the abdomen from the middle of the 1st segment fuscous, the vertex and the greater part of the mesonotum black, the antennal scape testaceous, the flagellum fuscous, almost black; wings hyaline, iridescent, large, the stigma parastigma and costa rufo-testaceous, the nervures of a dark testaceous colour; the 1st abscissa of the cubitus roundly curved, the 2nd longer than the 3rd, the recurrent nervure interstitial; the 1st transverse cubital nervure obliquely bent from shortly below the middle, the nervure dilated at the junction of the 2 curves; the 2nd cubital cellule is of equal width and is two and a half times longer than wide; the 2nd transverse cubital nervure has the fore half slightly obliquely bent towards the stigma. The basal 2 segments of the abdomen are strongly, closely striated and with a narrow keel down the middle; the 3rd is more weakly striated. Female. Length 18 m.m.

Rhyssalini.

Pararhyssalus, gen. nov.

Eyes large, distinctly incised on the inner side above, where they converge ; the malar space very short. Apex of clypeus transverse, the middle below bordered by an oblique depression. The upper tooth of the mandibles much longer than the lower. Temples very short, hardly visible above, the occiput transverse, weakly margined, palpi long, reaching to the fore coxæ. Mesonotum trilobate, the furrows uniting before its apex. Basal part of metanotum with a weak keel down the middle and a somewhat stronger one bordering the outer edge ; the apical slope with a large central and a smaller lateral area ; there is a wide shallow, curved furrow on the lower basal half of the mesopleuræ. Metanotal spiracles small, oval. Basal segment of abdomen sessile, about 3 times longer than wide ; it and the 2nd are strongly longitudinally striated, the striæ clearly separated ; the 3rd segment is weakly, irregularly striated ; the suturiform articulation wide, clearly defined, crenulated, there is a fine transverse furrow on the base of the 3rd ; the 1st segment is one-quarter longer than the 2nd, the 2nd fully one-quarter longer than the 3rd, the others shorter, the last bluntly rounded. Radial cellule wide, extending to the apex of the wing ; the radius issues from shortly behind the middle ; there are 3 cubital cellules, the 2nd large, 4-angled, the 2nd transverse cubital nervure half the length of the 2nd abscissa of the radius ; transverse median nervure received shortly beyond the transverse basal ; the recurrent nervure in 1st cubital cellule ; the basal abscissa of radius less than half the length of the 1st transverse cubital, which is angled near the middle ; the anal nervure issues from above the bottom of the nervure ; the radius in hind wings obsolete ; the cubitus distinct. Hind spurs short, about one-fourth of the length of the metatarsus.

In the arrangement of Szépligeti (Gen. Ins. Braconidæ, 76) this genus runs to *Oncophanes*, *Clinocentrus* and *Petalodus* ; it cannot be confounded with any of them.

Pararhyssalus longipalpis, sp.n.

Testaceous, the 2nd and following segments of the abdomen darker coloured, the 4 front legs paler, more yellowish than the thorax, the basal 10 or 11 antennal joints black, the rest rufo-testaceous ; the head with the mandibles and palpi paler, more yellowish than the thorax, the stemmaticum black ; the 1st and 2nd segments of the abdomen are strongly longitudinally striated, the 3rd more finely and closely to near the apex. Base of metanotum smooth in the centre, where there is a keel, which roundly bifurcates at the apex ; the sides are finely irregularly reticulated ; the apical slope above is surrounded by a keel, on it are 3 areæ ; the central is narrowed below, the lateral larger, wider, its keel following the outline of the apex. The apical abdominal segments and the legs are densely covered with white pubescence. Male. Length 6 m.m.

The 1st transverse cubital nervure is bluntly, angularly bent shortly below the middle ; the hinder part is thinner than the anterior.

MACROCENTRINÆ.

Zelini.

Zele melanonotus, sp.n.

Ferruginous, the head, pleuræ and breast largely tinged with pallid yellow ; a stripe across the vertex through the ocelli and the mesonotum, except the sides of the middle lobe, black, the antennæ dark brown, darker coloured above, the scape except above pallid yellow, the head yellow, the orbits paler in tint ; legs testaceous, tinged with rufous, the coxæ paler, the hind tarsi infuscated ; wings hyaline, iridescent, the costa and stigma testaceous, the nervures darker coloured, the basal almost black, the transverse median nervure received shortly beyond the transverse basal ; the recurrent nervure received in the middle of the cellule ; the basal abscissa of cubitus oblique, roundly curved, the 2nd straight, the basal abscissa of radius straight, obliquely sloped, about one quarter shorter than the 2nd ; the 1st transverse cubital nervure straight, sharply obliquely sloped, as long as the 2nd abscissa of the radius and one-fourth longer than the 2nd, the apical half of the anal nervure roundly curved downwards on the basal half, upwards on apical. Female. Length 12 m.m.

Base of metanotum irregularly punctured, the rest irregularly transversely striated. First segment of abdomen fully one-quarter longer than the 2nd ; distinctly narrowed and of equal width behind the spiracles, becoming gradually widened, but not much, from these. Tips of mandibles black, palpi pilose, long, reaching to the middle coxæ. Sheaths of ovipositor short, hardly reaching to the top of the penultimate segment.

Meteorinæ.

Erythrometeorus.

Wings with 3 cubital cellules, the 2nd oblique, 3 times longer than wide, rounded at the base, receiving the recurrent nervure close to the base ; stigma large, receiving the radius before the middle ; the radial cellule not reaching to the apex ; the basal abscissa of the radius short, straight, forming a blunt angle with the 2nd, which is not half its length ; transverse median nervure received shortly beyond the transverse basal ; anal nervure interstitial ; the 2nd discoidal cellule closed. Clypeus separated from the face by a furrow, its apex transverse. Eyes oval, malar space slightly longer than them. Vertex and cheeks not margined. Thorax short, wide, reticulated, without parapsidal furrows ; the mesonotum rounded at the base, the metanotum steeply sloped, its sides broadly rounded. Abdomen with a slender peduncle, one-third of the total length, its apical third dilated, the spiracles placed at the base of the latter ; the rest of the abdomen forms a longish oval ; the 2nd segment is as long as the petiole and longer than the other segments united. Legs normal, the spurs short. Antennæ stout, shorter then the body, 18-jointed, the 3rd joint longer than the 4th ; they are placed above the middle of the face. Mandibles with a long, curved apical tooth, the sub-apical with its apex transverse, clearly separated from the apical. The marginal cellule in the hind wings is not divided by a nervure and is narrowed towards the apex.

In the arrangement of Ashmead (Bull. U.S. Nat. Mus. XX, 117) this genus runs to *Aridelus*, March, which may be known from it by the 1st cubital cellule being confluent with the 1st discoidal. Szepligeti (Gen. Ins. *Braconidæ*, 177) only accepts 2 genera—*Meteorus* and *Zemiotes*—the latter being separated from the former by the radial cellule in the hind wings being divided in two by a transverse nervure. The present genus may be known from *Meteorus* by the head not being margined and by the mesonotum wanting furrows. The thorax of the known species is shorter, wider and much more strongly reticulated all over than usual.

Erythrometeorus reticulatus, sp.n.

Ferruginous, the antennæ, mandibular teeth, stemmaticum, apex of hind tibiæ and the hind tarsi, black; wings fuscous, the stigma and nervures black, the hinder part of the basal 2 cubital cellules streaked with hyaline. Male. Length 7 m.m.

Head and abdomen smooth, the thorax coarsely reticulated; the reticulations large, deep, irregular, round or longer than broad, transverse or rounded at the base and apex. Scutellum with a fovea in the centre of the base and 2 large ones, placed transversely, in the centre of the apex. The abdominal petiole half the length of the rest of the abdomen, its basal half slightly narrowed, pallid yellow. The last joint of the antennæ is rufous. The 3rd abscissa of the radius is broadly roundly curved.

Diopsilinæ ?

Rhopalotoma, gen. nov.

Wings with 3 cubital cellules, the 2nd the smaller, narrowed in front; the radial cellule long, reaching to the apex of the wing, the radius issuing from shortly behind the middle of the stigma; issuing from the transverse basal nervure; the transverse median nervure received beyond the transverse basal, at the apex of the basal third of the cellule; externo-median nervure with the apical half roundly curved backwards; anal nervure almost interstitial. Clypeus separated by a furrow from the face, its apex transverse. Occiput and cheeks margined. Metanotum with 2 diverging keels down the centre. Abdomen sessile, the basal 2 segments striated, keeled down the middle. Legs short and stout; the 4 anterior tarsi; shorter than the tibiæ, the basal joint longer than wide, the 3 following wider than long, longer than the basal joints united, much thicker than them, roundly narrowed at the base; they are two-thirds of the length of the tibiæ; the hinder has the basal joint more and the apical less strongly dilated; the metatarsus is as long as the others united, the last as long as the preceding 3 united and thicker than them; the apical joint of the anterior is larger dilated, becoming gradually widened towards the apex, as long as the basal 4 united; that on the 2nd pair is dilated, but not so strongly as the 1st, the last is still more slender than it. The spurs are minute, the claws small.

The parapsidal furrows are distinct on the basal half of the mesonotum; the spiracles on the 1st abdominal segment are placed near the base; through the bounding nervures being bullated below, the 2nd discoidal cellule is open

posteriorily at the base and apex ; the antennæ are placed high up, close to the frontal depression ; the upper tooth of the mandibles is longer and sharper than the lower. The 2nd transverse cubital nervure is faint except in front and behind. The basal 2 abdominal segments are faintly keeled down the middle, the abdomen is as long as the head and thorax united.

I am unable to classify this genus to my satisfaction. In the arrangement of Szepligeti (Gen. Ins. Braconidæ, 5) it comes nearest to the *Diopsilinæ*. When the female has been discovered it probably will be found to form the type of a new tribe. Certainly the structure of the tarsi is very peculiar. The obliquely depressed apex of the clypeus and the projecting mandibles when closed gives the mouth the appearance of what it is in the *Cyclostomi*.

Rhopalotoma crassitarsis, sp.n.

Rufo-testaceous, the apex of the apical joint of the tarsi, the apex of the hind tibiæ and the basal 3 joints of the hind tarsi, the stemmaticum, mandibular teeth and the antennæ, black ; wings fuscous, the stigma and nervures black, inclining to fuscous. The head and thorax are covered with short, the apical abdominal segments with longer pale pubescence. Middle of the front with stout curved striæ on either side of the centre, the vertex almost smooth. Face strongly, closely punctured, more strongly in the centre than on the sides ; there is a broad, smooth keel down the centre of the top of the face. Pro-and mesothorax closely punctured ; the metanotum at the base finely rugose ; down the centre are 2 diverging keels running to the top of the apical slope and having about 5 transverse keels between them. the apical slope is less strongly keeled round the top and sides and is of a pale yellow colour, the metapleuræ being also of a paler yellow and more strongly and irregularly punctured than the mesopleuræ. Propleuræ stoutly striated down the central depression, the apex crenulated. Basal 2 abdominal segments closely, longitudinally striated, keeled down the centre ; the others closely punctured, the punctures becoming gradually weaker ; the last segment is fuscous. Male. Length 5 m.m.

SIGALPINÆ.

Fornicia clathrata, Bé.

Brullé, Hist. Nat. d. Ins. Hymén. IV, 512, Pl. 44, f. 3. Bred from the Limacodid moth *Sibine bimacula* The species was originally described from Bahia, Brazil.

CHELONINÆ.

Phanerotoma pallida, sp.n.

Pallid yellow, the mesanotum slightly tinged with testaceous, the sides of the back of the abdomen with a narrow dark line ; the legs paler coloured than the body, the antennæ darker coloured, the apical half infuscated ; wings hyaline, the stigma and nervures pallid yellow, almost white. Stemmaticum black. Female. Length 2.5 ; terebra ·5 m.m.

Bred from the caterpillar of a Pyralid.

Smooth, shining, almost bare. Antennæ 21-jointed, fully one-half longer than the body. The 1st abscissa of radius is hardly one-fourth shorter than the 2nd ; the 1st transverse cubital nervure is sharply, obliquely sloped towards the radius and is rounded ; the 2nd is more than half its length and is obliquely sloped to the cubitus ; the 2nd cubital cellule is about 4 times longer than wide and is hardly widened towards the apex. Parapsidal furrows distinct.

Phanerotoma spilaspis, sp.n.

Pallid testaceous, the antennæ more rufous in tint, the 9 apical joints darker coloured, almost black ; 23-jointed ; the centre of the scutellum broadly black ; the apical segments of the abdomen darker coloured, more rufous in tint ; the legs paler, whiter coloured than the body, the base of the hind tibiæ and their apex more broadly rufo-testaceous ; wings hyaline, the nervures and stigma pallid testaceous, the parastigma and apical two-thirds of the stigma fuscous Female. Length 5 m.m.

Lower half of clypeus smooth, the upper weakly, sparsely punctured. Face granular, obscurely transversely striated ; the front with roundly curved striæ ; the vertex obscurely punctured. Face and clypeus densely covered with long, white pubescence ; the white pubescence on the front and vertex sparser and shorter. Basal half of mesonotum granular, the apical irregularly longitudinally striated, the striæ appearing in some lights golden. Scutellum distinctly but not very strongly or closely punctured. Metanotum granular. Pleuræ aciculated. Basal 2 abdominal segments weakly, the 3rd more closely and strongly punctured. Basal abscissa of radius thicker and half the length of the 2nd ; the 1st transverse cubital nervure roundly curved, almost bluntly angled near the middle ; the 2nd abscissa of the cubitus broadly roundly curved ; the 2nd cubital cellule narrowed at the apex, the 2nd transverse cubital nervure faint : half the length of the 1st ; the parastigma thick.

AGATHIDINÆ.

Agathis rubriventris, sp.n.

Bright red, the antennæ, head, pro-and mesothorax, the 4 anterior legs and the hind tibiæ and tarsi black, wings fuscous, the nervures and stigma in front black, fuscous behind, the 2nd cubital cellule oblique, of equal width, longer along the transverse cubitals than along the longitudinal nervures ; the recurrent is interstitial with the 1st transverse cubital. Oral region piceous. Palpi pallid testaceous. Trophi densely covered with white rubescence. Sides of front bordered by stout keels. There are 3 keels on either side of the basal part of the metanotum ; the central are close to each other on the basal half and straight ; on the apical they are rounded and diverge ; the 2nd is longer, the outer still longer ; the space between them stoutly striated ; the outer keel is margined on the outer side by short irregular keels. Pleural depressions crenulated. In the centre of the apical slope of the metanotum is a large triangular area formed by stout waved keels. Female. Length 10 m.m.

Agathis guyanensis, sp.n.

Bright red, the antennæ, head pro-and mesothorax, the 4 front legs except the tarsi, which are dark testaceous, the apex of the hind tibiæ and the tarsi black, wings hyaline to the 1st transverse cubital nervure, fuscous beyond ; the basal nervures pallid testaceous, the apical fuscous ; the costa dark testaceous, the stigma black in front, fuscous behind ; the 2nd cubital cellule slightly narrowed in front. Basal part of metanotum with 3 stout longitudinal keels ; the central 2 closer to each other ; at the base they are parallel, straight, beyond they slightly diverge ; the others are wider apart from each other and from the central ; they do not converge ; the space between them is strongly transversely striated. Pleural furrows strongly crenulated ; the space below the outer keel on the metanotum is crenulated ; there are some longer oblique striæ on the lower part of the metapleuræ. In the centre of the apical slope of the metanotum is a large triangular area united to the apex by 2 short straight ones. An oblique keel issues from the outer side of the lower ocellus and 2 irregular diverging ones from its lower side. Pleuræ densely covered with long, white hair ; thelegs are densely, more shortly, pilose.

Disophrys pilipes, sp.n.

Rufous, the antennæ, head mesopleuræ, mesosternum, the middle of the apical half of the 1st abdominal segment, the middle of the 2nd entirely and the others almost entirely, black ; fore legs testaceous, the tibiæ and femora broadly black outwardly on the base ; the 4 hind legs black, the coxæ below the middle knees, and apical three-fourths of the hind femora rufo-testaceous ; the middle tarsi yellowish, the apices of the joints more rufous in colour. Face and clypeus densely covered with black, the pleuræ and legs with longer white pubescence, wings yellowish hyaline, a dark fuscous cloud enclosed by the transverse median, transverse basal, recurrent and discoidal nervures, it extending on the apical half of the transverse basal on to the costa, and the apex from the apex of the stigma fuscous, there being also an irregular fuscous cloud in the middle of the hind wings and a narrower one on the apex ; the 2nd cubital cellule is distinctly narrowed in front, through the fore half of the 2nd cubital cellule converging towards the 1st. There is a large semi-circular area on the base of the metanotum with a longish triangular one in the centre ; following this are 3 areæ, the central narrow, twice longer than wide, the outer square ; on the apical slope is, in the centre, a narrow triangular area, bordered by 2 squarish ones. The pleural furrows are stoutly crenulated. Metapleuræ sparsely, distinctly punctured, with some curved keels in the centre. Palpi pale testaceous. Female. Length : 10 m.m.

Mesonotum trilobate, the middle lobe with a shallow furrow.

Biroia ruficollis, sp.n.

Black, the apical half of the propleuræ, forming a large triangle, pronotum, mesothorax with scutellum, the base of metanotum broadly irregularly and the greater part of the centre of metapleuræ, red ; the 4 anterior tarsi rufo-testaceous ; palpi black, covered with white pubescence wings fuscous violaceous, the stigma and nervures black, the areolet narrowed;

in front, the nervures almost meeting these, the 2nd dilated outwardly below the middle. Base of metanotum depressed ; from its centre run 2 keels to the apex, touching at the base, gradually diverging towards the apex and having 2 stout transverse keels shortly beyond the middle ; bordering this is a larger area, twice longer than wide and with the apex roundly narrowed. Mesonotum flat. Pleural furrows smooth. Pro-and mesopleuræ smooth, the metapleuræ distinctly, not very closely, punctured. Female. Length 10 m.m.

Antennæ longer than the body, densely covered with a white pile. Face and clypeus densely covered with short-black pubescence the pleuræ with the pile longer, sparser and paler. Legs densely pilose. Transverse median nervure received shortly before the transverse basal.

Cremnops maculipes, sp. n.

Black, the basal 2 segments of the abdomen, the base of the 3rd, the metathorax, the hinder coxæ except the apical two-thirds on the lower part of the sides and below, the hind femora except the basal third irregularly on the outer side bright red, the basal three-fourths of the hinder tibiæ more obscurely red ; the 4 anterior knees obscure testaceous, the calcaria black, the apical 3 joints of the tarsi testaceous ; wings fuscous, tinged with violaceous, the costa and stigma black, the nervures fuscous ; the base of the anterior hyaline to near the transverse cubital and transverse basal, the 1st cubital cellule, the 2nd less clearly and the space between the recurrent, the 2nd transverse cubital and the base of anal nervure, hyaline ; the 2nd cubital cellule triangular, the nervures united in front, the 1st straight, oblique, the 2nd oblique, rounded ; the transverse median nervure interstitial. There are 2 central areæ on the metanotum, the basal 5-angled, obliquely narrowed to a point at the base, the apex transverse, the 2nd larger, about twice longer than wide, transverse at the base and apex ; there are 3 lateral areæ, the basal 2 wider than long, the 2nd larger than the 1st, the 3rd larger, squarish. Female. Length 8 m.m. ; terebra 5 m.m.

Body and legs densely covered with white pubescence. Mesonotum trilobate, the basal 2 thirds with a shallow furrow down the centre ; the depression separating the lateral at the apex becomes gradually narrowed towards the apex. Scutellar depression large, wide the sides rounded, the base in the centre slightly rounded inwardly, the apex transverse.

Cremnops punctipennis, sp.n.

Black, the metanotum, basal 4 segments of the abdomen, the two-thirds of the hind femora and the basal half of the hind tibiæ, more obscurely, red, the 4 anterior knees and the fore tarsi testaceous, wings fuscous, the basal nervures fuscous, the others and the costa and stigma black ; the areolet 4-angled, the nervures not quite meeting in front, the front half of the 2nd transverse cubital nervure angularly bent backward from the middle ; there is a small square hyaline cloud, projecting forward at the apex, before and behind, in the base of the 1st cubital cellule a larger, more irregular one in the base of the radial and a bifid one, the anterior branch the longer, on the outer side of the recurrent nervure. Female. Length 8 ; terebra 6 m.m.

Metanotum with a central area, a little longer than wide, the keels united at the base, gradually roundly diverging towards the apex, *i.e.* conical, the lateral extends to the outer edge and is wider than long; there are 3 large areæ on the apical slope, the central longer and narrower than the lateral. Mesanotum trilobate, the middle lobe broadly rounded at the apex, a smooth line down its centre. Pubescence sparse, pale; palpi pale testaceous, calcaria black.

Cremnops parvifaciatus, sp. n.

Black, the metathorac, the 1st, 2nd, 3rd and the sides of the 4th abdominal segment broadly, the hind coxæ and the hind femora, except narrowly, at the apex, rufous, the 4 front tarsi testaceous; the palpi pale; wings fuscous, the stigma and nervures black, a narrow hyaline cloud along the fore part, continued more broadly along its base, thence more broadly into the discoidal cellule along the recurrent to the anal nervure, the fore part being broken into by a conical cloud, the 2nd cubital cellule is oblique, triangular, the nervures meeting in front, the apical nervures are fuscous. A stout keel runs down the centre of the basal part of the metanotum, leading down to an area, twice wider than long, and of equal width; the sides are bordered by a stout keel, which is thinner at the base, and there is a keel round the apical slope. The pleuræ and more especially the metapleuræ, are thickly covered with white pubescence, as is also the sternum. The legs are densely covered (especially the hind coxæ) with white pbescence.

This species may be known from the 2 other species here described by the pedunculated basal metanotal area.

Cremnops nigrobalteata, sp. n.

Rufo testaceous, the antennæ, lower part of occiput, base of pronotum, a narrow line along its sides, the apical half of the 3rd and 4th and the whole of the 5th and 6th, the apex of the middle tibiæ the basal and apical fourth of the posterior and the 4 hinder tarsi, except the base of the metatarsus, black. Wings fuscous, the nervures and stigma black, the areolet oblique, 4-angled, the nervures uniting in front. Female. Length 5 m.m.; terebra 4 m.m.

The pin, unfortunately, goes through the metanotum, so I am unable to describe its structure. The malar space is longer than usual for a *Cremnops*, being almost as long as the eyes, showing an approach in the form of the head to *Agathis*.

Spilomicrodus, gen. n.

First cubital and first discoidal cells confluent, the 1st abscissa of the cubitals only indicated at the base; transverse median nervure interstitial. A stout keel runs from the ocelli to the outer side of the antennæ. Eyes large, slightly converging above. Malar space short, but distinct. Apex of clypeus transverse. Labrum large, rounded. There is a small closed basal hinder cellule in the posterior wings. Areolet 4-angled, in front half the width it is behind. The long spur of the hind tibiæ two-thirds of the length of the metatarsus. Claws simple. Parapsidal furrows distinct, uniting at the base of the apical fourth of the mesonotum; the middle lobe of the mesonotum clearly defined.

Ovipositor short. Scutellum keeled laterally and more strongly at the apex. Metanotum regularly areolated, the spiracles longish oval.

The head is a little wider than the thorax; the face rises into 2 blunt teeth at the antennæ, the temples are short, oblique, the occiput broadly rounded inwardly, not margined. Clypeus foveate laterally, not separated from the face. Ocelli prominent, glassy reddish, the anterior smaller than the posterior.

This genus apparently comes nearest to *Zelomorpha*, Ashm.; it differs from that here described in that the long spur of the hind tibiæ is not half the length of the metatarsus and that the 2nd joint of the maxillary palpi is dilated; the thorax is described as "short," which is certainly not the case in my genus which has also a closed discoidal cellule in the hind wings, which is not the case with *Zelomorpha*.

Spilomicrodus nigriceps, sp.n.

Luteous, the antennæ, head, except the clypeus, labrum, mandibles and palpi, and the hind tibiæ, except narrowly at the base, their spurs and the tarsi black; wings yellowish hyaline, a fuscous cloud between the base of the parastigma and the 1st transverse cubital nervure, extending to the opposite end of the wings, narrowed at the cubitus, becoming widened towards the apex on the outer side and extending beyond the anal nervure, this apical dilated part bearing a small longish triangular cloud; there is an apical commencing at the end of the stigma; in the hind wings there is a cloud commencing at the apex of the basal nervures and extending the length of the radius beyond the latter, the base broadly, roundly dilated in the middle, the apex obliquely widened from the anterior to the posterior margin. Female. Length 8 m.m.

Smooth, shining; the head in front, metanotum and legs densely covered with white pubescence. Metanotum areolated; the central basal area twice longer than wide, the basal half obliquely narrowed to a fine point; outside this is a larger, wider area, its base much wider than the apex, through the keel running obliquely behind the spiracles, the apical part of equal width, longer than wide; these basal longitudinal keels run into a transverse one which runs round the top of the apical slope; there is, in the centre of the latter, a large, wider than long area, flanked by a smaller square one. Metapleuræ sparsely, not very strongly punctured.

MICROGASTERINÆ.

Xanthomicrogaster, gen. n.

Antennæ stout, hardly narrowed towards the apex, 30-jointed. Eyes hairy. Mesonotum and mesopleuræ without furrows. Metanotum short, its side broadly rounded, the centre with a weakly crenulated, shallow furrow. 1st abdominal segment broad at the base, roundly curved at the apex; the 2nd segment shorter than the 3rd; the suturiform articulation wide, curved; the ovipositor broad, curved, more than half the length of the abdomen. Wings with 2 cubital cellules, the 2nd open at the apex, the cubitus projecting a little beyond the radius, which is broadly, roundly

curved ; the recurrent nervure is received almost its own length in front of it ; the transverse median nervure received shortly beyond the middle of the cellule. Legs—especially the hinder—stout, the long spur of the hinder calcaria three-fourths of the length of the metatarsus.

The head is narrower than the thorax ; the temples short, rounded. Clypeus not separated from the face, which is slightly, broadly dilated in the middle, the apex of clypeus broadly rounded ; the front depressed, narrowly raised in the centre.

This genus is readily known by the 30-jointed antennæ, by the furrow on the metanotum, long, broad projecting ovipositor and yellow colour.

Xanthomicrogaster fortipes, sp.n.

Luteous, the thorax paler than the head, the back of the abdomen infuscated in the centre, the flagellum of antennæ black above, brownish below, darker towards the apex ; the sheath of the ovipositor black except at the base ; the ocelli are united by a black line closely covered with white pubescence, thickly on the face, apices of abdominal segments and legs ; wings hyaline, the stigma fuscous, the costa and nervures darker coloured. Smooth and shining, the furrow on the metanotum obscurely, irregularly crenulated. Female. Length 3.5 m.m. terebra 1 m.m.

Xanthomicrogaster ruficollis, sp. n.

Black, the pro-and mesothorax with the scutellum and the sides and base of the 1st abdominal segment and the ventral surface pallid rufous, the legs of a paler red, the apex of the hind femora narrowly, of the tibiæ more broadly and the hind tarsi black ; antennal scape black, yellowish below, the flagellum black, fuscous below ; palpi pallid testaceous, almost yellow ; wings clear hyaline, the nervures and stigma pallid testaceous, almost white. Sparsely covered with a white pile, which is denser on the legs. Shining, smooth, the mesonotum of equal width, about one-half longer than wide, bordered by a furrow, outside of which is a distinct keel. There is a narrow margined furrow down the middle of the metanotum. 1st abdominal segment wider than long, the central part narrowed obliquely towards the apex. Female. Length 2 m.m.

On the same card as the above described females are some males, which differ in having the thorax entirely black, the colouration otherwise being the same. Both were bred from the Pyralid *Zinckenia fascialis*.

Apanteles concordalis, sp.n.

Black, the 4 anterior femora except at the base, the 4 anterior tibiæ and tarsi and the hind tibiæ to shortly beyond the middle and the palpi pallid testaceous ; the wings clear hyaline, the stigma and nervures pallid testaceous, almost white. Female. Length 3 m.m. ; terebra 1.m.m

Bred from Pyralid, *Mesocondyla concordalis*. Covered with a white pile, which is longest on the face and eyes. Front and vertex closely punctured ; a wide oval

depression above each antenna, mesonotum similarly, but more strongly punctured. Scutellum smoother and more shining, one-half longer than it is wide at the base, which is twice wider than the apex ; it becomes gradually wider towards the apex and is bordered at the base and sides by crenulated furrows, the lateral furrows more distinctly crenulated than the basal. Metanotum with a large, longish oval area, irregularly transversely striated ; there are 2 large lateral basal areæ, the inner widened on the innerside of the base, the outer of equal width, almost square ; there is a large area on the sides of the apex, wider than long, narrowed at the apex above, widened at the base below, its upper keel somewhat rounded. First abdominal segment twice longer than wide, of equal width, the sides with a distinct margin, its apical half is broadly roundly curved ; the basal half finely closely rugose, the apex finely irregularly transversely striated in the centre, the sides more strongly longitudinally striated ; the other segments are smooth and shining The hypopygium largely projects, is plough-share-shape and pallid testaceous. Antennæ densely covered with a white pile.

Apanteles leucochilonea, sp.n.

Black,the legs rufo-testaceous, the coxæ and the apex of hind femora narrowly black, the apical half of the basal joint of the hind tarsi and the whole of the others of a lighter black colour ; palpi pallid testaceous ; wings hyaline, the stigma and nervures pallid testaceous, almost white. Female. Length 2 m.m. ; terebra 1 m.m.

Thickly covered with white pile, the legs more densely than the body. Head pro-and mesothorax shining, closely minutely punctured ; the metathorax opaque, coarsely alutaceous, except at the base of the metapleuræ. Scutellum shining, one-half longer than it is wide at the base, narrowed towards the apex, bordered by a not very distinct furrow ; the part at its side is very shining and smooth.

What is indicated as the male (bred from the same host) has the legs darker coloured, with the hinder black except the basal three-fourths of the tibiæ.

Bred from the Hesperid *Leuchochilonea arsalte.*

Apanteles lineodos, sp.n.

Black, the apex of the fore femora, their tibiæ and the tarsi testaceous, the apical joints of the 4 hind tarsi dark testaceous, the spurs white ; wings clear hyaline, the stigma and nervures black. Head and thorax alutaceous, covered (as are also the legs) with a white down. Scutellum shining, about one-quarter longer than it is wide at the base, the lateral furrow narrow. Post-scutellum rounded at the apex, the centre depressed, the raised sides broad. There is an oval area in the middle of the metanotum, its apex sharper pointed than the base ; there are 2 areæ on either side, the basal short as compared with the length and of equal width, the apical much larger, narrowed on the outerside towards the apex on the innerside, the basal keel rounded and thicker than the apical. There is a large pyriform fovea or depression on the apex of the mesopleuræ in the centre ; the lower basal half of the metapleuræ has a large, somewhat pyriform depression. Male. Length 2.5 m. Bred from Pyralid, *Lineodes*, sp.

Apanteles philocampus, sp.n.

Black, the legs pallid testaceous, the coxæ, the trochanters, the hind femora except more or less at the base, the apical half of the hind tibiæ and the hind tarsi, black ; palpi pale yellow ; wings hyaline, the stigma and nervures fuscous, Metanotum shagreened, the base, sides and apex margined by keels, the basal keel thicker than the lateral, the apical narrowed in the centre. First abdominal segment broadly, roundly raised, shining, as long as it is wide at the apex ; the 2nd segment wider than long, the centre an almost equilateral triangle ; the sides are obscure testaceous. Female and Male. Length 2 m.m. Bred from a Syntomid caterpillar.

Apanteles yuyanensis, sp.n.

Black, the basal abdominal segment, the sides of the 2nd at the base outside the furrow, the sides and apex of the 3rd narrowly, the basal 3 ventral segments and the legs rufo-testaceous, as are also the mandibles ; the palpi pallid yellow ; the apex of the hind tibiæ as long as the shorter hind spur and the apices of the hind tarsal joints slightly, black ; wings hyaline, the stigma fuscous, the nervures paler, the tegulæ pale testaceous. Female. Length 2 m.m.

Antennæ longer than the body, the scape below testaceous, the basal joints of the flagellum fuscous ; the flagellum closely covered with a blackish pile. Head and thorax covered with a microscopic pile ; the apical abdominal segments fringed with longer white pubescence ; smooth ; the scutellum more shining than the mesonotum, about one quarter longer than it is wide at the base ; it is slightly narrowed towards the apex, which is rounded. Metanotum shagreened, a broad transverse keel near its base, with 2 short, not very distinct longitudinal ones in the middle behind it. First abdominal segment longer, if anything, than it is wide at the apex, the central part clearly limited, of equal width, wider than the apex of the lateral border ; the 2nd segment wider than long, about one quarter shorter than the 3rd ; from the centre of the base 2 furrows run to the outer apical part, forming, in the middle, a wide triangle. The ovipositor is very short.

TENTHREDINIDÆ.

Monophadnus foveiceps, sp.n.

Pallid testaceous, the flagellum of antennæ, tips of mandibles, a mark, about one-half longer than wide, its apex roundly narrowed, a narrower, longer line on the lateral lobe, reaching from the base to the apex, which is narrower than the base, the apices of the apical 2 joints of the fore tarsi, the apex of the basal 2 of the middle and the whole of the others, the hinder entirely, the basal joint paler and the apex of the hind tibiæ, blackish ; the vertex behind the ocelli and the upper half of the occiput fuscous, as are also the parts bordering the scutellum Wings hyaline, distinctly tinged with fulvous, the stigma, costa and nervures of a deeper fulvous colour ; the forepart of the transverse radial nervure roundly curved outwardly, the centre roundly curved inwardly, the posterior part straight, oblique ; the 3rd abscissa of the radius about one-fourth

longer than the 2nd, the transverse basal nervure is received shortly, but distinctly before the middle. the nervures are darker coloured towards the apex of the wings, which have there a faint violaceous tinge. Female. Length 12 m.m.

The antennæ are short, not much longer than the head and thorax united ; they taper distinctly towards the apex, and are densely pilose, the 3rd joint is not quite one-fourth longer than the 4th. A distinct furrow runs from the posterior ocelli obliquely to shortly beyond the anterior ; they are bounded laterally by a deeper, wider furrow ; there is a large oblique fovea on either side, half way between the latter and the antennæ. Apex of clypeus transverse ; the labrum large, almost semi-circular. Middle lobe of mesonotum distinctly separated ; its centre with a well marked furrow. Cenchri large, white.

Monophadnus spilonotus, sp.n.

Deep black, the prothorax, the mesonotum except for a broad triangular black mark on the basal half of the middle lobe, scutellum and the pleuræ rufous ; wings fuscous, the stigma and nervures black, the former with the hinder half fuscous ; the 3rd abscissa of the radius is as long as the basal 2 united ; the 1st recurrent nervure is received shortly beyond the middle, the 2nd at the apex of the basal fourth ; there is a black round point in the lower apical part of the 2nd cubital cellule ; the 3rd transverse cubital nervure is broadly, roundly curved backwards and is broadly bullated. Female. Length 8 m.m.

Antennæ short, thick, densely pilose, tapering towards the apex, the last 2 thinner than the preceding, the last longer than the penultimate, the 3rd about one quarter longer than the 4th ; apex of clypeus transverse. Frontal area open below, the sides bounded by furrows which are roundly curved outwardly ; there is a fovea below it and a more distinct, wider one on either side, the middle of the front is bounded by wide, oblique furrows, rounded behind, head and thorax densely covered with short black pubescence. There is a deep, clearly defined furrow in the centre of the basal lobe of mesonotum.

Monophadnus guyanensis, sp.n.

Rufo-testaceous, the antennæ except the scape, head, except the clypeus and labrum, the apical half of the middle tibiæ the whole of the posterior, the 4 posterior tarsi and the apical 2 abdominal segments, black ; wings light fuscous, iridescent, black, the costa the nervures paler, the stigma rufo-testaceous, paler behind ; the 3rd abscissa of the radius is as long as the basal 2 united ; the transverse radial nervure is received close to the 3rd transverse cubital ; the 1st recurrent nervure is received shortly before the middle, the 2nd in the basal fourth. Female and Male. Length 8-9 m.m.

The face, clypeus, labrum, mandibles and palpi are pallid testaceous ; the apex of clypeus transverse. There is a longish, oval, deep fovea in the centre of the front below ; the front ocellus is in a pit ; there is a Λ-shaped furrow behind it. Antennæ short, thick, distinctly tapering towards the apex ; the 3rd joint not much longer than the 4th, the last not much longer than the penultimate.

Monophadnus triehiotomus, sp.n.

Testaceous, the antennæ, head, mesonotum, mesosternum, the apical 3 segmentsof the abdomen and the tarsi black, the hinder tibiæ darker coloured, infuscated towards the apex ; wings fuscous, the stigma and nervures black, the 3rd abscissa of the radius distinctly shorter than the 2nd, angled near the base of the apical third where the transverse radial nervure is received ; the 1st recurrent nervure is received at the apex of the basal third, the 2nd in the basal fourth. Female. Length 5 m.m.

There is a longish, flat fovea in the centre below the ocelli, with a smaller, deeper, wider than long one, on either side of the apex of the latter ; the ocellar region is raised, but not bounded by distinct furrows. The legs are paler coloured than the body.

Perreyia ruficollis, sp. n.

Dark blue, the head with the blue colour less distinct, the antennæ black, the prothorax, the middle lobe of mesonotum, the outer sides of lateral, the mesopleuræ, mesosternum, the 4 anterior coxæ and trochanters, the anterior femora and the anterior tibiæ in front, rufous ; wings large, fuscous, tinged with violaceous, the nervures and stigma black ; the 2nd abscissa of the radius one-fourth shorter than the 3rd ; the 1st recurrent nervure is received two-thirds of the length of the 1st transverse cubital nervure from the latter, the 2nd very close to the 3rd ; the 1st recurrent nervure is broadly, roundly curved. The mandibles are broadly red. Antennæ densely covered with short stiff black hair ; 12-jointed, the 3rd joint of equal width, nearly as long as the following 2 united ; the 4th thinner and longer than the 5th not much narrowed at the base, the 5th a little longer than the 6th widened towards the apex, the 6th distinctly longer than wide, narrowed towards the base, the 7th shorter, narrowed towards the base, the 8th and 9th of equal length, longer than wide, the last 2 thinner, of equal width, the last thinner and a little longer than the penultimate, its apex rounded. Female. Length 11 m.m.

Legs densely covered with short, stiff black pubescence ; the face and clypeus thickly with longer black stiff hair. Smooth and shining. Middle lobe of mesonotum with a distinct furrow down the middle. The hind femora below are tinged with rufous.

This species belongs to *Brachytoma*, West, which does not seem to be separable from the older *Perreyia*, *Brulle*.

Opiinæ.

Stiropius, gen. n.

Radius springing from behind the middle of stigma ; 2nd abscissa of radius shorter than the 2nd transverse cubital ; transverse median received beyond transverse basal ; recurrent in 1st cubital cellule, anal nervure issuing from the bottom of the nervure, almost interstitial. Occiput not margined. Metanotum and basal 2 abdominal segments keeled down the centre, the 1st segment twice wider at the apex than at the base, if anything wider at the base than at

the apex. Mesopleuræ without a furrow, but the mesoternum appears to be bordered by a distinct, if shallow, furrow. Antennæ slender, longer than the body, 14-jointed, the joints longish, of about the same length and thickness. Parapsidal furrows obsolete. Scutellum at the base with a distinct crenulated furrow. Stigma wide, about 3 times longer than it is wide at the radius; parastigma distinct. 2nd cubital cellule small, shorter along the radius than along the cubitus. Palpi long.

In the arrangement of Szépligeti (Gen. Ins. Braconidæ, 159) this genus runs to *Hedylus* which differs from it in the radius leaving the stigma beyond the middle, by the mesonotal furrows being distinct, by there being a crenulated mesoplural furrow, by the recurrent nervure being interstitial and by there being no anal nervure. From all the described genera it differs in the keeled metanotal and basal abdominal segments.

Stiropius carinatus, sp. n.

Black, the head, prothorax and antennal scape testaceous, the sides of the abdomen narrowly above, the ventral surface, palpi and the legs whitish testaceous; the flagellum fuscous, almost testaceous at the base; wings hyaline, iridescent, the stigma and nervures pallid testaceous, the stigma almost white in the centre. Female. Length 2 m.m.; ovipositor 5 m.m. "A leaf miner." No doubt it is a parasite on a Dipterous leaf-miner.

Head, pro-and mesothorax smooth, the metanotum opaque, alutaceous, a stout keel down its centre. Basal 2 segments of abdomen opaque, alutaceous, almost aciculated, the 2nd with a few scattered punctures; there is a keel down the centre, the keel on the 2nd is the stronger. The 2nd segment is about one-third longer than the 1st or 3rd, which are of about the same length; the ovipositor is as long as the 3rd.

"SHIPPED FOR THE BARBADOES."

Some Fragments of forgotten Chapters in Irish and West Indian History.

"Tharsei moi, tharsei, teknon!

. . . . .

Chronos gar eumares theos."

Sophocles, *Electra* 174.

Mainly Introductory.

As the relations of Irish and West Indian history are very little known even in the United Kingdom, I considered when I began this paper a few days ago that it would be unfair to assume any special knowledge of the causes and sources of Irish colonization in the West Indies to the people of British Guiana. This country is very remote from Ireland and was not drawn into the orbit of British imperial policy until nearly a hundred years after the last bondservant had died among the cane-fields or escaped to a happier fate in lands less hostile to his race and creed. The present paper, therefore, is chiefly introductory and is partly an effort to disabuse my readers' or listeners' minds of what I may call the conventional or "wood kerne" theory of pre-Cromwellian Irish civilization, to which Mrs. Alice Stopford Green (the widow of the historian John Richard Green) has dealt so shrewd a blow by her brilliant "*Making of Ireland.*" In the conventional writers, with whom one must class Carlyle, in spite of his other departures from the normal, we seem to read only of rough rug-headed savages charging furiously upon civilizing British influences from some wooded fastness and retreating as rapidly into bogs whither cavalry cannot follow them, unveracious, disobedient men, out of harmony with fact. We hear little of the great commerce of Galway with the continent of Europe, for Galway's quays and tall Spanish houses are gaunt and lonely now, or of White's school of 2,000 students maintained throughout the wars in that once flourishing town, or of the great colleges built and supported throughout Europe by the scanty doubloons and reals of the exiled swordsmen* after their native colleges of Youghal and Dublin and their Monastery schools were suppressed and confiscated—Prague, St. Omer, Rome, Lisbon, Valladolid, Louvain, Salamanca and yet more. The tradition of learning was not easily destroyed in the children of Columba, Columbanus, Virgilius, Erigena and Duns, and this very Cromwellian century w s to produce a marvellous brood of Hibernian pundits, turning out their vast tomes amid the thunder of the shop of war. Chief Justice Davis records that

* In a note to his *History of Trinity College, Dublin*. Professor MacNeil Dixon has been kind enough to cite as an authority on the subject of the exiled swordsmen a paper of the writer's which was published in the proceedings of the Dublin University Philosophical Society for 1899–1900, when it received a Gold Medal. The writer went abroad before it appeared and has never seen the paper since. He believes it has been out of print for many years. Some of the references in the present essay are based on his recollections of the earlier effort.

when he empanelled a jury in Donegal in 1613 thirteen out of the fifteen could speak Latin fluently; yet most of the gentlemen of that land were abroad at the time. About the same date the same county struck off the head of its first surveyor, but this, I submit, was politics and not any more primitive form of barbarism. Petitions of Right had a hard practical side in those days. We hear little of the numerous inter-marriages of the chieftainry with the proudest of the English and Scots nobility or of the Gaelic with the Norman stock; yet the wife of the High Burke was the widowed Countess of Essex, daughter of Walsingham; Tyrone's son married Argyle's daughter; his daughter was wife of Lord Mountgarret; Red Hugh O'Donnell's mother was daughter of the Lord of the Isles; Lady Tyrconnell, his brother's wife, was a daughter of the Earl of Kildare and O'Dogherty's wife was a Preston of Gormanston: a hundred more could easily be named. Only in the case of the remnants of the older plebeian tribes, the unfree and non-fighting population, could any degree of uncivilization be alleged. Whether their condition was in any way degraded or whether this idea, too, does not belong to the "woodkerne" legend, I hope incidentally to show.

In the Prado in Madrid hangs one of the most famous paintings of Velasquez. the *Surrender of Breda*. Some of my listeners have seen the original and to others it is well known in reproductions. Its artistic value is priceless. Historical students have lingered lovingly over its details and have expounded their meaning. The great blockade has lasted eleven months and all the efforts of Maurice of Nassau, Prince of Orange, have failed to break from the outside the ring of Spanish steel which Spinola has drawn round the little Dutch city. Maurice has died in the attempt. The garrison's supply of food has given out and the end has come. It is one of the last few good days of old Spain. In the background the spires of Breda rise from a typical landscape of the Netherlands. In front the Dutch Governor, identified as Justin of Nassau, advancing on foot at the head of some of his guard, bends low with Batavian grace as he offers the key of the town to the victor. He wears his sword and his companions still carry their short Dutch pikes and halberds. Spinola is depicted as standing with his staff in front of a well-ordered troop whose long Spanish lances rise against the watery sky. He and his officers are uncovered. Tall, lean, and soldierly in his damascened coat-armour, with features of grave dignity, his left hand grasping his leading staff and plumed hat, he leans forward in a kindly attitude to clasp his beaten enemy encouragingly on the shoulder with his right hand and to raise him up. It is clear that he has refused to accept the sword and is complimenting Justin on his stubborn defence. One notices that, although his provisions are exhausted, the Hollander is still plump, but this may be constitutional. Even in the Siege of Derry there was one fat man, who, not being of the house of Orange Nassau, was in danger of his life from his suspicious and hungry fellow-citizens.

The time is 1625 and the fight of the Netherlands for freedom from the Spanish yoke has lasted fifty-seven years, except for a truce of twelve. After all the bitter memories of racial and religious war, of slaughter and reprisals, of Alva, Egmont, William, and Van Hoorn, these stately warrior courtesies

are possible from victor to vanquished. Surely the days of chivalry are not yet past and gone, for so and no otherwise must Pierre du Terrail the Sieur de Bayard, *chevalier sans peur et sans reproche*, have demeaned himself at Villa Franca when he surprised Prosper Colonna a century before. Yet it is only six years forward to the Sack of Magdeburg and it is already five years since Count John Tzerklaes von Tilly began the Thirty Years War in Upper Austria.

Let us look forward. The Bavarian Pappenheim blockades the great Protestant stronghold on the Elbe but the Maiden City, as Magdeburg is fondly called, stubbornly resists. After some five months Tilly assumes command and begins a bombardment. The inhabitants are now willing to treat but their Swedish commander Falkenberg succeeds in postponing the reply to the final summons to surrender. The delay is destined to be memorable in the history of man's inhumanity to man. While Falkenberg is speaking in the Rathhaus to the assembled Councillors, Pappenheim crosses the Elbe from the Neustadt suburb and storms the walls, while elsewhere the Croatians pour in through a shattered gate. Falkenberg rushes from the Council Chamber and offers a fierce resistance but falls mortally wounded. The massacre of the Protestant garrison and of the citizens, both armed and unarmed, follows. By accident or design the whole city is burnt to the ground. How far the Imperialist leaders are responsible can never be fully known and possibly they may not have been able to restrain the fury of Croats, Hungarians and mercenaries accustomed to the savagery of Turkish warfare. But Europe shudders and even Wallenstein disbelieves the tale of horror, and Pappenheim confesses to his master, the Emperor Ferdinand, that no such awful visitation of God has been witnessed since the destruction of Jerusalem.

Cromwell.

Let us look forward again. The time is 1649 and we are in the English camp before the Millmount of Drogheda. To the North the stately city of the Pale, a stronghold for centuries of English rule against the Irishry, girt with lofty walls and towers, bestrides the Boyne. Parliaments of the Norman colonists have been held here, royal favours have been showered upon its citizens, and only now for the first time does it stand for any Irish cause. St. Mary's steeple rises close at hand above the Southern wall and on the Northern height beyond the river rises St. Peter's: the former is soon to be beaten down by a terrific cannonade and the latter will pass to history in burning flame. Cromwell summons the Governor, Sir Arthur Aston, to surrender, but the old English soldier of the Polish wars is true to his trust. Charles I. is in his martyr's grave, sent thither by the iron will of this very General of the besiegers, but, thank God, his son lives, a prosperous gentleman (although not, perhaps, as yet too much so). Cromwell hauls down the white ensign which is flying from his headquarters and replaces it: the new ensign is red. Breaches are made in the South wall. Cromwell is well provided with the best artillery of the time and the mediaeval curtains and bastions can not resist his powerful batteries. The grim Roundhead columns converge upon the shattered wall. Their word is "For Him that we shall find with us in Ireland as well as we did in England, our Lord God!" The royalist Governor

does not set his men's thoughts so high. His word is "Ormonde," the name of the loyal but narrow-minded Marquis of the great Irish Norman house of Butler, under whose feeble leadership the opponents of the Parliament of England are, for the moment at least, nominally united. The word indicates the composition of the garrison, English royalists of both religions and royalist Catholic Anglo-Irish of the Pale, the latter greatly predominating; scarcely a Mac or O among the whole three thousand. No General would have dared to give a purely Irish army the name of this particular King's Lieutenant as a gathering word. They distrust him and will soon deny him admission to their remaining towns. Patriotic Butlers are numerous enough: his uncle Mountgarret, Muskerry his brother-in-law, and many of his kin are Confederate Generals, but James of Ormonde is playing the safer game of the astute house of Argyle. Drogheda at least he is slow to relieve. The dead, under high authority, are to bury their dead.

Twice the Roundhead storming parties force the breach and twice they are hurled back by the gallant defenders. Then as the dusk of the early October evening gathers in, Cromwell leads the third charge in person. The memories of Marston and Naseby are revived as the Ironsides see once more the gleam of the sword of the Lord and of Gideon. They will see it yet again in the valley of Dunbar. A berserker rage seizes both leader and followers and a fierce onrush gives them the command of the entrenchments and of St. Mary's Church. Let us first hear Cromwell's own story as written forthwith to the Parliamentof England :—

"Divers of the enemy retreated to the Millmount, a place very strong and of "difficult access, being exceeding high, having a good graft and strongly pali-"sadoed. The Governor, Sir Arthur Aston, and divers considerable officers "being there, our men getting up to them, were ordered by me to put them all "to the sword. And indeed being in the heat of action, I forbade them to "spare any that were in arms in the town; and I think that night they put to "the sword about 2,000 men."

The slaughter, however, did not end with the night nor with the armed men. Down the street leading to St. Peter's Church local tradition says that streams of blood flowed from the indiscriminate slaughter of soldiers and citizens. It bears the name of Bloody Street to this day. St. Peter's Church was fired and a hundred desperate defenders perished in the flames. They refused to yield. They had seen the massacre of all who had surrendered—some at least on terms of quarter. Cromwell continues :—

"The next day the two other towers were summoned in one of which was about "six or seven score, but they refused to yield themselves, and we knowing that "hunger must compel them set only good guards to secure them from running "away until their stomachs were come down. From one of the said towers "notwithstanding their condition they killed and wounded some of our men. "When they submitted their officers were knocked on the head and every tenth "man of the soldiers killed and the rest shipped for the Barbadoes. The soldiers "in the other tower were all spared (as to their lives only) and shipped likewise "for the Barbadoes."

All the priests and friars were of course knocked on the head promiscuously and Clarendon states that the massacre continued for five days, and that all the citizens who were Irish, men, women and children, were put to the sword. Thomas, the brother of Anthony à Wood, the historian of Oxford, was a Roundhead trooper in the Siege. He related to his brother who records it without comment in his *Athenæ Oxonienses*, that when his comrades made their way up to the lofts and galleries of St. Mary's Church and tower where the enemy had retreated, each would take up a child and use it as a buckler. In the vaults many women had taken refuge. Thomas à Wood tried to save one of these, a beautifully dressed maiden, and to escort her to safety, but a soldier perceiving his intentions ran his sword through her body. The narrator, "seeing her gasping, took away her money and jewels and flung her down over the works." Doubts have been thrown upon this frank record by writers of all parties owing to the scamp's reference to the girl's jewels and beautiful dress. The mud-stained staff of Grant and Sheridan who headed off Lee at Appomatox were surprised to find the hard-bitten Southerners in new uniforms and their leader wearing a presentation sword. The explanation is simple. When the Army of Virginia made its last dash for freedom it preferred to leave behind its old clothes rather than its new. Either feminine human nature or the commercial spirit of the Anglo-Irish town had induced this poor girl in abandoning her worldly goods to cling at least to her jewels and best clothes. My lady listeners, I am sure, will pardon my hazarding an inexperienced bachelor's explanation of the incident.

The Governor, Sir Arthur Aston, was among the first who fell at the Millmount. He had his brains beaten out with his own artificial leg. It was reputed to be of gold, says the regicide historian Ludlow. There was a great dispute and a scramble for it, but it proved to be of wood. In his girdle, however, were two hundred broad pieces and this led to another scramble. These godly men did not despise the mammon of unrighteousness. His body was hacked to pieces. Thomas à Wood tells the same tale, and neither expresses any disgust. At this spot Cromwell commanded in person and his own bloodshot eyes may have seen through the hot red mist of action the ignominious butchery of the gallant soldier and honoured pensioner of King Sigismund. We seem to have made little progress since thy golden times, Ambrogio, Marquis of Spinola, dead of a father's and a soldier's grief and in thine honourable grave these eighteen years at Casale in Piedmont! It is calculated in *Curry's Review* that of the inhabitants only thirty survived the five days' massacre and these were shipped to the West Indies as slaves. Of the garrison, some three or four thousand of the flower of the Irish royalist army, it would appear from Cromwell's own account as given above, that a hundred or so were spared who had held out after the first day in the two towers (the Bolton and West Tower). These were all "shipped for the Barbadoes."

The above quoted extract from Cromwell's military correspondence is the first mention we find of the shipment of Irish slaves to the West Indies. We know, however, from a letter of Father O'Hartigan, a Jesuit envoy of the Catholic Confederation to Cardinal Richelieu, that as early as 1643 he had received "a petition from twenty thousand Irish whom persecution and evil times have

" forced into exile and who are living in St. Christopher's and the neighbouring islands." They asked for the assistance of clergymen of their race and faith. Who were these mysterious Irish exiles in St. Kitts and what became of them? Were they at this time bond or free and did Father O'Hartigan hearken to their appeal? These and similar points I hope to deal with in this or in a succeeding paper.

The Red Legs of Barbados.

In the last issue of *Timehri* an interesting article on *Negro Dialects* appeared from the pen of Mr. Cruickshank which contained some references to Irish settlers in Barbados and Montserrat. The talented writer of the article has I believe given considerable attention to the origin and present condition of the famous " Red Legs," that rapidly dwindling population of poor whites, degenerate and unloved, who are to be found in the parish of St. James in Barbados and who seem to have preserved few or no traditions of their original stock. The district in which they live is called " Scotland " and the names point rather to the descent of the inhabitants from the deported " Red Shanks " or Highlanders and other royalist Scots of Worcester, the Fifteen, and the Forty-Five. They are Protestant in religion and I think this point cannot be ignored. While the Scottish Highlanders were largely Roman Catholic even as late as 1745 their attachment to the older faith seems to have been determined by the attitude of their chiefs more than by any retention of strong religious conviction. When the chiefs conformed or the supply of priests fell off, the Highlanders, unlike their Irish kinsmen, followed their chiefs or listened of their own accord to the ministrations of those who wore the Geneva gown. Now-a-days few disapprove more strongly of the wiles of the Scarlet Woman than the Highland Host of the larger kirks or the litigious and triumphant Gaelic remnant known as the " Wee Frees." In Ireland the name Redshank was used to distinguish the Antrim glynnsmen, chiefly McNeils and McDonnels, who were Scots Highland immigrants of the 15th and 16th centuries, clearly marked off however by Catholic religion and Gaelic race from the Presbyterian Lowlanders of mixed blood, who followed in the 17th century and who have given a characterisation of their own to parts at least of Ulster. That any depth of degradation could destroy the attachment of any folk of Irish Gaelic stock to family and racial tradition is not easily conceivable to those who know the breed. " The Barry is an Englishman " asserts Standish O'Grady's Ulric the Ready, " Why, he has been in Ireland only five hundred years."

An analysis of the family names may reveal some further details, O'Neals and Lynches being numerous enough among the population at large, but even this investigation must take into account the number of Irish and Scots names left in later times by soldiers of the various garrisons. If Mr. Cruickshank can be induced to publish his studies, they will be welcomed by many Irishmen anxious to recover some fragments at least of one of the lost chapters of Irish history. Government records of that date in the West Indian islands have largely disappeared—destroyed through party feeling from time to time as Cavalier or Roundhead in turn gained the upper hand, or lost in the

vicissitudes of the great international wars when islands and parts of islands frequently changed hands, or burnt in later days by accident or design. The official documentary remains are scanty and information is chiefly available in the various Calendars of State Papers, in fragmentary references in the few colonial writers of the time, such as Ligon, or in the pages of industrious students like Prendergast (*The Cromwellian Settlement*) J. Rodway (*West Indies and Spanish Main*). Cardinal Moran (*Persecutions*), N. Darnell Davis (*Cavaliers and Roundheads*) and Father McInerney (*Irish Slaves in the West Indies*). What light there is only makes darkness visible and most writers on West Indian subjects do not deal with the Irish part of the problem even in a single passage. The Roman Catholic clergy probably kept no records at all in the days of persecution when they lurked in disguise among the settlements attending their flocks at the risk of their lives, their blood not seldom being mingled with the wine of the sacrifice. When the Penal Days came to a close the clergy who succeeded the earlier confessors were often without interest in Irish affairs or were lacking in the historic sense. Parochial work in a poverty stricken mission is in any case hardly compatible with thankless research. In the interval the Irish bondsmen had frequently rebelled and been shot down or hanged. The race suffers from a constitutional aversion to governments, however legal and well-intentioned, in which it has no say. This is a peculiarity which it shares with that extraordinary people which has been induced to disguise its somewhat miscellaneous origin, the Celt predominating, under the misleading title of Anglo-Saxon, one of the most remarkable cases on record of the triumph of what Bacon calls the idols of the market place. Many escaped individually or in organised bands. In Montserrat they appear at a later date to have temporarily captured the island, killed a number of planters, seized shipping and sailed away to Cuba. The mortality of Europeans in the canefields must have been appalling and of the precise fate of the women and children (of whose deportation I must write later) we shall never know. It is not a pleasant subject for the story of the children reduces the massacre of Herod by comparison to an amiable attempt of an enlightened monarch to relieve congestion in Judaea.

Mr. Cruickshank speaks of the accent and of the expressions, sometimes pure Elizabethan English, but, nevertheless, a characteristic survival in the Emerald Isle, which have been remarked among the inhabitants of Barbados and which he appears justified in ascribing to those Irish bondsmen of the 17th century who, he relates, were accused of influencing the negroes and leading them into mischief. Thus early had the political boss and the ward heeler begun his career among the exiles. The clannishness and quaint humour of the Barbadian both white and black he might also have referred to a possible Hibernian origin as well as a certain *autarkeia*. But there the parallel ends. The Irishman wears his rue with a difference, unless other West Indians are wrong in hinting that the Barbadian is inclined to slam the gates of Bridgetown on mankind.

This particular Irish War had lasted eight years when Cromwell arrived and it was not concluded either by the initial slaughter of Drogheda or by the stark fighting of the rest of his campaign. Cromwell departed in May 1650. He had dealt the royalist cause some fearful blows by the capture of most of the leading towns of Leinster and Munster, but Waterford he failed to take, Duncannon repulsed one of his divisions and Black Hugh O'Neill at Clonmel gave him a terrible defeat, which, but for the fact that the total disorganization of Ormonde's leadership left the heroic nephew of Owen Roe without support and even without ammunition, had in Cromwell's own words "almost changed his noble to a ninepence." Limerick was taken by Ireton who died of plague in the ruined town after he had hanged all the leaders of the defence except Black Hugh, who escaped on a third trial by a single vote of the court martial. But Ireton succeeded only through the treachery of the Ormondite Fennell and his friends after thirteen months' blockade and six months' siege and bombardment on October 27th, 1651. It was to survive fiercer sieges and other betrayals. Galway surrendered in 1652, and the war was officially declared to be over in September, 1653, but in the form of savage guerilla fighting it lasted till the Restoration. In the form of sporadic rebellions, isolated murders and unceasing turmoil and agitation it may be said to have lasted to our own times. The terror inspired by the massacres of Drogheda and Wexford which was and remains their sole justification, affected only some of the Leinster towns and the royalist garrisons, English or Anglo-Irish. Beyond that area it did not prevent the Irish from defending every ruined wall in the four provinces. They were almost without ammunition or other resources and had few friends; but two years after the crowning mercy of Worcester they were still in arms for a king who had repudiated them to gain the favour of the bigots of the Covenant and who at a later day would cheerfully have seen every Irish head under the axe rather than risk being sent "on his travels again." Cromwell like most great military leaders benefited by the whims of fortune. The death of Owen Roe on his southward march to face him, removed the only general of established European reputation opposed to him in Ireland. The only army which could venture to face the Ironsides and which Owen Roe had trained, was frittered away by incapable direction and finally led to the slaughter at Scariffhollis by the worthy but incapable bishop-general Mac-Mahon. Yet Cromwell left his work unfinished, and unfinished it remained when he died on that stormy night in 1658. In those years vast numbers of Catholic and a few Royalist Protestant Irish, men, women, and children, were transported to the West Indies.

At a meeting of the Irish Catholic bishops and clergy at Clonmacnoise on the Shannon in December, 1649, a Declaration was issued to undeceive many of their flock who were, they thought, misled with a vain opinion of hopes that the Commander-in-Chief of the rebel forces, commonly called Parliamentarians, would afford them good conditions. Many of the Old Irish, as distinct from those of Norman stock, had no great attachment to the Stuarts, and Owen Roe

O'Neill, their favourite general, had for a time taken the side of the Parliament against the royalist Ormondites. The professions of toleration of all creeds made by the dominant party led many to hope more from negotiations than from a hopeless resistance. The Declaration quotes Cromwell's words to the Governor of Ross on 19th October, 1649 :—

"For that which you mention concerning liberty of religion, I meddle not "with any man's conscience ; but if by liberty of conscience you mean a liberty "to exercise the Mass, I judge it best to use plain dealing and to let you know, "where the Parliament have power that will not be allowed of."

It goes on to warn them that by English Acts of Parliament the estates of the inhabitants had been sold to those who subscribed for the cost of the Irish War and that it only remained for the complete success of the invaders to put the purchasers in possession. The common people might receive more moderate usage at the moment for the better support of the Puritan Army but the intention was "to root out the commons also and plant this land with colonies to be "brought hither out of England, as witness the number they have already sent "hence for the Tobacco Islands, and put enemies in their places." Here if nowhere else in that ravaged and distracted island, might Carlyle find, had he cared to seek for them, a few men in touch with God's fact.

In his vituperative reply dated from Youghal in January, 1650, Cromwell says : "And as for the banishment it hath not hitherto been inflicted upon any "but such who being in arms might justly upon the terms they were taken "have been put to death : as those who are instanced in your Declaration to be "sent to the Tobacco Islands."

The statement was notoriously untrue. Cromwell may, as Carlyle says, have come to Ireland with a God's truth in the heart of him, but like many other pious men of a visionary type he seems to have been as capable of dissociating himself from the plain facts of a situation as the most unveracious and disobedient Celt of his biographer's own Celtic dithyrambics. Before leaving London and on arriving in Dublin (and we who realize in the Irish difficulty, the salt, estranging factor of seventy miles of sea, are not surprised to learn that his chaplain Peters found the Lord Lieutenant 'as sick at sea as any man I ever saw in my life.") he had addressed his army and warned them to treat the Irish as Joshua had treated the Canaanites. They were to overthrow the empire of Babylon and establish in its stead the new Jerusalem. To this end they were to show no mercy but to smite with the edge of the sword. Joshua 6. 21. The army had been mutinous but it now saw its title clear to heavenly mansions and to the subter-celestial manors of slaughtered Gibeonites and Amalekites, not foreseeing that the survivors should themselves eventually succumb to the daughters of Heth.

In the wake of the retreating armies descended the slave hunters. The Government by General Orders of the Council of State issued permits and entered into contracts with Bristol merchants for the capture and shipment of the unarmed inhabitants, now chiefly women and children. Many scoundrels engaged in the enterprise without direct Government authority. Some of

these were God-fearing, if needy, Puritans, but many were mere tarry-breeked followers of the "Jolly Roger" without any special pretentions to sanctity. In those days the Irish seas swarmed with pirates. They had plundered Wentworth's baggage on his first crossing and one magnamimous sea-wolf named Nutt even offered to escort him in view of the scarcity of government vessels, but the superior fiend did not accept. Some plied their trade with the yell of Allah and would as soon take a Roundhead as a Papist and Baltimore which they sacked in 1630 was a plantation town. The greater number appealed to Jehovah and the Lord of Hosts. The land was a drifting corpse and the sharks were hard at hand. The Roundhead garrisons gave active assistance. A night raid by Colonel Stubber, Governor of Galway, produced a thousand of every rank and condition and he had many predecessors and many imitators. The praises of God were in their mouths and the two-edged sword and the slave-whip were in their hands. It was not dangerous work as nearly all the fighting men of the pacified districts (35,000 at an early date) had marched far away under treaty, and were in Poland or Sweden or Venice or France or Spain, anywhere but at home. A curse was on the wasted island—the curse of Cromwell.

Orders were also issued that when any Cromwellian soldier or settler suffered outrage four of the neighbouring inhabitants were to be seized and sent to the West Indies. In some cases the punishment included the natives of the whole district. Most of these unfortunates were landed at "Indian Bridge" which we know now as Bridgetown. But Jamaica was also favoured in a special way. It had been captured in 1655 from the Spaniards and the new British colony suffered from a lack of feminine society. The English Government wrote enquiringly to the Irish Cromwellian Council. Its President, Henry Cromwell, the saintly and youthful son of the Protector, no doubt "in a very manful, simple, noble way," as Carlyle describes his general conduct, sent the following reply :—

"Concerning the young women, though we must use force in taking them up, "yet it being so much for their own good, and likely to be of great advantage to "the public, it is not in the least doubted that you may have such numbers of "them as you think fit."

The English Committee of Council had no doubt of it and promptly indented for a thousand girls and as many boys. After two hundred and sixty years we can hear these godly and thrifty grey-beards and this simple, noble youth discuss barracoon quotations and refer each other to Joshua 7. 13. Meanwhile the Commissioners for the transplantation were fasting and inviting their Christian friends and the army "to join them in lifting up prayers with strong crying and tears to Him to whom nothing is too hard, that His servants whom He hath called forth in His day to act in these great transactions, might be made faithful, and carried on by His own outstretched arm against all opposition and difficulty, to do what was pleasing in His sight."

A Retrospect.

I am however anticipating, and perhaps before entering in detail into the history and fate of the various shipments of slaves and bond-servants (for not

all the exiles were of the lower condition—many being merely bound to work for wages) it will be better to cast a glance backwards and to sketch as briefly as possible the course of events which brought the proud and warlike inhabitants of Ireland to this pass. They had expelled the Dane and worn down the Norman. To slaughter and famine they were not unused, but the Puritan methods had the advantage of a compre hensive simplicity and of a united driving force. Part of Connaught was to be made an Irish Wales with the Shannon as an Offa's Dyke. We now know that the plan was doomed to failure and would not have succeeded under a dynasty of Cromwells, but in the years 1649 to 1660 the struggle of centuries appeared to be drawing to a bloody and tragic close.

To us who have seen by a few years of constructive policy, of which both the great parties in the United Kingdom can claim the credit, an industrious and thriving population of small proprietors rapidly replacing the restless and turbulent peasants of the shattered feudal regime imposed upon the island by James and Cromwell, the days and manners of the Protectorate seem farther off than the days of Hengist and Thorkill or the manners of Chaka, King of the Zulus. "We kept the peace" but next month or year we broke it and expelled the inhabitants. "We offered quarter" but sent those who accepted it to a living death in the sun-scorched cane-fields. "We meddle with no man's conscience" but if he worships according to his own we will pike or hang him, and whether he does or not we will take away his property but will allow him if he is otherwise inoffensive and we can find nothing against him, to take possession of somebody else's property in the more boggy and mountainous parts of Connaught. It is too painful a story to dwell upon at any length and there will soon be little left but the faint trace of a cicatrice long so red and raw from the Roundhead sword. A better understanding between the races and creeds has arisen, and great, wise, and truly imperial sovereigns like Edward VII. and George V. have replaced fanatics like Cromwell and Ireton, or monarchs faithless in word, deed and thought like the second Charles or the second James. I do not know at the present time any part of the dominions of the gracious Patron of this Society which would produce at need in proportion to the population more enthusiastic defenders of the Empire than that no longer distressful country which once poured out (through having stubbornly defended throne and altar, be it ever remembered) so many wretched men, women, girls and boys "in custody for the Barbadoes." That fighting talent which had once to be devoted to the service of foreign and often hostile kings can now be exercised in the service of their own, nor can it be suggested by their keenest critic that the older races and creed represented in the island have not contributed in the British ranks to the renown which valour and fidelity won for them elsewhere in those evil times when they faced the seas as friendless exiles.

The time has come when both nations can write or speak of those terrible years without bitterness, even if the recollections encourage a slightly sardonic spirit, and it would be folly to shrink entirely from the unpleasant subject because of its unpleasantness. Ignorance or forgetfulness of the past is a poor

foundation on which to build for a future which is bound to have serious problems of its own. For both nations, moreover, those years were not wholly years of shame. They have also golden memories of valour, self-sacrifice and glory. Nowadays a typical advocate of the extreme Irish view in replying to William Watson can write :—

"And when you make your banquet and we come,
Soldier with equal soldier must we sit,
Closing a battle not forgetting it,
We keep the past for pride
And so must this fight end.
Bond, from the toil of hate we may not cease:
Free, we are free to be your friend."

The Desmonds.

The reigns of Mary and Elizabeth are the turning point in Irish history, inasmuch as in those days the systematic policy of colonization was begun which had as an inevitable corollary the extirpation or exile of the original inhabitants. That a Roman Catholic instead of a Protestant queen issued the edict did not turn the blow for the slaughtered O'Mores or O'Connors of the first plantations in Leix and Offaly, which we know from the colonizing vigour of those Catholic sovereigns Philip and Mary as King's County and Queen's County. Protestant Elizabeth then wasted Munster and most of Leinster and Connaught in the great Desmond wars and received them ready for colonization from her Raleighs, Binghams and Greys as carcasses and ashes in 1581, when, we are told, not the lowing of a cow nor the voice of a herdsman could be heard from Youghal to Kilkee nor from Kerry to Cashel. But there is no reason to suppose that her strong-minded Catholic sister would have held back her deputies from the design of crushing the Desmonds, the elder and southern house of the Geraldines, in the interest of the accepted policy of the Government and to please the great rival clan, the Butlers of Ormonde, allied in blood to and loyal as ever to the English royal line. The Earls of Desmond stood for what in later times, when ideas tend to become more coherent and less fluid, is termed nationality, which at this stage became identified in Ireland with the Catholic cause as against that of the Reformation, remaining so for two hundred years of blood and flame. As the oppressive laws were only occasionally put in force the identification of the struggle against the Crown with the cause of the old religion was for a long time imperfect. Triba jealousies accounted for much of the rebellious spirit : the desire to maintain the old chaotic independence from organized authority accounted for more. Hence we find that even at the *summa dies et ineluctabile tempus* of Ki sale the Ulster dynasts, fighting for independence under a papal banner, with the aid of Catholic Spain, were beaten by an army whose better portion were Irish Catholics led by the High Queen's Norman and Gaelic Irish Catholic Lords. To many what remains in political life of that identification causes difficulties now, especially in Belfast and Portadown on July 12th, when the dog star rages. "Quid-quid delirant reges plectuntur Achivi." But even in ancient Ulidia the refuges of the spirit of the Thirty Years War are crumbling inch by inch and year by year.

The great Juggernaut car of an organised Government, backed by the lean exchequer of the infant but growing empire, making the war feed the war with confiscated colleges, abbeys and estates, and supported by the rival clans of Butler and O'Brien, passed over the rebel house: and its place knew it no more. One year we see Garret Fitzgerald, Earl Palatine of Desmond, bearing sway in all broad Munster, an honest but somewhat ineffectual noble, unequal to the dreadful time, his kin of Kildare dividing Leinster with his foe and stepson the Butler and making claims even to Lecale in Down where, however, they never dared to face the sword of the successors of Shane O'Neill, who had spurned the proffered earldom and who so well knew and taught that Ulster was his and should be his, that with the sword he had won it and with the sword he would keep it. One year we see Garret Earla ride through the main gate o' Shanid or Croom or Youghal or Askeaton or Kilmallock with five hundred gentlemen of his name around him, high in his pitch of pride. John of Desmond is there and James of Desmond and James Fitzmaurice (star of the Norman chivalry) and the Knight of Kerry and the White Knight and the Knight of the Valley and the Seneschal of Imokilly and Lord Lansdowne's much-outlawed ancestor, Fitzmaurice, Baron of Lixnaw. The archways sound to the tramp of the chief horses or steeds of service. The steel-tipped horsemen's staves of the *duine uasals* rise like a forest. The forbidden *coolun* flows in ringlets from inlaid bassinet and plumed barret and the felonious *c ommeal* fringes the lips of the rebel Geraldines. We see the Dalgais axes of the galloglass—mail-clad giants moving portentously in column. We see the ordered pikes and matchlocks of the *bonnacht*, mercenary troops of ruthless black-haired McSheehys and McSwineys, and equally feared red-headed Scots. The rumble of saker and culverin shakes the walls and deer-footed kerne brandish dart and *sgian* as the street rocks to the greeting slogan of *Crom aboo!*

> "Swiftly sweep the eagles westward, gathering where the carcase lies:
> There's a blacker cloud behind them: vultures next will rend their prize."

A few years pass and we see the enemies of his house close at night round a lonely hut in the Kerry hills above Tralee, where they suspect that Garret lies, a hunted outlaw now. A light is shining and they watch from the shadows till the lingering, misty dawn breaks on the corpse-strewn Munster dales, and find huddled by a dying fire of turf an old, old man, a woman and a boy. "Ye seek Garret, the Desmond: strike not: I am he." But a brutal Irish mercenary strikes with the *sgian* and strikes again, and Elizabeth, the gracious High Queen Gloriana in London, in return for that grey, gory head gives her "subject and soldier" a rich guerdon from the confiscated lands. But the name and clan of the smiter and the name and clan of the petty chief who led him are still in no high favour after three hundred years in those long-memoried Desmond lands.

Munster was then planted with English and foreign colonists and the gentle Spenser and the less gentle Raleigh hung up their swords and "tuned their

oaten reed and pastoral stop" on their share of the confiscated lands "among the green alders by the Mulla's shore" at Kilcolman or in the plundered Desmond college at Youghal. And again the land has peace. They will write minutes and reports (to be pigeon-holed but to survive) tending to the extermination of their remaining fellow subjects in "this loste land," as Raleigh calls it. But the land will hold them in its grip as it will hold sterner men, and the grandsons of these literary cut-throats will stand for an Irish cause.

Unconquered Ulster.

In the North, meanwhile, lowers unconquered Ulster and soon the storm breaks on the devoted colony. The great clans regnant of the Hy Niall, the Kinel-Owen and the Kinel-Connell, O'Neill and O'Donnell, with their allied, tributary and mercenary tribes, chiefs, *urraghts*, *taoiseachs* and *bonnacht*, rise under Hugh O'Neill, the great Earl of Tyrone, a shrewd and experienced statesman, courtier and soldier, and under young Red Hugh O'Donnell, the darling of the Gael. The latter had been kidnapped as a boy by being enticed on board a "ship with wines," sent *ad hoc* to the Swilly by Lord Deputy Perrott (bastard of Henry VIII). After various attempts he escaped to his mountain wilds from Dublin Castle, lamed for life by the hardships of the evasion. He had done no wrong. Perhaps the captivity explains his subsequent predilection for hanging all male inhabitants of Connaught above sixteen, who could speak no Irish. All Ireland for eleven years is "a shaking sod."

For eleven years Hugh O'Neill was virtually king of Ireland. He and O'Donnell beat in open fight army after army of English and Anglo-Irish. The Munster colony went up at once in smoke and flame and the broken clans took possession of their own. Many of the Norman nobles joined him or remained neutral and the great head of the Butlers, Black Thomas of Ormonde maintained a secret friendship and understanding with this last native prince of Ulster. When the O'Moores captured Black Thomas he was promptly released by order of "Hugh Tirone." James, a nephew of the last Earl of Desmond was even named by Tyrone to the headship of the Geraldines, which shocked the constitutionalists of the towns. The O'Neill they thought could gift with the white staff of chiefship and make an O'Sullivan, a Macarty more, an O'Hanlon or any other chief, but none but the High Queen herself could make an earl. Few, however, besides the Barry, dared to hold by the Crown where the banner of the Red Hand was displayed in those eleven years and Lord Barrymore was soon for the time a broken and fleeing man. "I hate the Norman churl as though he had but landed yesterday," said the sombre Ulster prince, the long ethnic hate of five hundred years too much for once for that politic and cautious brain. Never but once was that great combination of the Ulster clans beaten in fight. Bribery drew away Nial Garbh, the stoutest soldier of the O'Donnells, and set him up as a Queen's O'Donnell. The unscrupulous diplomacy of Carew, President of Munster, afterwards Earl of Totness, threw discord among the confederates of Munster when O'Neill withdrew from the South. But the State was bankrupt in money and credit and Tyrone only waited aid from Spain to drive out the last of the invadors.

Kinsale.

And in the winter of 1601—2 the aid came. A considerable force of Spaniards landed at Kinsale. The Lord Deputy collected what English and Irish troops he could and the few loyal or pseudo-loyal clans headed by the Barry, by the O'Brien, Earl of Thomond, and by the High Burke, Lord Clanricarde, and besieged the town. The Confederate chiefs marched from the North, O'Donnell by the most astounding marches any army ever made in winter with carriage, and blockaded the Deputy in his disease-smitten camp. Nearly all Munster, Gaelic and Norman, prepared to rise to join them. The pseudo-loyal watched the issue. A night attack was planned in conjunction with the Spanish commander. What exactly happened no one can say with confidence. One account says the two great Ulster dynasts quarrelled for the first time for precedence in the charge. Another says they went astray in the night march. Perhaps one Brian MacMahon of the Dartry really did betray the design to Carew for old sake's sake and more recent gratitude for a bottle of whisky. Morbid conditions always breed such vermin and in Ireland they have never been conspicuous by absence. Still, usquebagh has also been plentiful at all times, and was likely to be less scarce with the rebel chiefs than with the hard pressed eputy. At all events when morning dawned the attack had miscarried and the Ulster forces were struggling in a bog. Mountjoy dealt his counter-stroke, broke the hesitating and scattered clans in bloody disorder if not rout. They rallied at Inishannon eight miles away but decided to await better aid from Spain rather than again attack, and Kinsale surrendered. If ever there was a decisive battle of the world one was fought on that raw December morning of 1601 at Kinsale. There the feeble and expiring bantling of the British Empire was saved from destruction. The chiefs had never been beaten before. Mountjoy's army was reduced to half by disease and desertion. Of the remnant the Irish majority was ready to change sides. The Ulster forces were better disciplined, equally equipped and better led hitherto, than the High Queen's troops. Had there been any other issue of that fatal night attack we should be now speaking Dutch in Demerara and planning a trip to Amsterdam for the holidays.

O'Donnell handed over his command to his brother Rory and went oversea to Spain for aid, obtained it but died of poison by the hand of Carew's envoy. O'Neill who was wounded retreated sullenly northward and fought on for two years. His allies fell away. Ulster's sons forsook their strong one. Even Rory O'Donnell after a gallant fight was forced to make a separate peace. O'Neill's chief Urraght, or tributary chief, 'O'Cahan, Lord of the great county of Derry, was bought by the Government by the offer of independence of his tribal lord. But none, bought or unbought, would betray the prince of Ulster. The land was wasted from end to end. The crops were cut down by Mountjoy's armies, the cattle driven off and the people starved to death in large numbers. In the words of Aubrey de Vere, written of the Desmond War but equally appropriate here :—

"'Twas not war that wrought the ruin! Sister portents, yoked for hire,
Side by side dragged on the harrow, Famine's plague, and plague of Fire:
Slain the herds, and burned the harvests, vale and plain with corpses strewn:
'Mid the waste they spread their feast; within the charnel reigned alone."

Over whole counties no living being could be found and as they marched from destroying the O'Neill's crowning stone at Tullaghogue to Toome they passed a thousand unburied corpses; but O'Neill was still in arms. Aid might still come from Spain and the last fight of his allies the O'Sullivans at Dunboy and Glengariff had cost the state dear. It was now issuing base money. The defence of Dunboy and the northward retreat of the Prince of Beare are among the most stirring tales in Irish or any other story. Elizabeth was dying and the future king James VI. of Scotland had long been in friendly correspondence with the mighty Earl.

The State secured and offered terms and made peace. It gave back to the Earl and to Rory O'Donnell, whom it made Earl of Tyrconnell, all their lands and privileges, declared an amnesty and abandoned the traitors Nial Garbh O'Donnell and O'Cahan. The restored Lords went to Hampton Court and made their homage as dutiful subjects to King James. Elizabeth had died during the negotiations and when Mountjoy broke the news to Hugh after the Treaty of Mellifont was signed it is recorded that the Earl burst into sudden tears. Perhaps the recollection of the useless slaughter of those wasted years during which King Harry's daughter had used the whole resources of her kingdom to wear down hearts as proud as her own was too much for the reticent and silent Earl. After eleven years the State had saved its face if not its credit.

The New Plantation.

O'Neill was still virtually Prince of Ulster but it could not last. Sir John Harrington voiced the sentiments of those who had borne the burden and heat of the day. He had lived to see Tyrone received in high favour at the Court of King James I. Time was when he had seen him reduced to a single woodland fastness in Glenconkeine.

"How I did labour after that knave's destruction. I adventured perils "by sea and land, ate horseflesh in Munster, and all to quell that man who now "smileth in peace at those who did hazard their lives to destroy him; and now "doth Tyrone dare us old commanders with his presence and protection." The powers of these Gaelic dynasts could not endure in harmony with the sovereignty of James, especially with this new sanctity of absolute monarchy under the theory of the divine right of kings. English law was substituted by mere judicial decision for the Brehon Code, I think the most tremendous exercise of the law making power of judicial decision on record. Bills were introduced into the Irish Parliament on the subject but were never passed and it is to

the decisions of the Irish Judges of James I. in the case of Tanistry and the case of Gavelkind that we must trace the origin of that great fight of the Irish peasants for their tribal rights which has been at last closed by the Land Purchase Acts. Sheriffs were appointed and judges rode circuit in the Ulster territories, girt at first with armies, as the inhabitants loved not novelties and when King James's first surveyor appeared in old Tyrconnell the inhabitants, as I have already mentioned, cut off his head. By every possible annoyance of officials and their favourites the lives of the two earls were made a burden to them. They were surrounded by spies. The Arch-Earl said he could not drink a carouse of sack in his castle of Dugannon but messengers were spurring to inform the Council. The tale is too long to tell. Attempts were made by the Government to enforce the proclamations against the Catholic religion in the new shire-lands. They feared seizure by the Government and captivity with the last Desmond, the so-called Sugan Lord, and with Florence McCarthy and many more of their late allies in the Tower. Had their resources been adequate they would have rebelled again but without aid from abroad they could do little except bring fresh devastation upon their faithful clansmen by such a course. They fled to the continent (in a ship chartered by the Maguire and brought to Rathmelton on the Swilly) to secure aid from abroad for a fresh outbreak, with some hope at the same time of dictating better terms for religious and personal liberty to King James as an alternative to invasion. Historians speak of their flight as wrapped in mystery but they sent separately to the king a detailed narrative of their respective grievances, and their wrongs and forebodings are tangible enough to any careful student of the epoch. Their escape, however, was naturally, taken to be damning evidence of black treason and ingratitude, and to their country and class the result was dire.

They were unlucky in the occasion of their flight. Europe was at peace with England but they were received with great courtesy abroad as suited their high renown and fair accomplishments. We can readily discard the talk of the brutish manners of those magnanimous soldiers and high-born gentlemen: O'Neill at all events was used to the courts and palaces of Elizabeth. This was in 1607 and next year O'Donnell died in Rome of the country fever. Assassins were on the watch but death himself was quicker in his arrest. O'Neill lingered on, hoping against hope to be able to return, sleeping with drawn sword by his restless bedside to be ready for the eventful hour. Plot after plot was formed, sometimes in conjunction with plots and outbreaks at home, sometimes independently. Agents negotiated with the European courts and the Salviati palace where he lived hummed and buzzed with exiles and their friends, also with spies Irish, English and Italian, paid by the far-seeing Cecil. Italians offered their services to the Government as poisoners but no definite acceptance is known to have been given. Hugh Roe had died of poison, so the State Papers disclose. Shane O'Neill and his whole household nearly died from a present of Government wine and the Earl's eldest and most stirring son was to die strangled in his bed in Brussels. Nobody was shocked at the suggestion. No statesman

in any part of Europe would have been shocked a that date. It was a custom in Israel. Perhaps another method was tried. O'Neill was nearly seventy-six, his sight was failing and the inactivity and the malarial Roman climate were telling on a constitution used to hawking and the chase in the intervals of war, and to the keen air of the Ulster hills. Still he meant to "have a day in Ireland yet." At this stage enters a physician of uncertain nationality, one Dr. Doyne, a spy of Cecil. He gains the confidence of the exiled Earl, lives in his palace and bleeds him (aged 76 and weak) from his legs, some sixteen ounces of blood. O'Neill's herculean frame and great will-power keeps him alive for some months but we are hardly surprised to hear that he suffers constantly from intermittent fever and dies in the torrid Roman heat of July, 1616. I can find no record of any faithful clansman having slipped a *sgian dhu* into the worthy Dr. Doyne. His good faith has never yet been questioned. He had departed, ostensibly for study of the healing art in Padua, his work in Rome well done. Perhaps although a spy, his empirical mystery was exercised honestly enough and haply he lived long and visiting Spain in his old age assumed the name of Sangrado instead of Doyne.

In the Church of San Pietro in Montorio on the Janiculum, hard by the traditional site of St. Peter's martyrdom, under the clouted shoes of the Trastevere popolani, there are two recumbent tombstones marked with a red hand and a cross. As one examines the wreaths which are seldom absent, or kneels to pray, a Spanish lay-brother (the church being under the protection of the Sovereign of Spain) will lay down his sweeping brush and drawing near point to one grave and then to the other, uttering in the accent of Barcelona, his only information on this head, the words, "Oneglio" and "Odonnello." I have been there about twenty times and I never heard him say any other words. One nods in silence, revolving memories, and he moves tactfully away unfeed. Perhaps he dimly knows, this Catalonian Minorite, that to an Irishman, for no other nation turns aside from the magnificent Roman panorama of the terrace to pause at those memorials of a forgotten cause, he need not say too much about the last native Princes of the Gael.

With the very letter announcing the flight of the Earls the Lord Deputy Chichester broached the great scheme of the Ulster plantation. Bacon had already given the idea some attention as colonization was in the air and had a particular attraction for his practical mind. "Their principalities" write the Four Masters, with biblical simplicity, amid the ruins of Donegal Abbey, a few years later: "their territories, their estates, their lands, their ports, their "fruitful harbours and their fishful bays, were taken from the Irish of the "province of Ulster, and given in their presence to foreign tribes; and they were "expelled and banished into other countries where most of them died." Six counties in Ulster were confiscated and disposed of to English and Scots planters and O'Cahan's country went to the City of London companies. O'Cahan went to the Tower. In Simpson's Statistical Survey of the County of Derry, the story is told that the Duchess of Buckingham passed through Limavady in O'Cahan's country during the Cromwellian war. She visited the great castle

of the older lords above the rushing Roe, once a mighty stronghold, then a shattered ruin. A few rooms were partly habitable and in one an aged crone, wrapped in a blanket, crouched over the reek of a peat fire which filled the miserable room with smoke. Struck with so much wretchedness the duchess asked her name. The gaunt hag drew herself up to her full height and replied: "I am O'Cahan's wife."

O'Cahan had rotted in the Tower. Among his fellow captives were Nail Garbh O'Donnell and Nachtan the latter's son, once of Trinity College, Dublin, but too capable to leave unchained. They had been removed thither from Dublin Castle, from which they had made many desperate escapes. Standish O'Grady relates that no prison in Tyrone could hold Hugh of the Fetters, son of Shanee O'Neill. No prison in Ireland could hold that tameless Tirconnallian house. One of Hugh Roe O'Donnell's urraghts, Sir Cahir O'Dogherty, who had abandoned his chief and adhered to the Queen was driven to revolt and the Lord Deputy Chichester seized for himself his territory of Inishowen when the rash youth died in his last fight at the Rock of Doon. (Chichester's descendants are still Marquesses of Donegal but the older and more enduring stock has again "the lands, the ports, the fruitful harbours and the fishful bays" of that wild northern land.) So passed the Ulster septs which cleaved to the Crown. Of the Ulster rebels one family the Macdonnels of the Glynns survived as Earls and Marquesses of Antrim through the sympathy of the Scottish Stuarts for their Highland origin and a somewhat un-Ultonian suppleness. Sorley Boy was right: when the government showed him the bloody head of his son Alister, the fierce lord of Dunluce laughed: "My son" he said, "has many heads."

Other confiscations followed. Each new deputy planned new seizures. Most of Wicklow and Wexford was torn from the O'Byrnes and Kavanaghs. A slice of them was given to one George Castriot De Rinzy, an Albanian, but the family of our genial Inspector General has ceased to be exotic. Longford was taken from the O'Farrels. When Strafford deserted the cause of parliamentary agitation and came in 1632 as Lord Deputy he designed to make the Government self-supporting and incidentally to create an army and a supply of money for King Charles I. then out of suits with parliamentary methods. So far the King had never been the better for Ireland. Strafford confiscated Connaught and other districts under trivial pretexts or none at all. He did many other things in Ireland which I am glad to say eventually cost him his head. The English, who are rich and prosperous enough to be, as regards hero worship, the most fickle and sentimental people in the world, are suffering from a re-action in his favour, being rather surfeited by the enthusiasm of over-strenuous admirers of Cromwell's heroic methods. The Irish, the least sentimental of peoples and whom he used petty knavery to plunder, merely regard Black Tom Wentworth as a paler cavalier edition of the later sanguinary quack. Their opinion has not changed in two hundred and fifty years.

Religious persecution had accompanied the confiscations and when the Catholics started fresh colleges and educational endowments to

replace the old they were seized by the Government. Trouble was brewing for the settlers on the confiscated lands and no deputy or other responsible officer of the time had any delusions on the subject. They knew that when the opportunity offered the dispossessed proprietors would return from the Continent and in conjunction with those natives who had as tenants or otherwise clung to the soil or lurked as rapparees, tories, or marauders in the mountains, would endeavour to recover their patrimonies, re-establish their religion in the ruined churches and extirpate or expel the new arrivals.

Much of the manhood of Scotland and Ireland was abroad in those years either as soldiers or as merchants, for commerce was not despised. The Scots were chiefly in Sweden, Poland or in Protestant Germany, and the Irish in Southern Germany, Austria, France and Spain. Yet when the imperialist commander-in-chief, Wallenstein, tries to force a peace and perhaps create a principality for himself, by opening up negotiations with the Swedes and Saxons, the Governor of Eger where he encamps for the last time is one Gordon, a Presbyterian of Aberdeen. The army is loyal in part, but the enemy is near at hand and Wallenstein can boast more truly than Pompey that he has only to stamp his foot and armed men will spring from the soil. The whole fate of the empire and of the Catholic cause is in the hazard. Count Walter Butler, loyal to his soldier's oath, rides upon the town at night with his Irish regiment. Captain Edmund Burke patrols the streets. Major Devereux with his troop bursts into the great banqueting hall of the Castle and the confederate officers are cut down at their cups, although Tzerzky accounts for five Irishmen before he is beaten to the ground. "Oh, Gordon," he cries "what a supper for your friends!" Then up the oaken staircase rushes Devereux with reeking partisan and flings his gigantic form against a barricaded door. It crashes from its fastenings and the grim Duke of Friedland is seen alone in the middle of the room. Schiller has described it in a great trilogy. "Art thou not a traitor to Ferdinand and the Empire? Then die." There is a flash of steel and Wallenstein falls amid the shouts of "*Viva Ferdinandus*" of the Irish dragoons.

War and Exile.

To Ireland, however, the current of migration was now to turn and Walter Butler refused to recruit a second regiment of Irish musketeers for Ferdinand, "Poor Ireland," said Walter, "has lost too many of her sons already." She was soon to need them for the old cause. The first, which consisted of no less than fifteen companies instead of the usual ten and which he commanded when he defended Frankfort against Gustavus Adolphus was not his own but that of his kinsman or brother James. At this time there were six Butler kinsmen holding high rank in the Austrian service and it is difficult to trace their precise relationship. Schiller describes the slayer of Wallenstein as being of humble birth but he was undoubtedly a cadet of the great Ormonde house. At the siege of Frankfort James Butler was absent from his regiment, luckily for him. Gustavus demanded that the Governor of the captured town should be brought before him. He had been wounded in the

last assault, in which the musketeers had won a European reputation, and was borne into the presence of the Swedish sovereign on a litter of pikes. "Art thou James Butler?" asked Gustavus. "No, sire, I am Walter." "I rejoice at that" said Gustavus: "for thou has fought well, but even so, hadst thou been James I should have spitted thee with my own sword." The reason of this hatred is not clear but James had been in the Polish service in which indeed he was to die (unless it is true that he was killed at the Battle of Ross) and when the Poles routed the Swedes at Osterode a Butler led them.

The struggle between Charles I. and his parliament gave the signal for the new revolt and Scotland furnished the example. Although penal statutes could not be forced through the Irish parliament against the Catholics the substance of English legislation on the subject was put in force from time to time by orders of the Deputy and Council. The bigotry of the Puritans was threatening further outrages and confiscations. In October and November, 1641, the Ulster Irish rose. They failed to surprise Dublin but were joined by the Norman Lords of the Pale the following year. At a meeting at the Hill of Crofty in Meath the Anglo-Irish nobles formally asked the delegates of the clans: "Why come ye armed into the Pale?" The reply was 'For the defence of our king, for the liberties of God's church and for the rights of this land.'' With this agreement of the older races the Pale vanishes from Irish history. Yet no Irish artist has yet selected this meeting as a subject. The Continental Irish returned under Owen Roe O'Neill, Tyrone's nephew, the heroic defender of Arras against Marshal Meilleraye, and under Preston, a nephew of Lord Gormanston. Many cruel deeds were done on both sides but the so-called massacre of 1641 has died with the reputation of Froude. Modern historians have disposed of that gigantic if hoary and decrepid lie. The struggle became exclusively one for religious liberty with complications produced by the conflicting claims of king and country. "One could pity this poor Irish people," says Carlyle, who had at least acquired some small glimmering of the story from inter course with his friend Gavan Duffy: "their case is pitiable enough. The claim they started with, in 1641, was for religious freedom. Their claim we can now all see was good, essentially just, though full of intricacy; difficult to render clear and concessable." This is not the place to enter into it with any detail. I can only say that Irish discontent was again beaten to the ropes, made treaties and conventions as worthless as ropes of sand, but was allowed and encouraged to sail away oversea to fight there far off, and again the land had peace.

All over the broad land the broken armies and garrisons are marching into exile. There is a glint of steel as the sun struggles with the mist. The guidons of white and green flutter in the sharp bogland breeze and the nostrils are stung for the last time by the burning match. We hear the hoarse orders in the Gaelic: "Close up your files." "Comport your pikes." "*Fear-brataighe*, Advance the standard!" We see the giant pipers in swinging saffron stride before the ragged columns and the swift sound of thousands of buskined feet blends with the fierce notes of O'Neill's, O'Donnell's, O'Dwyer's, O'Reilly's or O'Farrell's March or with the softer tones of the airs we know as "Shule Aroon," "Lochaber no More." or "Shane O'Dwyer a Gleanna."

"Sometimes there trembled through the strain,
A song like falling tears
And then it rose and burst again
Like sudden, clashing spears."

At the head of the column rides, lean and hollow-cheeked, some young yet grizzled and bearded veteran of eleven bitter years. His ample Irish cloak, the last relic of the national dress, unless he clings to the barret-cap, partly hides the dinted cuirass and the stained buff-coat. Like their owner they bear the tokens of nights of watching by rampart and bivouac. The slouched Spanish hat hides a sword-cut on the temple, partly hides a scar upon the cheek, hides brows scorched with the powder of a recent siege-explosion. The first recalls the Break of Benburb; a Westland Whig gave it him and the waters of the Oona flow over the Covenanter now. The next was from the snaphance of Colonel Zeal of the Lord Busy at the storming of Clonmel and the Round-head died in the breach in the North wall. The last recalls the petards which sprang the bridges at the in-take of Limerick. That broad brim too hides hard grey Irish eyes that are now dim with something else besides the steadily falling rain. Was this the last stroke for Banba? Was this out-march the end of all the heroism and the sacrifice, of all the watching and the starving of eleven weary years. Perhaps we can see him, dimly down the centuries, check his chain bridle on the miry causeway amid the low, grey, rounded hills and in the hearing of the western sea, fling off the sombre Spanish mask which was the pose of the Irish Officer of the time, and cry to his marching clan almost in the words of the chorus to Electra: "Courage, children, (a chlanna); time is with us. We shall come back." And sounding up the years comes the wild answering yell, "True for you. MacArt," (or MacPhilip or MacShane or whatever patronymic his clan knew him by) "we shall come back and see their backs again and the people will make way for us at the altar." The haggard eyes flash but again grow hard: again the sharp order in the Gaelic.: our own eyes are dim, perhaps with the visionary rain, and when we look again we see only the darkening moorland and the watching stars.

Future marshals and captains-general, fathers and grandfathers to be, of viceroys, princes and governors, grandees of Spain, Austria and France, rode beside the retreating columns. Honour and fame awaited some over-sea whither they were marching, penniless and defeated, vocal only in an unknown Gaelic speech, bearing the dinted swords and tattered standards of a lost cause, but bearing, too the heritage of unconquered hearts, of stainless names, of sinews of iron. Of a few we know something. Condé alone had a corps of 5,000. Mortara had still more in Spain but he or King Philip IV. treated them badly and paid for it. Spain they loved but poor Spain was sickening of her long illness. Many went for Poland and fought the Turk and Cossack. Others were for the Low Countries. Philip O'Reilly and Black Hugh O'Neill, the valiant defender of Limerick, Owen Roe's greatest nephew, became Generals in the Spanish service, and Hugh lived long enough to claim the Earldom of Tyrone and the estates of the Arch-Earl after the Restoration. Owen himself had died at Clough Oughter Castle as the

marched southward to measure swords with Cromwell, and his gallant son Henry had been butchered after Heber MacMahon folly had led the hitherto unbeaten Ulster clans to disastrous rout at Scarrifhollis in 1650. Rory O'More, who organized the original outbreak and fought through it until the last bleak Western isles were taken in 1653, died in Brabant. No abler, truer or more single minded patriot ever lived, but his later fortunes and even his grave are unknown Fitzpatrick sailed for Spain with 1,000 foot and 300 horse but came back at the Restoration and married a sister of Ormonde, Lord Lieutenant and Duke, although his mother Florence had been burned to death (on dubious evidence be it is said) for expressing a desire to make candles of the fat of English folk. McCarthy, Lord of Muskerry, fought in Venice and Poland, but soon came back restored. Preston, Lord Gormanston, was equally fortunate and has left a long line of Jennico Prestons to recall the loyal service of that ancient stock. Colonel Grace took 1,200 to Spain and came back to fight successfully and to die fighting for James II. at Athlone in 1691 as became a descendant of the first conquistador, Raymond le Gros. Owen Roe's other nephew, the ablest diplomatist of the age, Daniel O'Neill, came back from Holland (whither he carried or at least was licensed to carry, 5,000), to become the first Postmaster General of England and to die, in 1664, a conscientious Protestant, as he had always been. "As honest a man as ever lived," wrote Charles II. to his sister with one of the few displays of feeling he had ever shown, "I am sure I have lost a good servant." His religion, to which like Ormonde, he was brought up as a State orphan, claimant to Clandeboye, probably cost him in those days the headship of his house and of the Ulster armies. But he had at least the proud distinction of being the first of a great line—the Irish Protestant patriots of every shade of political opinion, who did not end with Alfred Webb and Shaw Taylor, and who will not end with Dunraven, Pirrie or Sir Horace Plunkett. They offer a surer hope for the eventual taming of the Blatant Beast of religious hate in that reviving land than can be furnished by protocols or laws.

So much we know, but of the fate of the great bulk of the chiefs or of the gentlemen and private swordsmen who followed them into exile we know little or nothing. They took shipping and sailed away. A similar exodus was destined to follow the defeat of the cause of James II. in 1691 and to swell into a flood of half a million of men in fifty years by the breach of the Treaty of Limerick. But loving hands have collected their memorials in distant lands from Dunkirk to Belgrade. Their descendants, Macmahons, Taaffes, Nugents Brownes, Lacys, O'Donnells, O'Neills. and O'Reillys, Dukes of Tetuan, Dukes of Magenta, Dukes of Feltro, Governors of Paris, Madrid, Vienna and Berlin, in every country in Europe and America have seldom forgotten their connection with the *antiquae sedes*. But the Irish of Cromwell either as soldiers in Europe or, as we shall see, as slaves in "The Tobacco Islands" have lacked both historian and poet.

Urgentur ignotique longa
Nocte : carent quia vate sacro.

In all history so far as I have read it, I know of no sadder picture than this outpouring of the swordsmen of an ancient nation led by the chieftain families of an aristocracy prouder than that of Castile to perish unrecorded amid the welter of a continent in arms. Some day a student of the new revival of intellectual studies in Ireland, some product of the new Universities or of the new spirit in dear old Trinity, working among the records of continental war-offices, may unearth the facts and relate what successors the Butler who defended Frankfort against Gustavus, the Butler his brother who saved the Holy Roman Empire for two centuries by slaying Wallenstein, the O'Neill who defended Arras the Preston who defended Louvain and Genappe, what predecessors the O'Mahony who saved Cremona, the Lally who won Fontenoy, the Lacy who conquered the Crimea, the Fitzgerald lass who defended Gerona, the O'Higgins who liberated Chili and Peru, the O'Donoghue who was first President of Mexico, the Clarke who was Napoleon's Minister of War, the Macmahon of Magenta and Solferino, found among the *curishees* of the Protectorate.

With Black Hugh O'Neill and those Gaelic and Celto-Norman chiefs and nobles and their military families marched the survivors of those who had met the superior numbers and superior arms of Munroe's dour Scots Covenanters at Benburb five years before, and broke them there, horse, foot and artillery, by the pleasant Northern Blackwater, leaving the Confederate cause dominant in old Ultonia. With him marched those who had outfaced the terrible Ironsides in Clonmel breach and hurled them back time and again until the streets were filled with nearly 3,000 Parliamentarian dead, paying back the debt of Drogheda and answering the muttered thunder of the 68th Psalm with fierce *Rosg-catha* and defiant Irish yell.* With him marched the haggard remnant of 1,200 men who had fought by his side for six months of storm, starvation and plague against Ireton, Cromwell's ferocious and untiring son-in-law, on the crumbling bastions of Limerick, until Fennell's treachery did what numbers, resources and valour could not do, and won St. John's Gate and citadel for the Roundheads. They were looking, most of them, for the last time on the golden gorse and white-tufted cotton of the bogland, on the soft, grey, rounded hills, on the wide lakes lapping their low green shores with amber water. They were for Muscovy to fight the Golden Horde, for Poland to ride against the Turk with Patrick Gordon and Hetman Sobieski (not yet a king), for France to pass the Rhine with Condé and die at Salzbach with the brave and good Turenne. Is it likely that they belied their breed in the land of their adoption and that their wild slogan yell was not the herald of victory many a time and oft, by Danube, Rhine and Volga in the days that were to come ?

" Empty fame at the best,
Glory half-dimmed with shame:

* " The wall as well as the houses behind was manned by men who did not flinch in their death struggle with their hereditary foe. Caught in a trap the Cromwellian soldiers bore themselves bravely as was ever their wont, but the plunging shots tore their ranks and strewed the ground with slain. To break through that semi-circle of fire was beyond their power and when night fell the survivors staggered back to acknowledge that for once they had been foiled. Their loss had been enormous ; according to one account it was reckoned at not less than 2,500 men."—Gardiner's *Commonwealth and Protectorate.*

War-battered dogs are they,
Fighters in every clime,
Fillers of trench and of grave,
Mockers bemocked by time
War-dogs, hungry and grey,
Gnawing a naked bone,
Fighters in every clime,
Every cause but their own."

We know only that under treaty and convention they took shipping and sailed away, guidons fluttering, standards high, pikes well-ordered, matches lighting, bullet in mouth, war-pipes perhaps screaming the *Planxty Sudley* as on that long past battle-day in Ulster by the Black and Oona Waters. On the headlands that "shoulder off the Western seas" bonfires are held in readiness for many a year to greet the home-coming of the swordsmen, and the years pass, and the world changes again at the Restoration; but few ever see again the Reeks of Kerry rise above the Shannon mouth or the twin peaks of Errigal look across the Swilly to the bellowing waters of the Moy'e. The sails dip below the horizon, and with the loud wailing of the women and children who can find no place on the ships the night of the Cromwellian curse falls on the tortured land.

It will next be my task to narrate the fate of those who remained behind and to endeavour to trace, with the scanty records available, the process of the transportation of so many of them to the West Indian and American plantations and their subsequent history in these ultimate lands.

(Read by the President, Joseph J. Nunan, B.A., L.L.B., sometime a Junior Fellow of the Royal University of Ireland, at a General Meeting of the Royal Agricultural and Commercial Society of British Guiana, October 31st, 1915. His Excellency the acting Governor, C. T. Cox, Esq., C.M.G., in the chair.

PROCEEDINGS OF THE SOCIETY.

Meeting, July 19th, 1911. *Elections.—Members*—Messrs. W. A. Dunn, William Day and C. W. Prest. *Associates.*—Messrs. Jas. F. Irving, John James Seton-Shore, David Royer, F. J. Whitehead and Ernest McWatt. *Lady Subscribers.*—Miss C. Andrade and Mrs. H. van Nooten.

The President reported on behalf of the Directors that 487 members, Associates and Lady Subscribers had paid their subscriptions during the current year; that the Chamber of Commerce promised to contribute $25 per annum; that a new Catalogue was being prepared; that "Timehri," No. 2, was expected to be out the next day; and that the proposed Tennis Court would probably soon be put in order.

The President moved and the Honorary Secretary seconded—

"That in future Members and Associates, after due proposal, as at present provided, shall be elected by the Directors at a Directors' Meeting, a three-fourths majority sufficing for election, and that the election by ballot at General Meetings as provided in By-Laws 1 and 3, Chap. V., shall be hereby abolished, also that the Directors shall be empowered to alter the By-Laws accordingly."

This was passed without opposition.

Mr. Justice Hewick read a paper entitled "Recollections of the Straits Settlements."

A vote of thanks was warmly accorded after some appreciative remarks by the President.

Donations to Library.—26 vols. Books from Mr. L. H. Buxton, 3 vols. from the Bishop of Guiana and 2 vols. from Hon. J. J. Nunan. *To Museum.*—a live Alligator from Hon. J. J. Nunan.

Meeting, Sept. 22nd, 1911. *Elections reported.—Members*—Drs. Fitzherbert Johnson and K. S. Wise, and Rev. L. J. Rowe. *Associates.*—Rev. Stanley E. Watson, Messrs. H. S. D. Webb, G. N. Sahasrabuddhe, D. Howard, C. A. Mylau, R. J. Kingsland, and W. D. Cleary. *Lady Subscribers.*—Mrs. Robert Allan and Mrs. Linley Vinton.

A letter from Mr. B. Howell Jones, thanking the Society for their congratulations on the honour of C.M.G. lately conferred upon him was read.

The President then vacated the chair in favour of His Excellency the acting Governor, who stated that he had great pleasure in coming that afternoon to present the silver cups given by the West India Committee and won by the Consolidated Rubber Company and Mr. W. Hodgson for balata and rubber, the best from the West Indies. After referring to the connection of the late Mr. Jenman with Rubber cultivation he presented the cups to Mr. McTurk on behalf of the Consolidated Rubber Company and to Mr. Hodgson.

The recipients having expressed their thanks, the President moved a cordial vote in acknowledgment of His Excellency and Mrs. Cox's presence, and to His Excellency for presenting the cups, also a vote of thanks to Mr. Aspinall of the West India Committee and to Mr. Stockdale for their work at the late Rubber Exhibition in London, at which the cups were awarded.

Meeting, October 31st, 1911.—*Elections reported—Members.*—Mr. A. F. White, Hon. J. Hampden King, Mr. W. V. Sherlock, Major May, Dr. Burton and Hon. W. Crawford ; *Associates*—Messrs. C. A. S. Howard, Carlos Lopes, T. Milton Chee-a-Tow, Joseph Samuel Roy, C. Cox, jnr., S. V. L. McBurnie, B. B. Marshall and W. T. Johnson ; *Lady Subscribers.*—Misses Gretchen Garnett B. S. and A. J. Jardine.

The President spoke of the forthcoming parts of "Timehri," the continual additions to the membership, and the desirability that greater interest should be taken in the forthcoming election of office-bearers.

Notice was given of a motion to amend certain By-laws concerned with the election of Office-bearers ; to allow ladies to hold office if they paid the subscription of members ; to reduce the subscription of residents in Berbice and Essequebo to $5 ; and to allow Honorary Members to hold office.

Donation to Library.—Purser's Christian Missions in Burma from Rev. W. G. White. *To Museum.*—Photo of B. G. Rubber exhibit at the London Rubber Exhibition from the Director of Science and Agriculture, and specimens of Rubber exhibits from Mr. Quincy Tucker.

The President read a paper extitled "Shipped for the Barbados" (see p. 331) for which a vote of thanks was accorded.

His Excellency the acting Governor took the chair while the President read his paper, for which kindness a vote of thanks was also accorded.

Meeting, Nov. 16th, 1911. *Elections reported—Members*—Messrs. W. Douglas and W. T. Parratt, Rev. Father Blake and Mr. I. van Gilze. *Associate.*—Mr. Harry Moore.

The amendments of By-Laws were passed as follows : —

Chap. III—1. At the Anniversary General Meeting in December, which shall be summoned for the propose, the Society shall elect the following Office-bearers, viz. : A President, a Vice-President, a Secretary, a Treasurer, and ten Ordinary Directors, of whom three shall be Managing Directors. In addition to the Ordinary Directors the President of the Chamber of Commerce, the Chairman of the Planters' Association, and the Director of Science and Agriculture shall be *ex-officio* Directors.

Chap. III—3. All the Office-bearers may be re-elected annually, with the exception of the President and Vice-President, who shall not be re-eligible to the same offices after the expiry of a second term, until after an interval of one year from the date of the expiry of the second term.

Chap. III—4. Candidates for elections may be proposed and seconded at the Anniversary General Meeting held during the month of November or December. The names of candidates proposed at any previous General Meeting, and the names of their proposers and seconders shall be hung up on the Notice-board in the Reading Room.

Chap. v—15. After Board of Dfrectors ; to read, " provided that any lady, by paying the subscription of an Ordinary Member shall be entitled to the privileges of Ordinary Members, including that of holding office."

Chap. v—2. Add " Country Members residing in Berbice and Essequebo shall pay five Dollars annually."

Chap. vi—2. Delete " being eligible as office-bearers."

The Honorary Secretary reported that the President had been appointed by the Directors to represent the Society at the coming Agricultural Conference at Trinidad in January, 1912.

The Hons. J. Hampden King, George Garnett, and Mr. W. Stuart Cameron were nominated as Directors for 1912

The following were elected as an Editorial Committee for " Timehri" :— Prof. J. B. Harrison, Messrs. T. A. Pope, G. F. Franks, F. A. Stockdale, G. E. Bodkin, Dr. K. S. Wise, W. Douglas, D. K. Jardine, J. Cunningham, C. W. Marchant. Rev. Jas. Aiken, J. Rodway and J. J. Nunan.

In connection with " Timehri" the President said that a paper had been received from Prof. Crampton for No. 4, and it would probably be desirable to bring that out about Easter as a special colony number dealing with all phases of its activities.

Dr. E. M. Minett read a paper on " The Relations of Business and Preventive Medicine" for which a hearty vote of thanks was accorded.

Donation to Library.—8 vols. Books from Mr. J. J. Nunan.

To Museum.—The heads of a two-headed lamb from Mr. Howell Rickford.

POPULAR LECTURES ETC., IN 1911.

January 30th.—Lecture by Sir T. Crossley Rayner on his recent visit to the Kaieteur Falls, with lantern illustrations. The Hon. C. T. Cox, Government Secretary, presided. Prior to the lecture a brief musical programme was contributed by Mrs. Cassels, Mrs. Stephenson and Miss Simpson. Thanks were warmly accorded to the lecturer, the ladies who contributed the music and to Mr. A. Leechman who manipulated the lantern slides. A conversazione followed; refreshments were served in the Reading Room and Museum, which were well lit up; the very large audience was not only interested in the lecture and slides but in viewing the Museum.

February 10.—Sir Crossley Rayner repeated his lecture to a good audience under the Presidency of His Excellency the Governor. Among those present was Captain Thesiger, of H.M.S. "Scylla," with some other officers and men. His Excellency proposed a vote of thanks which was warmly accorded.

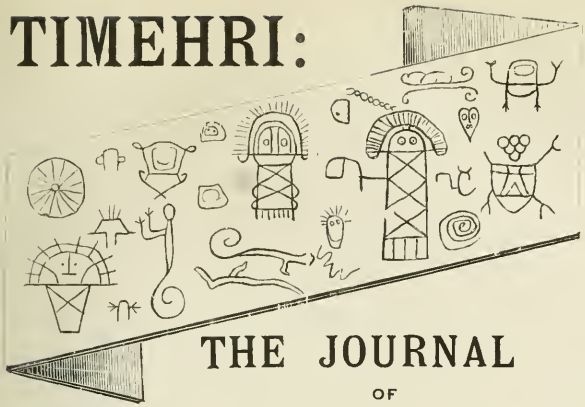
May 8th.—Lecture by Rev. Father Cooksey on Prehistoric Remains in the Aruka Hills, North West District. Mr. Justice Hewick presided and introduced the lecturer. Father Cooksey gave an account of the kitchen-middens and their contents, especially the ancient pottery, of which a large number of specimens was shown, some of which were of a different type from any before recorded. Bishop Galton moved a vote of thanks, which was warmly accorded.

September 5th.—Lecture by Professor Crampton, Ph.D. on "Georgetown to Roraima, *via* Kaieteur." His Excellency the acting Governor presided, and introduced the lecturer. There were lantern illustrations prepared by Mr. John Williams and worked by Mr. A. Leechman. The lecturer gave a vivid account of his recent journey and spoke of the interesting natural objects seen on the journey, as well as the fauna of the district. A vote of thanks was moved by Sir H. A. Bovell, seconded by Mr. Justice Hewick, which was warmly accorded.

September 6th.—Prof. Crampton repeated his lecture; Hon. Dr. J. E. Godfrey presided. Votes of thanks to the lecturer and to Mr. Leechman were accorded.

During the months of August to October the Curator of the Museum gave a series of nine lectures on "Animal Life" to the Boy Scouts. They were well-attended and the boys found them very interesting and instructive. Commencing with the vertebrates, he, in the different lectures, spoke of teeth, the orders of animals, with special attention to carnivora and rodents, birds, fishes and insects, and gave some account of their life histories.

TIMEHRI:



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G. FRANKS, M.A., *Literary Assistant Editor.*

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THE JOURNAL OF

THE ROYAL AGRICULTURAL AND COMMERCIAL SOCIETY OF BRITISH GUIANA.

VOL II. JULY, 1912. NO. 1.

FOREWORD.

THE COLONY VOLUME.

The intention to make the present a Colony Number in the special sense of dealing in a comprehensive way with every feature of the Colony's activities has been only partly realised, but the promises made for the second number justify the hopes of the Committee that the volume of the current year will be expressly distinguished as the Colony Volume. As we go to press the drought has broken. It had reigned for some months, wholly suspending balata operations, interfering materially with logging work by drying up the lesser creeks, menacing the short crop of the Sugar year and endangering the entire harvest of the smaller agriculturists. What the net economic loss will be cannot yet be foretold with accuracy, but while discounting the utterances of the alarmists it must be admitted that the total is likely to be heavy, and much sympathy will be felt towards His Excellency Sir Walter Egerton, who arrives on July 4th, in having to inaugurate a new and eagerly-anticipated regime, and to formulate a constructive policy at a period of some depression. Much sympathy has also been felt for the acting Governor, the Hon. C T. Cox, C.M.G., in having to deal with the grave problems of such a crisis during an interregnum. It is not the first time that the colony has had occasion to realise the value of its actual administrator's quiet, effective, and somewhat thankless work under circumstances of difficulty. Much more serious mishaps than a temporary water famine, however, have been encountered with cheerfulness by this and other British colonies. To scientific agriculturists the drought, owing to its effect in causing trituration of the soil and destroying pests, may even seem a blessing in disguise, and our people have already cut their loss and are ready as of old to turn

> "A keen untroubled face
> Home to the instant need of things."

In this number the place of honour is awarded to Professor Crampton's paper *The Latest Journey to Roraima*. It is a valuable narrative of an expedition undertaken on behalf of the American Museum of Natural History, of

which he is head of the department of Invertebrate Zoology, cutting a kind of biological traverse to that great plateau of some ten thousand feet elevation, which represents the oldest land in South America East of the Andes. The expedition has been fruitful in scientific results and has been memorable in the history of the Society for the keen interest which Professor Crampton and his colleague, Dr. Lutz, have ever since taken in its fortunes, and in that of *Timehri*. Dr. Lutz is also represented in this number by a paper on *String Figures* to which Dr. Roth has already devoted some attention.

Judge Hewick's article, *Our People*, which attracted much attention in our December issue, is replied to by Mr. J. S. McArthur, of the British Guiana Bar, whose acquaintance with the African creole is unequalled. The pages of *Timehri* know no distinction of race, colour, creed, class or political opinion. Subject to its primary intention of encouraging scientific enquiry, its object is to create and foster public opinion in the colony, while recognising that it may fall short of the further goal of one of the most influential of the world's journalists, of which it does not quite despair, viz., of making the public opinion racy of the soil. As the views expressed in the articles referred to, as well as in some of our other papers, raise controversial questions, it need hardly be emphasized that no responsibility is taken for what is expressed in signed articles and least of all for political opinions. As regards this particular subject there are few thoughtful men who consider that the obligations incurred by the community to the African race in this colony were discharged by its liberation. There are few who are quite satisfied with the attempts made to fulfil them since that eventful year. There is still a debt to pay. Fortunately racial as well as religious trouble has been less acute here than anywhere else in the world and the African creole, still forming the bulk of the population, has always shown himself responsive to the calls of the common life of citizenship. The new constructive policy is certain to contribute to his advancement in education, discipline, morality and material wealth as much as to that of any other class of our people. For the hinterland he will still be found the best as he has hitherto been found almost the only pioneer.

The Most Rev. Dr. Galton, Bishop of Petenissus, the head of the Roman Catholic body in the colony, has favoured us with his views on education. Mr. A. A. Thorne, late Member of the Combined Court, concludes his article on the same subject from the secularist standpoint. A Member of the Railway Joint Committee, in *Railways : Ten Years After*, reviews the Railway Question to date in a manner which is certain to arouse discussion, and perhaps may excite criticism by its directness. Without favouring any particular scheme the writer pleads for an abandonment of *a priori* opinions and asks for the adoption of such a policy of general railway advance as may be found to be within the means of the colony after full financial investigation. The colony, he asserts, is not stripped for action in its struggle for existence. The suggestion of reprinting the Society's railway debate of 1902 has been adopted. Our pages are open to further contributions on the subject from the same or from other standpoints.

Mr. Registrar Dalton takes up the cudgels on behalf of Roman-Dutch law, with which he has had an early acquaintance during his service as a Magistrate

in South Africa. His well-informed article is a useful addition to our study of the problem as a whole. The President replies to his critic, but only in a short article, explaining that he does not deem it advisable to anticipate further the work of the Commission appointed by the acting Governor, Hon. C. T. Cox, to deal with the question of the appropriateness of our present common law for existing requirements.

The Rev. Mr. Aiken, our Scientific Assistant Editor, contributes an interesting account of the neighbouring Dutch Colony of Surinam with which our commercial and other relations tend to increase. It was read as the first paper of the Society's year. His brother, Mr. J. W. D. Aiken, during a flying visit to the colony, has given us a short survey of the Gold Industry of Surinam. We can only regret that we cannot offer a similar review of the same industry in this colony from that trenchant pen.

Mr. J. D. Lawrence, Assistant Inspector of Schools, has written an account of the Falkland Islands, part of our far flung line of Empire (off the coast of the Argentine Republic), the only other South American possession of Great Britain. It has been read as a paper at a meeting of the Society. A colony of vastly greater importance, and with conditions approximating closely to our own in climate and other respects, is dealt with by Mr. Justice Hewick in his paper on the Straits Settlements, a country with which he was closely connected for many years. Sir Walter Egerton's early career as an Administrator is also identified with that colony. The discussion which followed the reading has been reproduced on the ground of the parallel or contrast attempted to be made between the respective achievements of the two colonies.

Mr. Benson's remarks on the Balata Industry are included, not as purporting to be a comprehensive survey of the whole position, which we hope to secure after the publication of the report of the Balata Committee has stated the problem in regard to the relations to employer and labourer, but as making several suggestions which appear worthy of investigation by those principally engaged. Mr. Benson challenges discussion by his very definite ascription of commercial value to other and plentiful forest gums, when mixed with the tenacious latex of the mimusops globosa.

In a contribution entitled *Materia Medica* Mr. E. A. V. Abraham, a well-known member of the legal profession, proposes to ride a tilt with the British Pharmacopœa. Like Mr. Benson and ex-President Roosevelt his hat is in the ring. We could not refuse him a suitable arena on neutral ground, but his fate be on his own head. Dr. Minett has been able, in spite of the many and growing calls upon the Bacteriological Department to which he belongs, to prepare for publication his paper on *Mosquito Prophylaxis.* The valuable work which Dr. Wise and his Assistant are performing is more and more assuming the dimensions of that of a Department of Public Health. A third instalment of the catalogue of the *Hymenoptera* of the Georgetown Museum, which Mr. P. Cameron has been kind enough to undertake for the Society, appears in the present number. The work will be completed in this volume. The subject is referred to in an introduction by Mr. J. Rodway, our Honorary Curator, at

whose request Mr. Cameron undertook the necessary work. While the general reader is hardly likely to be attracted any more than by any other article of exclusively technical or scientific character, the desirability of having our Hymenoptera named and described cannot be overlooked. Until this is done they cannot be discussed in the learned world. Such a catalogue, if accepted, supplies at once the vocabulary and the grammar of the discussion. We trust that Mr. Cameron will have the reward of the pioneer by the acceptance of his descriptions and the adoption of his nomenclature by the world of entomological science. Divergence of view he can hardly escape. Any articles or other contributions on the subject by other entomologists *Timehri* will be glad to welcome.

Mr. J. Van Sertima, of the *Argosy* staff, whose wide acquaintance with economic subjects is well known, has written a very timely article on the *Financial Position of the Colony*. Mr. R. O. H. Spence, of the Department of Lands and Mines, writes on *Maps and Surveys*, showing the progress that has been made to date towards obtaining a proper cartographical knowledge of the interior and making proposals for its continuance. Rev. Father Gough, S.J., who is in charge of a recently-established Roman Catholic Mission on the Rupununi savannahs, writes on the Macusis, the child-like, unwarlike and attractive people amongst whom his work lies. Rev. Father Cooksey, S.J., gives an account of the *Early Inhabitants of Barbados*. Dr. Roth, whose name is familiar to all students of anthropology, has sent us an interesting article on *Native Drinks*. Mr. E. de Montpellier, whose arrival in the colony on behalf of Messrs. Bonsall, of New York, has signalled a revolution in the methods of our timber industry, writes on the subject of its possibilities. Mr. Edgar Beckett deals with the subject of our minor industries. Articles have been promised for this number by the Hon. Dr. Godfrey (Surgeon General) on the Local Government of the colony, by Mr. Harold Moore on some division of our *fauna*, by Mr. Bascom (proprietor of Pln. Cove and John) on the Labour Question as affecting the sugar industry, by Mr. A. Fergason on Colony Philately, by Rev. Mr. Williams on the Rupununi Indians, by W. Douglas, Esq., of Pln. Diamond, on the Position of the Sugar Industry, and by others but are not to hand at the moment. To Messrs. Sprostons, Ltd., we are indebted for some of our illustrations of colony life and scenery.

We regret that owing to the pressure of their various duties which have recently much increased we have no contributions from any of the officers of the Department of Science and Agriculture, but several have been promised for the second number of the volume. The assistance of Messrs. Leechman and Williams of the staff has always been forthcoming for our lantern exhibitions and to them and to another busy Government Officer, Mr. Alsing, the Society's thanks in such matters are due. The presence upon the Editorial Committee of the Hon. Professor Harrison, C.M.G., of F. A. Stockdale, Esq., Assistant Director, and of the Government Entomologist, Mr. Bodkin, shows that the department is not out of touch with the Society in the revival of its once famous magazine. Naturally its first allegiance is to its own very interesting Journal. It will be noted however that anthro-

pology, entomology, medicine, law, finance, education, sociology, geography, commerce and industry have all a place in the pages of *Timehri*.

The Library.

The general work of the Society has continued to progress notwithstanding the temporary renewal of agricultural depression. Our membership is over five hundred, being greater than at any time since the Society was founded in 1844. It includes every planter, merchant and official of standing in the colony. It is, we believe, the only Royal Society in the West Indies and its membership is far ahead of any other Society of its class. An attempt is being made to provide shelf-room by discarding such of our thirty odd thousand volumes as have ceased to be of use or interest. Large purchases of modern editions, beginning more especially with the poets and leading novelists, are being made to replace those which have become out of date or on which time or the numberless book-plagues of the latitude have wrought their havoc. It is useless to attempt to cultivate a taste for poetry or any other branch of literature where the author has to be read in a musty or dishevelled volume. However much an early edition or a first issue (and our collection contains enough of such to delight the most exacting) may appeal to the bibliophile (and of these the colony has few indeed) the treasure leaves the *homme moyen sensuel* quite cold. The progress of renewing will be continued as rapidly as funds allow by the allocation of special votes to the Book Committee, which is doing useful work under the chairmanship of Rev. Mr. Macnie. Two suggestion books are now at the disposal of those who wish to recommend new purchases. The light literature is in the hands of a Sub-Committee of ladies. Complaints are promptly dealt with. In the nature of things the lighter literature will always attract especial attention. We can only appeal to the subscribers to take the matter into their own hands by indicating clearly what purchases they desire and by electing to the various Committees and Sub-Committees those whom they are convinced will best serve the general purpose. In the past a high standard has been maintained and we believe that the present local standard in such matters is high enough to ensure its continuance. The new catalogue has made considerable progress and will soon be in the hands of the printer. The walls of the Society's roomy premises now display the most recent maps of the various South American countries and all the latest authoritative works on South America, the United States, Canada and the West Indies, have been purchased from time to time. As the serious periodical literature dealing with those countries is also subscribed for, it may be asserted that the Society supplies a complete equipment to the administrator or citizen desirous either of studying the history or of keeping abreast of the progress of any aspect of the development and colonisation of this part of the globe.

The Museum.

It will be remembered that the salary of the Curator of the Society's Museum was at one time defrayed by the Government in addition to the annual grant, and that substantial special grants were voted from time to time for cases and

specimens. Valuable contributions in money and material were also made annually out of the Contingency Fund by successive Governors of a scientific or literary turn. These have been absent of recent years, but we know on the other hand that the Fund has none of its old elasticity and has been shorn of its fair proportions. From the new Governor we expect an appreciation of past achievements and a sympathy for present ambitions of usefulness which we have missed more deeply and which will prove of more service to our work than any assistance from the Fund. Our merchants and planters, public-spirited citizens of a colony of which they were proud, in the old days took a keen interest in the work of the Museum and endeavoured to make it worthy of the best traditions of any scientific or educational institution of the kind in any land. The achievements of im Thurn (now Sir Everard im Thurn). Appun, Quelch and Evans as Curators responded to the demands made by the civic pride of their time and the Georgetown Museum assumed very worthy proportions. In those days, moreover, the Society looked after the representation of the colony at the various great Exhibitions. The Curator and the other officials of the Society under the supervision of the Directors, and of the former Correspondence and Imperial Institute Committees, performed all the functions of a Permanent Exhibitions Committee and for a long period the Society never faltered in its task. The independent merchants and planters have gone, through economic causes which we must assume to have been inevitable, but the loss is ours. The post of Curator has also gone although the Society's Assistant Secretary, Mr. J. Rodway, as Honorary Curator, has made a heroic effort with resources which until recently were steadily diminishing, to perform the duties of what was once a dignified, well-equipped and not underpaid office. The salary of the Curator disappeared with the post. The Government grant to the Museum was reduced from $4,500 to $1,500 and finally fixed at $2,000. Other losses equally grave accompanied the reduction. The rents of the Post Office and Pilot Office were lost by a very summary process. The scalpel of economy went down to the vitals. What the cost has been to the colony in insect pests who can say ? The days of private contributions and of direct personal interest ceased, and an institution which was once the leading scientific focus between Washington and Rio de Janeiro, the only Museum in the British Possessions on the American Continent, and which still has no rival nearer than Para, struggled on in its crippled condition without a voice being raised to denounce the shamefulness of this *gran rifiuto* of the colony. One of the first duties of the Society and of our citizens as a whole should be the resumption of the enterprise of making the Museum the headquarters for many branches of scientific study and of applied science between the United States and Brazil. For anthropological investigation we have unrivalled opportunities. All the *fauna* and *flora* of South America are at our doors. Our entomological collection is vast and of the highest value. The study of the timbers of the Continent could be pursued under the most favourable conditions. But we need not catalogue the possibilities which everybody connected with the scientific world will at once appreciate in full and which must be apparent even to the wayfaring man.

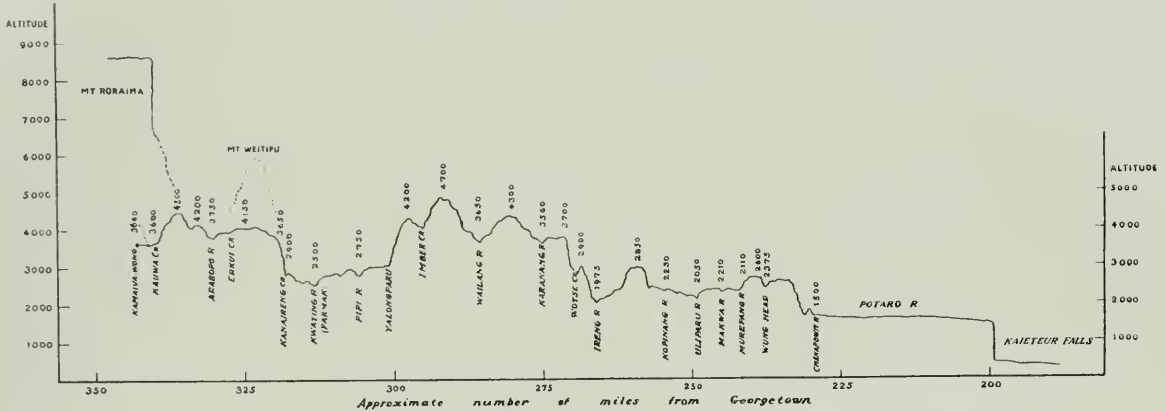
The method to be adopted in order to secure the most beneficial realisation of this policy is a matter on which opinions may differ and as to which suggestions and discussion are invited by *Timehri* and by the Society. A Sub-Committee is now investigating the deficiencies of the Museum with a view to ascertaining the approximate cost of bringing it thoroughly up to date in all departments in accordance with modern ideas of museum display and management. We recognize that wealthier communities have made our present methods somewhat antiquated by comparison. Something has already been done to make the educational side more prominent. Last session Mr. Rodway delivered a number of lectures to the Boy Scouts. A large case to illustrate the rubber and balata industries is in course of erection, which may be useful to the capitalist and to the labourer if properly carried out. The specimens of the hoazin or Canje pheasant, recently brought in by an expedition of the Society, are about to be prepared for exhibition in admiring imitation (alas, *longo intervallo*) of the method which the magnificent American Museum of Natural History has adopted in dealing with the birds within thirty miles of New York. (The birds are shown in their habitat, with nest, young and eggs and with the whole environment artistically reproduced, a clear, complete and interesting description accompanying each specimen.) Complete sets of hoazin are also being prepared for the leading Museums elsewhere by way of reciprocity and to encourage an interest in the study of the colony. A series of juvenile lectures on the Geography and History of the colony will be delivered this session by the Honorary Curator, the utility of which it is to be hoped the Department of Education will sufficiently recognise, so that the Society may obtain its co-operation. An educational sub-committee has been already formed, but so far it has hardly risen to the height of the great argument and has suffered from lack of initiative. Mr. Inspector Sconce, his assistants and teachers have here a great opportunity which is available elsewhere only in the great self-governing colonies. We trust that under the more favourable conditions we hope to create they will appreciate it to the full. His published utterances make it perfectly clear that His Excellency realizes the importance to a community of the study of its own geography.

Last year the request for an additional $500 was postponed by the Government on the ground that the time was inopportune for placing the proposal before the Combined Court. The time for asking for an increase of any vote in British Guiana has been inopportune for many years, but we hope for better things and for the recognition by the Government that educational and scientific expenditure of this kind is essentially reproductive. We claim that with the other research work the study of the insect pests revealed by the cases on this subject prepared by Messrs. Rodway and Moore justify in the fullest manner the inadequate grant now devoted to the general upkeep of the Museum. But the Society is quite conscious of falling short of its own ideals and is anxious to secure the co-operation of all who have at heart the interests of science and education. Its attitude can best be described in the words of Brutus :—

" For mine own part
I shall be glad to learn of noble men."

We have carried on as best we could, relieving the Honorary Curator as far as possible of the Society's general secretarial work to enable him to devote more attention to the Museum. It is clear that further Government assistance must entail further Government supervision and control and the Society will welcome the most active participation of the Department of Science and Agriculture under whatever form such assistance can be most effectually secured or which may be dictated by the interests of science and education, by the general objects of the Society and by the necessities of the public purse. Meanwhile a special appeal to the public spirit of those interested in the colony, both resident citizens and absentee proprietors or directors of companies with headquarters abroad, will probably be necessary. The duty of taking an interest in this great and unique achievement of their predecessors is one which they should not lightly neglect. The privilege of identifying themselves with those who created it by supporting the Museum now in its days of revival and on the eve of a general forward movement (such as we all confidently anticipate) in this great but too long stationary colony, is one which touches their honour and prestige.

THE EDITOR-IN-CHIEF,
(FOR THE EDITORIAL COMMITTEE.)



General profile of the country traversed between Kaieteur and Roraima.

THE LATEST JOURNEY TO RORAIMA.

HENRY EDWARD CRAMPTON, Ph. D.

Curator of Invertebrate Zoology, American Museum of Natural History; *Professor* of Zoology, Columbia University; *Associate* of the Carnegie Institution of Washington.

During July and August of the past summer the writer had the rare good fortune to make a successful journey from Georgetown to Roraima,—the famous mountain that stands sentinel at the post where Guiana, Brazil and Venezuela are one. The journey was replete with incidents and experiences that possess chiefly a personal interest, but in addition certain observations were made that may have a general value to those acquainted with the interior of this part of South America, as well as to those who may travel toward Roraima at some future date. The present brief narrative aims to give a general description of the line of travel, the purposes, and the results of the expedition.

The main object, in a word, was to run a biological traverse from the coast at Georgetown to the high levels centreing about Mount Roraima. To the biologist, the fauna and flora of this portion of South America are particularly interesting in connection with the larger problems of geographical distribution and evolution, for reasons which may be stated briefly as follow. During the glacial period great ice sheets came well down into the United States and destroyed many or most of the species living in that vast area. Later the climatic conditions changed so as to become those of the present temperate situation; as such changes gradually came about North America was re-populated by organisms which set out from South America, and mainly from two centres of dispersal. The first of these was the northern Andean region, from which most of the emigrants reached the United States by way of the Isthmus of Panama, Central America and Mexico. The other centre was the high interior region of which Roraima is the present focus, and from this area the organisms migrated mainly by way of the West Indies and Florida. With these fundamental facts at hand, the Department of Invertebrate Zoology of the American Museum reached a point in the development of its scientific work where it seemed desirable to undertake an extensive series of explorations in the Antilles and northern South America, in correlation with field-studies in characteristic localities of North America, in order to trace out as clearly as possible the lines of migration and distribution in past geological times, and to gain fuller knowledge of the evolutionary history of lower organic forms. In pursuance of these purposes, an attack upon the Roraima centre of dispersal was determined upon for an initial survey.

With Mr. Roy, W. Miner and Dr. Frank E. Lutz, Assistant Curators of the Department, the writer left New York late in the month of May. Three weeks were devoted to biological studies in the island of Dominica, a place that attains the ideal for such investigations. Here Mr. Miner remained, an

returned later to New York, while the other members of the expedition continued on to Demerara. By July 1st the steamer had found the muddy waters of the Guiana rivers, the low coast with its many chimneys, rising like lighthouses, was sighted, and the welcome landing at Georgetown was made.

With the aid of new-found friends in the colony, final preparations were hastened for the journey into the interior. On July 8, khaki and leggings were donned and we took the steamer up the Demerara River. The scenery along theriver, monotonous though it is, and the incidents of communication between steamer and shore prevented the time from passing tediously, and ere long Wismar was reached, our equipment was transferred to the waiting train, and we started for Rockstone Landing. Stopping for a moment at a wayside station, a hurried dash to the ground yielded a few specimens of bugs or beetles, much to the amusement of bystanders and trainmen ; and so to the Essequebo. Owing to the heavy rains of the preceding weeks the river was well up under the hostelry, so that the servitors angled from the very windows with almost comic success. The howling of the monkeys, new to our ears, roused us early on the following morning, and as the day was Sunday we remained here and occupied the time profitably in collecting on the sandy lowlands and rises back from the river, where the drogher ants ply their ceaseless course from leafy bough to underground chamber. On the 10th of July Sprostons' capable service brought us to Tumatumari, and here, as well as further on up the rivers, we found ourselves the first occupants of the rest-houses built for the use of travellers to Kaieteur. Our equipment weighed upwards of 4,000 lbs. and demanded much time for its shipment, so that the time was devoted to collecting about Tumatumari until the morning of the 13th. The journey to Potaro Landing, and the walk across country to Kangaruma were accomplished without incident. At the latter place three Patamona Ackawoi Indians were secured through Sprostons' agency, and the journey resumed. We arrived at Tukeit on the evening of July 15th, one week from Georgetown. It was almost a physical relief to reach the foot-hills of the higher ground beyond, welcome indeed after the continuous lowlands up to this region. And doubly enjoyable was the first glimpse of Kaieteur, which we saw from a point far down the gorge, above waters so still that not only were the mountains reflected in all their beauty of form and colour, but even Kaieteur itself was mirrored in an inverted position. (Plate 1.)

The next task was to accomplish the transport of our goods to the Kaieteur Plateau. Two of our own Indians were sent for bearers to the settlement on the Chenapowu, about " Holmia," the home of the late Dr. Bovallius, thirty miles beyond the rim of the great falls. On July 19th Sprostons' men took up enough equipment to establish a camp and field-base on the Potaro River, about a mile above Kaieteur, and here the writer took up his work. The tales of Kaieteur have been too well told to need repetition by him, but a just tribute must nevertheless be paid to the magnificent and unequalled grandeur of the great falls. It was a never-ending delight to explore the plateau so as to gain newer views and impressions of the beauty of this natural marvel. We were fortunate indeed in the choice of a route to Roraima which passed this way.

Plate 1.—The Potaro River Gorge below Tukeit ; Kaieteur Falls mirrored in the still waters.

Plate 2.—The base camp above Kaieteur, and the first party of Patamona

The Indian messengers returned on the 21st with a party of eleven Chenapowu natives, and, better still, with a ballyhoo, which was very old, but none the less serviceable. Shy and reticent at first, the Indians (Plate 2) soon responded to advances, and by the 28th, when all the goods were brought up, cordial relations had been established. Dr. Lutz, who had remained below to study the Tukeit region in detail, came up with the last carriers to occupy the camp, and to make a close comparative study of the savannahs and forests of the Kaieteur Plateau, while the writer pushed on to Brazil in the hope of reaching Roraima. It is true the attempt seemed foolhardy in view of the short time available and the arduous nature of the journey beyond. But it was thought that at least the Brazilian savannahs could be gained and studied, while chance might favour the successful accomplishment of the whole journey. Accordingly on the 28th of July farewells were said, the ballahoo, corials and woodskins were loaded with provisions and human freight, and off we went.

But I was not destined to reach "Holmia" within the expected time, owing to the heavy rains of the preceding days and the consequently swift current of the Potaro. The evening camp had to be made a little short of the Wamamuri, but well beyond the Muremure (not Wuremure). Yet good fortune awaited me in the form of a hunting party of Bucks from the region of the Ireng River who had shot a tapir the day before, although the animal had fallen into the water and had been lost. Five natives of the party were immediately added to the expedition. A hard day's paddling brought us the next evening to the neighbourhood of the Kwitaru Creek mouth, and near this point the missing tapir was discovered floating in the water, to the joy of all concerned. I must confess that my own pleasure was somewhat vicarious, for the novel odours incidental to the night-long babricotting of water-soaked "maipuri" were not particularly comforting to the neophyte. But all bushmen know that the health and well-being of one's natives are indispensable to one's own. At length, late in the afternoon of July 30, we arrived at Chenapowu and established ourselves in the fast-decaying house built by Dr. Bovallius. The river travelling was over for the time, and now imagination ran ahead along the distant way through the forests and across the savannahs to Roraima,—a way that had to be traversed entirely on foot. One day's halt was necessary for the organisation of the provision loads and for the engagement of additional bearers; then, on August 1st, the line of twenty-six natives filed off into the forest and over the divide to the lower Wung (not Wong) River. The steep climb was so severe that camp had to be made at Tururaparu.

Of the succeeding days it is difficult to write with moderation. Incessant rains were collected upon the dense canopy of the tree-tops, to pour almost in rivulets upon the matted roots of the forest floor, over which the traveller stumbles in the reduced light until every muscle aches and further progress seems well-nigh impossible. When camp is pitched it must sometimes be made in a place where the ground is covered with several inches of mud, so that comfort seems far off and unattainable. The racking pains of rheumatism and neuralgia are superadded, and life is black indeed,—the quest seems hopeless. If one does not count such experiences among his own, let him read Sir

Everard im Thurn's graphic description of his progress through this self-same forest on his way to the first successful ascent of Roraima ; that vivid account of the forest darkness and of arduous endeavour well portrays the situation and the present writer heartily endorses all that has been written by so masterly a hand. Yet, somehow, one wins through ; the terraced slopes bordering the many tributaries of the Kopinang—the Wung at its source, Murepang, Makwa, Uliparu, and the head of the Kopinang itself—present many geological and biological features to arouse the flagging interest of the observer. Beyond the level of the general plateau a steep climb brings one to a savannah 2,800 feet in altitude, south of Kamana Mountain, where the strong sun dries the body and soothes the mind ; a little further, and the eye ranges over the dense forest filling the valley of the Chimepir to the clouded hollow of the Ireng River basin, and on to the higher walls of the Brazilian mountains beyond. Encouraged by scenes of great natural beauty, we at last reached Saveritik, now situated on the Ireng, at about noon of August 5th, with the first third of the long walk successfully accomplished.

Taking account of the remaining provisions and of the available time, it was evident that a crisis had been reached. Slow travelling and vexatious delays had so reduced supplies that they were insufficient for the journey to Roraima and back to Saveritik. Two courses were open. I could go on within the margin of safety, penetrate for some distance into Brazil, and study the life of the savannahs at their northern limit. Or I could still make the effort to reach Roraima, in the hope and expectation of obtaining food somewhere beyond. The lure of the famous mountain made the decision, and accordingly the number of bearers was reduced to seventeen, while four men were sent back to Kaieteur for additional supplies to be at hand on our return to that point. On August 6th we safely passed the river in some very doubtful corials ; and it was not without some emotion that I stepped out into the forests of a country that will always hold the minds of scientists on account of the work of many whose names will never die—Bates, Wallace, Agassiz, and Darwin himself. The trail rose sharply up the forest-clad slopes to a point 2,900 feet in altitude, then it dipped into a hollow where the Wotse Creek runs, and then it rose again still through the forest to the border of the great savannah itself, at an altitude of 3,700 feet. (Plate 3.)

To the north stood Mt. Elidik and, to the south, Achimatipu ; westward rolled the great grassy plains marked here and there by the deeper green of the forest areas along the water-courses. Here and there an outcrop of reddened soil or gray clay added a contrasting colour. (Plate 4.) We strolled on through this novel country and soon came to the Karanang River, which was so flooded that much time was occupied in fording it, far above the usual place ; and here camp was made for the night. Sandflies were present in immense numbers and added their unwelcome attentions to other annoyances ; then, too, the natives began to show the first symptoms of the distressing Brazil cold, from which latter many were almost incapacitated, while all succumbed in time, save the writer.

Another day brought us to the Wailang River, where again the floods imposed a halt so that a bridge could be constructed. A day's rest proved beneficial

Plate 3.—Entering the great Savannah beyond the Ireng River.

Plate 4.—On the Savannah near the Karanang River.

to all, and gave the hunters an opportunity to kill deer and two or three bush fowl, welcome additions to the usual fare. On the morning of August 9th we took up the journey and climbed up to the magnificent headland above Yakontipu, and, looking out over the beautiful valley of the Kwating, whose plain spread 1,500 feet below, at last we could see flat-topped and cloud-veiled Roraima, which stood beyond and to the north of terraced Weitipu. Another night in the forest on the Imber Creek, and then by a supreme effort the next day we arrived at the site of Parmak, only two miles east of the Kwating. But Parmak had vanished! All that remained was one mud-walled banaboo and our visions of a dry and comfortable house in which to swing the hammocks, cherished throughout the tedious and wet march of the long day, were rudely dispelled. By torch and lamp light the camp was made in the dripping forest, every one utterly worn out and discouraged.

But the morrow always brings new life and counsel, and the next day we were cheered by the assertion of a volunteer guide that a way led to Roraima by a trail two days shorter than the one followed by earlier travellers. With renewed hopes, therefore, we started from Parmak about noon of August 11th, walked the short distance to the Kwating River, and crossed in corials. The new path led southward to the shallow but broad valley of the Karnaireng, an affluent of the Kwating from the west, and early in the afternoon camp was made in a deserted and dilapidated banaboo on the savannahs. On the succeeding day we followed the Kanaireng toward its head, climbed over 700 feet through the forest, and found ourselves to the south-east of Weitipu on a beautiful savannah that averaged 4,000 feet in altitude. A solitary banaboo (Plate 5), occupied by an Arecuna and his flourishing family, stands directly south of Weitipu, on the very crest of the ridge which divides the head waters of the Amazon and Orinoco. Guided by this man, we proceeded onward and camped in a small patch of trees on Erkui Creek, due west of Weitipu's centre.

By evening of the next day, August 13th, we had reached Roraima! Making an early start from Erkui we passed on to a ford of the Arabopo and climbed steadily up the savannah terraces beyond to an altitude of 4,200 feet. A dip into the forest along the Paiapalu was followed by another climb to a table-land 4,500 feet high, directly south of Roraima. From its edge, we had a glorious view of the great cliff-walled mountain (fig. 6), so like a vast battlement, that has lured many into the interior, and whose latest victim had breathed his last at its foot only two or three weeks before my arrival. For a time we sat and gazed upon it almost spell-bound, for the scene was one of rare beauty. Hundreds of feet below our escarpment, the savannahs rolled upwards to the forest belt that girdles the mountain just below the high cliffs; Kukenaam to the west is scarcely less impressive than its more famous sister; to the east the lesser mountains of the Pakaraima series range in a jagged line on to Yakontipu and beyond, forming a natural boundary between the watershed of the Amazon and the systems of British Guiana.

Yet no new description of Roraima is needed; others have pictured it in graphic words with directness and power, and the circumstances of the present brief writing do not sanction my own panegyrics. With the fruits of success

almost in hand we climbed down from our vantage ground to the slopes of our mountain-goal. An ant-bear was descried in the plain below, and, fortune favouring, a photograph was secured from a distance of 25 feet, when finally the animal took alarm and bolted, but was run down and killed. Trending westward, the path led past the southern slopes toward the village of Kamaiva-wong, which stands opposite the gap between Kukenaam and Roraima. But heavy rains caused us to stop and camp on the shores of the Kauwa Creek, although subsequently some of my Bucks pressed on to Kamaiva-wong to pass the night.

Naturally it was gratifying to be at last at Roraima ; yet the feeling of satisfaction was not unmixed with apprehension, for food-supplies were far too short for safety, many were ill with influenza, everyone was weary, and the return journey had to be accomplished without a single hitch if we were to return safely to Georgetown. With great reluctance, therefore, the decision was made to return after only one day's stay at the long-wished-for camp.

The next morning, with four or five of my Ackawois, I walked the intervening mile or so to Kamaiva-wong, and was received almost with stony silence by Jeremiah and his tribe. (Plate 7.) Many incidents of this visit puzzled me at the time, but it was not until later that I learned their cause. Elder O. E. Davis had been* attacked near this village, and had died in the very banaboo before which I stood, and in whose door-way I changed the roll of my camera. Jeremiah stolidly stood by while I bartered for bows and arrows, baskets and blow-guns, and the cassava which was so much more necessary and desired. (Plate 8.) No word of the tragedy was told me as my interpreter was prohibited by Jeremiah, with threats, from doing so. Hence it was in entire ignorance of the precarious nature of the situation that the visit was made and photographs of the people were secured. (Plate 9.) In the afternoon studies were made on the upper slopes toward the cliffs, the evening meal was eaten, and we turned in, not without apprehension regarding the return journey which was to begin on the morrow. The ascent could not be attempted for the reasons stated above ; while furthermore the top is so well known from the studies of Quelch and McConnell that it would have been unjustifiable to take the time of the survey to satisfy a purely personal ambition.

Of the return journey, little need be said. Two days walking brought us back to Parmak. Four days more, on one of which no walking was done, found us again at Saveretik, where a day of rest was imperative as the Indians had begun to collapse owing to the rapid travelling. The distance to Chenapowu took less than three days, and the severe marching was over ;—more than a hundred miles had been accomplished in eight days of travelling, and in ten calendar days. The trip down the Potaro to Kaieteur took only one day and I arrived there on August 25th, just four weeks from the day I had set out for

* Note :—Since this paper was written it has been ascertained that there was no "attack," or foul play of any kind whatsoever. Mr. Davis died a natural death The author has heard of this, and has sanctioned a note by the Editor based on the information to hand since the Author left the colony.—Ed.

Plate 5.—An Arecuna banaboo on the high savannah south of Weitipu.

Plate 6.—Mount Roraima, from a plateau directly south.

Plate 7.—Chief Jeremiah and his house at Kamaiva-wong where Elder Davis died.

Plate 8.—The writer bartering for supplies at Kamaiva-wong.

Plate 9.—Arecuna women at Kamaiva-wong.

Roraima. Here some time was occupied in paying off most of the Indians, in communicating with Sprostons' people at Tukeit, and in preparations for abandoning the camp, which Dr. Lutz had left, at my direction, about the middle of August. Finally I arrived at Georgetown on September 2nd, after only eight weeks absence.

It was an interesting though arduous journey. Looking back upon it fuller results might have been secured had the time been longer ; but on the whole it has been successful. The Indians were splendidly efficient carriers, while to Charles Raggoo, my capable Hindu, a large share of credit is due, for his long experience in the bush provided a fund of knowledge upon which I largely drew in conducting the affairs of the expedition.

It is difficult to present the biological results of the expedition in a brief form, for the material must be studied in great detail, yet some significant facts appear with clearness. The survey passed from the forests of the coast to those of Roraima itself ; and everywhere, no matter what the altitude might be, certain species recurred again and again ; other species seemed to be characteristic of savannahs of all levels ; still other organisms were restricted to levels of a given altitude ; and finally each river-system had its peculiar types. Combining this analysis with similar studies elsewhere, in time we will gain the sought-for knowledge of distribution and evolution.

In conclusion, it is a great pleasure to place on record my sense of gratitude to the numerous friends whose assistance and advice were so freely offered. To Robert W. Crane, acting American Consul, the largest debt is acknowledged for his painstaking study in advance of our arrival of the conditions to be met. Mr. C. Wilgress Anderson, I.S.O., F.G.S., F.R.G.S., is also a heavy creditor for his expert help, while many more deserve our hearty thanks. To Mr. J. J. Nunan special words are due for his appreciation and encouragement of our work, and for the high privilege accorded me of presenting an account of the journey to the Royal Agricultural and Commercial Society. To one and all the foregoing account is tendered as a slight token of a lasting appreciation of their interest in what, to us, will always be a memorable experience.

OUR PEOPLE.

By J. Sydney McArthur, Barrister-at-Law.

A Rejoinder to the paper of Mr. J. E. Hewick, Late Senior Puisne Judge.

Mr. Hewick will long be remembered by all colonials with whom he came into contact for his sympathetic attitude towards the various races residing in the colony, and for his exceptional knowledge of their inherent characteristics and even of their idiosyncracies. His sojourn in the East, no doubt, greatly contributed to this predilection, and, being a keen observer gifted with a very versatile mind, his opinions must necessarily carry great weight and should be of considerable value. The reader, therefore, took up his paper on "Our People" with great expectations, but the perusal of it was disappointing in the extreme. The subject is not only cursorily treated but there is an air of levity that ill consorts with his serious mind; and the historical portions of the article lack that fulness which is required by the reader desirous of examining his conclusions. No attempt is made to account for any of the social and economic conditions which appeared so him to exist; nor is Mr. Hewick any happier in his suggestions for remedying a state of things which he, in his well-meant desire for improvement, would like to see ameliorated or even revolutionised.

With respect to the black race, Mr. Hewick has much to say, a great deal of which is based upon an assumption which, unfortunately, is fictitious. In the initial paragraph, it is asserted that "statistics show the reverse of progress either in the way of natural increase or in the upward march in condition." It will be interesting to know to what statistics reference is here made. To discover natural increases of population in any country, the statistics usually available are the census returns. These do not show "the reverse of progress"; on the contrary, the recent census discloses an increase of about 3,400 within the past two decades. Small though this increase may be, it negatives the statement fathered by Mr. Hewick, and so frequently repeated by many residents impatient of consulting authority. But, even in this connection Mr. Hewick overlooks an important factor. He must be aware of the process of miscegenation that is steadily going on in the colony. No person who passes along the streets of city, town or village, can fail to observe the varied hues apparent in the countenances of the heterogeneous population. All the intermediate shades of colour are familiar here, from ebony to white marble. And Mr. Hewick ought to be further aware of the great tendency evinced by these products of miscegenation, and even by some pure-blooded blacks themselves, to "get out of Africa" as the phrase goes, and to enter themselves on the census returns as white or "coloured people." Thus the unwary concludes that the blacks are "turning their faces to the wall." Nothing of the kind. They are only turning their attention towards an artificial change of pigment, and are perceptibly variegating the countenances of the present generation.

It would appear, moreover, from Mr. Hewick's article that he does not take into account these so-called "coloured people." No mention whatever is made of them. But if he wishes to include them in his references to the black race, then his statement is an egregious error. For by the same census returns the coloured people show an increase of 1,222. The Census Commissioner reports as follows:—"Taken by races, the only race divisions to show an increase during the period 1891-1911 are the East Indians or coolies, who show an increase of 21,054, or very nearly 20 per cent. in numbers; the blacks, who (taken separately from the Africans—who now number but 1,114) have increased by 2,217 or 1.96 per cent.; and the mixed or coloured race, who show an increase of 1,222 or over 4 per cent." And when it is remembered that the census was taken when hundreds of these blacks were away in Dutch Guiana at work in the balata fields, and great numbers were in the hinterland of this colony beyond the reach of the most industrious sub-commissioner of census, additional force is lent to my contradiction.

With reference to the "reverse of progress" alleged to be shown by statistics "in the upward march in condition," Mr. Hewick must have had exclusive sources whence he obtained these statistics. I suppose allusion is here made to the possession of material wealth, for which no statistics exist. But it is usual to conclude from the annual reports of the Savings Banks under Government control that the figures there given indicate the wealth of the various nationalities resident in the colony. There are no other statistics of which I am aware to which reference can be made. But the conclusion thus usually drawn is glaringly fallacious. Savings Bank deposits show, at the very most, the thriftiness of the common people. It is illogical to regard them as a sign of wealth. In point of fact a man's bank account is an uncertain indicator of his means; it is much rather indicative of his uninvested surplus cash. Upon reflection that the black people own considerable property in Georgetown and New Amsterdam, estates in the Canals and the Canals Polder, where much cultivation is carried on, that the numerous villages abounding in the colony belong almost exclusively to the black people, that under the direction of the Local Government Board these people are paying to bring their holdings to a state of perfect sanitation on up-to-date lines, that the majority of the houses are well-kept and sufficiently well-appointed to suit the needs of the occupants—conditions which are an undoubted improvement upon those which Mr. Hewick's so unequivocally lauds—their families are better clothed, fed and educated than the East Indians are,—it is clear that Mr. Hewick got his information at second-hand. To conclude from mere comparisons of the respective savings banks' accounts of negroes and East Indians, that the former are retrograding whilst the latter are progressing is, to say the least, a most unwarrantable mental proceeding. If the assets and liabilities of each individual were balanced, and the results then compared, the conclusion would not be the same.

But I am quite alive to the fact that there is a great deal of avoidable waste amongst the negro population; happily the hardships endured since the failure of the gold industry have taught the people a salutary lesson. Their lack of penuriousness is due to their environment, and to the evil example of those

from whom better is reasonably expected. The tendency in the tropics amongst all races—except the wily East Indian whose objective is to return with all his earnings to India,—is towards extravagant living. It is no libel to say that most people here live beyond their means, as the unpaid accounts in all the business-houses show. Every merchant in the colony will admit that he is only able to continue his business by reason of the cash paid to him across the counter—and this is principally done by the negro population to whom credit is usually not given. This, however, is a slight digression. With the evil examples of their so-called betters, and the constant inculcation by their teachers since Emancipation of the doctrine that "Godliness with contentment is great gain"—omitting to teach them also that great gain is quite consistent with if not almost necessary to true godliness or that they should "make friends with the mammon of unrighteousness" it is remarkable that these "children of former slaves" have attained to so much since their liberation. Personally, I have no doubt that Mr. Hewick's strictures are intended to stimulate them to even higher attainments; but the object might certainly have been accomplished without so much negation and with less ambiguity.

The larger question of what calling should be pursued by the generality of negro people has been barely touched upon by Mr. Hewick. Sufficient indication has nevertheless been given by him that his opinion is they should be encouraged by education and every influence "to work on the land." I am in thorough agreement with him, if "working on the land" is not restricted to purely agricultural pursuits. In my judgment, the balata-bleeder and the gold-digger are workers on the land equally with the rice or cane-farmer. And herein lies the point of difference, if not of opposition, between Mr. Hewick's conclusion and my own regarding the alleged failure of the colony's primary education as it affects the negro. It is so often repeated that the negro is an unreliable labourer and is not willing "to work on the land," that most unthinking colonists regard it as a truism. Mr. Hewick only partially states the true historical facts. At first the East Indians were introduced to do the ordinary labour whilst the work of cane-cutting and trench-digging with "carpenters, masons and blacksmiths work, remained for the blacks. . . . . "But the Asiatic after a time began to encroach on the province of the negro, "and from his thrifty habits (penurious they might be called) and the small-"ness of his wants, it was not long before holdings were transferred and the "negro was displaced. As sugar growing and manufacture became of neces-"sity, owing to low prices, more scientific, the less eager the black man was "to work on the estates. The discovery of gold and the rush for balata opened "a wide field more suited to his tastes." The reader should not be left to infer that the low prices of sugar, coupled with this same penuriousness and "smallness of his wants," made the free and indentured coolie a cheaper and therefore more desirable labourer for the sugar planter. The labour market was so flooded with these cheap labourers that the black labourer was hardly needed on the plantations except on extraordinary occasions. A further hardship was, and is, that the blacks—nearly two-thirds of the population—are taxed to maintain the importation of this competing labour from India. It was no question of taste or of less eagerness to work at all.

The greater domestic needs of the negro trained in Western ways of living demanded better wages than one shilling a day. And this the sugar estates would not pay.

The blacks, consequently, were compelled to find other and more remunerative labour, and by reason of their being free from estate labour, expansion has been given to colonial industry and colonial revenue. It is beyond controversy that without the black man the gold and balata industries could not exist in the colony, and that he is therefore doing great service to the State: for without these industries the colony's condition would have been considerably more parlous than it is. Nor can it be denied that the black men in connection with these industries are "working in that state of life to which God has called them"—I would rather not have copied Mr. Hewick's phraseology, but say they are working in that state of life to which they have been driven by the economic conditions of the colony. And it must be admitted that they work well and are evidencing "an upward march in condition" especially in the county of Berbice. Nearly every balata-bleeder I have known has passed his sixth standard and had not "kicked" as Mr. Hewick imagines. But the whole error lies in restricting "working on the land" to planting trees thereon. People talk about this being a purely agricultural colony, but it would be most disastrous if all the available labour were engaged in growing canes and rice and even economic products. So far from laying blame to the black man for leaving cane culture, he ought to receive every encouragement in the more permanent and lucrative industries, in which he has employed his energies. It is trifling with the facts to state that the system of primary education has unfitted him for the services which only the black man can and does render to the colony, in the development of its great hinterland resources—its balata, timber, gold and other industries.

It was quite consistent with Mr. Hewick's idea of a circumscribed field of operations for the black man that he should suggest the establishment of a Tuskegee institution in British Guiana, albeit on a limited scale. He advocates the establishment of farms under a central head, subject to certain rules, and with a curriculum including dramatic entertainments, lectures and concerts. For the institution at Tuskegee and its illustrious founder I have great personal admiration. But I have very grave doubts as to the practical utility of or necessity for such an institution in the condition of things prevailing here. And the future does not hold out any promise that the prospective graduates of the British Guiana Tuskegee will find scope for the practice of their several professions. It has become quite the fashion to borrow systems from other countries, and introduce them here without even amendment suitable to our conditions. And Mr. Hewick has followed the fashion without stopping to consider the possible effects. Some people think that whatever is a success amongst a certain race of people in one quarter of the globe must necessarily be a success in another, amongst people of the same race. This is manifestly superficial. No regard is had, for example, in the case of Tuskegee, to the great demand for farmers and artisans which exists in the United States; the lucrative nature of such callings there is not taken into account,

nor are the environments and the whole circumstances of life in America—its wealth, its great potentialities and its teeming population—even given a thought. British Guiana with barely 300,000 inhabitants, more or less parsimonious, one-third of which cultivates sugar and are penurious withal, according to Mr. Hewick,—what will the remainder do with a Tuskegee? Every man here is working his hardest to keep the wolf from the door, only a few succeed in keeping the wolf slightly farther off than the rest. Where is the opening for, let us say, 500 Tuskegee graduates? And let it not be forgotten that Tuskegee educates its graduates beyond the sixth standard, at which stage, says Mr. Hewick, the black youths "kick against working in that state of life to which God has called them!"

In my opinion there is great failure on Mr. Hewick's part to appreciate or grasp the true social and economic conditions of the colony as it affects the black people. They are working out their own salvation in a way undiscerned by him. It is unfortunate that the black man is not by nature a trader or a shopkeeper, for nearly all the people whose possession of a little money ensures them local conspicuousness, made it by virtue of their commercial instincts. The black man is always the buyer and the European (including, of course, the Portuguese), the Chinese and East Indians are always the sellers. The black man, it is true, sells his labour, but, owing to the cheap labour introduced from India, this commodity is also exceedingly cheap. It is only by working in the colony's forests that the black man can earn a living wage, and there, in hundreds, they spend the greater part of every year where there is no imported coolie labourer. The process is slowly but surely resulting in greater competency and moderate but increased means amongst them. No Tuskegee can alter the prospect or accelerate the momentum. When the hinterland is opened up and facilities of transport effected, the full value of the services of the black people to the country will begin to be realised. It is to this hinterland that the eyes of all are presently turning, and in which the larger hope of the colony's future is bound up. Not in the agricultural development of the strip of coast-land, not in Tuskegees, but it is in broadening the basis of operations, and the introduction of easy means of bringing out the forest products to the shipping ports, that the greatest success of those who depend solely upon their thews and sinews, must ultimately be achieved.

But the proposed Tuskegee should be established in the hinterland, it is suggested. Those who know the difficulties of travelling in the interior, and the expense of it all, must "smile broadly at the idea enunciated"—to quote Mr. Hewick. Why, the products of the proposed farm would be either unsaleable or unprofitable, if sold, what time they reached the markets.

A passing reference must be made, in concluding this part of my subject, to Mr. Hewick's thinly-veiled imputation against the character and antecedents of the coloured professional men of the colony. Most books, wrote Grant Allen, are written for sale—and fiction writers especially are allowed great latitude of imagination in consequence; this is not applicable to a serious writer in "Timehri." Professional men of colour here have no cause to be ashamed of their origin or antecedents, humble in point of wealth though the

former may have been. The fault of this lies with Mr. Hewick's racial antecedents who wrongfully enslaved them. Neither is any of them "stuck up" or can with truth be "*reminded* of the time when he was a 'shut-tail like awé." It would be a serious reflection upon English education if it made a negro professional man so utterly foolish as to consider himself as china and his black brother as earthenware. The imputation that the black professional man "for auld lang syne," does unprincipled things "against the etiquette of the honourable profession to which he belongs" is gratuitous, but I challenge Mr. Hewick to give a single instance of this outside of his imagination.

Dealing with East Indians who are "next in point of numbers," Mr. Hewick writes much that is interesting. They are the least understood of the colony's population. And it is astounding to observe that very few, if anybody, take the slightest trouble to prosecute this interesting study of "those characteristics which make the East the East, and which will never be eradicated." Here people forget that "there was light in Asia before there was gas in Exeter Hall." For these people it is suggested that village communities should be established in the interior, although it is admitted that they are doing remarkably well on the colony's littoral. According to Mr. Hewick, the East Indian "has steadily gained in physique, and has become more creole than the black people themselves"; "he is contented with his lot in the village communities where he finds all he wants"; and he is "advancing in prosperity." What more could human nature desire than strength and wealth, with contentment—to say nothing of the attendant ministrations of the priests. And the suggestion is, they should be taken to the hinterland, where, Mr. Hewick states, the stronger physique of the black man breaks down during a temporary sojourn; when "hundreds flocked to the bush, many alas! to leave their bones there or to contract diseases which sapped their strength." The suggestion is, to say the least, unkind, and East Indians would be foolish to adopt it under present conditions. The virgin forests of British Guiana are congenial to those capable of great physical endurance, and are wholly uncongenial to the fragile constitutions of the imported or native born East Indian. But Mr. Hewick has evidently forgotten that East Indian settlements under the ægis of the Government have been tried and have failed, chiefly because of the very system concerning which he says: "They are imbued with the traditions of the past, and caste remains as a severely drawn line." These Government settlements are an object lesson, and sufficiently answer Mr. Hewick's suggestion. The most ideal places were selected for them, within easy reach of the city by rail in one instance and by steamer in another. And yet they failed!

The fact is the East Indian prefers to select his own domicile, and in this he is not peculiarly different from the rest of us.

Error has crept in also in Mr. Hewick's venturing to account for the East Indian choosing to reside in the colony rather than to return to India. "For many years," he writes, "the return ships to India claimed a good many, but since the abolition of back passages the number of those leaving these shores has been greatly reduced." I have no comparative figures at hand to gainsay the statement regarding the reduction in numbers of late years—though I

very much doubt from personal recollection whether this is actually the case —but whilst section 202, sub-sections 1 and 2 of Ordinance 18 of 1891 still remains unrepealed, I have authority for questioning the correctness of the given reason for the alleged reduction. These sub-sections are as follow :—

> "(1.) Every Indian introduced during the season commencing in 1898 "or any subsequent season, who completes a continuous residence "of ten years in the colony and during that time obtains or becomes "entitled to a certificate of exemption from labour shall, unless "he surrenders as hereinafter provided his right thereto, be entitled "to be provided with a return passage to the port in India whence "he sailed to this colony, on payment by him if not destitute or "disabled, of the sum hereinafter specified, but if destitute or dis- "abled, then without any payment by him.
>
> "(2.) The sum referred to in the preceding sub-section shall be in "the case of any male immigrant one-half and in the case of any "female immigrant one-third of the passage."

Previous to the year 1900, when the above sub-sections were enacted, the proportion payable was one-fourth and one-sixth respectively. The only change made in 1900 was the introduction in the Ordinance of power to surrender his or her right to a return passage by accepting instead a grant or transport of land or a money payment in lieu thereof. This was to facilitate the Government's settlement scheme already referred to. And few they are who have exercised this power. Nor must I omit to mention that the children or dependents and the wives of such imported immigrants as aforesaid, are still entitled to free passages to India with their parents, guardians or husbands, except under certain exceptional circumstances which need not be detailed in this place.

The East Indian, like most other people, remains in the colony because he makes a better living here than anywhere else. And with the facilities given him for rice cultivation by the sugar estates people—facilities not given to any other race—he rapidly acquires a competence. With his own labour and those of his family his expenditure for rice cultivation is almost *nil*, excepting the payment of about $1 or $5 an acre per annum as rent. During the period when his rice is growing he obtains work on the sugar estates at the average rate of one shilling or so per day. The entire scheme enures for the benefit of both sugar planter and labourer, and therefore it continues. The planter advises him with respect to his planting and reaping of rice in such a manner as does not clash with the labour requirements of the sugar estates. These great facilities the East Indians do not fail to take advantage of, and the scheme succeeds.

For the rest, his social and domestic arrangements are not at all different from those to which he is accustomed in India. He is left alone to pursue his religious or no-religious functions at his own sweet will. He is not embarrassed by a self-condemnatory conscience, neither is he plagued like other men with persistent applications of the doctrine of contentment and submis-

sion to which I have already made reference. Whatsoever there is of religion in him—and no doubt there is much of a kind—it operates upon his mind in exactly the same way as religion did on the old Puritans of North America: "Whilst they neglected not religion they gave full play to their commercial instincts." This is a characteristic, comparatively speaking, that is sadly lacking in the descendants of the African slaves. There is too great reliance upon Providence—thanks to their advisers after Freedom—and too little upon their own business instincts and initiative.

But I must not digress. Reference has been made to the East Indian marriages and to the want of information amongst them regarding their being able to contract lawful marriages according to their own personal law and religion. And it has been suggested that this knowledge could be easily disseminated "by appointing duly registered Pundits or Moulvies selected for their character "and popularity, who would be required to keep in touch with the authorities "and be responsible for the proper conduct of the duties entrusted to them." This has already been done by the Immigration authorities and several marriages—not the solitary marriage known to Mr. Hewick,—have been so performed by these duly registered Pundits: so there is nothing to complain of in this connection. The case is truly very different as regards intestacy. The East Indian is subject to the Roman-Dutch law; but I am not aware of any hardships having been suffered on this score. In view of the fact that it is proposed to abolish the Roman-Dutch Law altogether, and substitute English law in its stead, probably the known equitability of the latter may have the effect of reconciling Mr. Hewick to the idea that there should be one law for all subjects in the colony.

So little has been said about our Chinese fellow-colonists in the paper under notice that I cannot refrain from remarking upon their great usefulness to the community in general. They are by no means a negligible quantity, although comparatively few in number. According to the latest census returns they total nearly 3,000 in number. In wealth they equal the richest of any race in the colony calculated per 100 or per 1,000, and they are as progressive and as law-abiding, and well-conducted withal, as the best people. As jewellers and gardeners they excel, and they can successfully carry on business as merchants and shopkeepers. It is not correct to say "they have introduced gambling." What there is of gambling that comes into public notice in the colony is not of Eastern but rather of Western origin and introduction. Sometime back they captured the public taste for the "chefa" game, but as that has been stamped out by legislation and the efforts of the police, the only form of gambling indulged in by them is restricted to their own race and people, and as inter-marriage with other races is exceptional there appears to be no danger whatever to the community if they lived their own lives according to their own religion and personal law—a state of things Mr. Hewick unequivocally advocates for the East Indians.

There remain the Portuguese and Aboriginal Indians to be mentioned. The latter are really what Herbert Spencer calls "provisional races" and according to experience these in time must die out after contact with civilisa-

tion. They are gradually being absorbed by other more virile races, and will be ultimately perpetuated as Boviander or half-castes. The Portuguese, on the other hand, are already to the fore in "the street." Within the memory of the present generation no room was given them in the commercial centre of the capital. Now, they appear to be parties to be reckoned with in mercantile competition. They are only now commencing to enter the close professions. Their alleged "aloofness" is natural and not assumed, but they are very sociable and entertaining when amongst those other races for whom they harbour any regard or respect. They are too proud to be patronised by any race,—the patronising habit being much too common amongst other European races—notwithstanding Portugal is at present a second or third-rate power. This is natural, especially when it is remembered that they were a great power when England was figuratively in knickerbockers. It will take many years to eliminate their pride of race.

To sum up. Each race in the colony is bearing its full share of the burden of colonial life; and while those most conspicuous by reason of the large place they occupy in the world of commerce and merchandise shine with brilliant lustre, it ill behoves any one to belittle those whose thews and sinews keep the colony from tottering to its fall. The "captains of industry" and their regiments are as of great importance to the colony as those whose success in life depends upon the ultimate financial results of the battle between man and nature.

KAIETEUR.
(Total height of Fall 822 ft.)

RAILWAYS.

TEN YEARS AFTER.

By a Member of the Railway Joint Committee.

I may begin by saying that the Committee is in no way responsible for this article and that I have consulted none of my colleagues in its preparation. I withhold my name to secure a free discussion without the intervention of any personal element and for no other reason. In a short survey of the railway problem of the colony in his Address in 1911 the President referred to the paper read by his predecessor, Mr. Luke M. Hill, on the same subject in 1902 and suggested that the Society should republish it along with a report of the discussion it aroused. It has been decided to adopt the suggestion, all the more readily inasmuch as the problem is again ripe for discussion and as contributions to its solution from any authoritative source in the interval have been astonishingly rare.

It is well known that various parties have approached the Government for railway concessions but that their proposals have not been entertained. None of these appear to have had any substantial financial backing except the late Colonel J. W. Link, whose proposal, advanced in April, 1908, contemplated a trunk route intended to connect with Manaos, the rising capital of the Amazon Valley. He asked for a land grant with mineral rights and for a guarantee of interest at 3½ per cent. for ten years (subject to any earned profits being deducted) on the cost of construction, the amount of which was to be agreed upon between his principals and the Government. He acted for the Colonial Rail and Tramway Syndicate, a somewhat amorphous body but containing some well-reputed English financial names. The consideration of this particular scheme no doubt suffered to some extent from the fact that Colonel Link was a company promoter by profession and that he had recently been engaged in litigation with the Colonial Government over a rubber lease on behalf of a corporation of a somewhat speculative character financed by an outside broker. The rubber boom had not yet come to accustom us to the methods of rubber companies and the operations of outside brokers. Since then the iron has entered our souls. The Colonel was an incurable optimist with some of the defects of the type and with others almost incidental to his profession, but his power to influence considerable bodies of capital was made manifest by the flotation of the Consolidated Balata and Rubber Estates, Ltd. and the Amsterdam Balata Company and by the progress made by other projects at the date of his death. He cannot, moreover, be held responsible for the appalling mismanagement and demoralization which have brought the balata industry to the verge of ruin nor for the criminal abuse of the colony's good name in worthless flotations from which some drastic legislative measures should in future protect us. Although a company promoter he supported no worthless schemes so far as my knowledge extends, introduced a large amount of liquid capital at a time of

great depression in 1909-10 (induced by a decline of the gold industry and a collapse of the export market for rice) and never victimized or, as a matter of fact, even profited by the colony. I have no hesitation in making this reference to a man so much in the public eye whose name will always be associated with the railway question as the first propounder of an adequate even if over costly solution. If he had been successful we should long since have recollected that Strathcona, Rhodes and Hays were also company promoters.

In the United States they have a slang phrase: "I am from Missouri. You must show *me.*" The Colonel did not realise that Governments and legislatures confronted with a large and possibly highly expensive proposition, like his countrymen of Missouri, require to be shown. Whoever takes up the Sisyphean task of trying to convince the colonists that they can only expect the interior to be developed on the same terms which more popular and perhaps more favoured countries have been compelled to accept, viz., of paying for the benefit at the market rate, will have to avoid his predecessor's mistakes. He will have to bear in mind that British Guiana is a *cul de sac* not alone geographically but in many other respects, the home of shibboleths discarded for many decades elsewhere, and almost unaware that the world has during those same years been spinning down the ringing grooves of change. The languor of the Land of Drowsy-head even affects the latest arrivals as they touch the stelling. In a month they are more inert than the most apathetic of the native-born. As a matter of fact the creole shines by comparison with new-comers clearly selected on the principle that anybody out of the colony is better than anybody in it; but, none the less, the community as a whole has none of the vigour of a new people and is devoured by a cynical self-distrust. It betrays some of the features of premature senile decay. When the railway propagandist is informed, for instance, by some pundit who has never left Georgetown or has only just reached it from abroad, that no railway can ever pay in this colony, no solitary fact being adduced in support of this damnation of our future, or when someone solemnly announces with the air of enunciating an original but universal truth, that rail-traffic can never compete with water-traffic, or, reversing the policy of Brazil, the Argentine, Canada, Australia and all but the long-settled and over-peopled European countries, says that we must first of all bring in a population (no scheme of accomplishing it being suggested) he must only keep his temper and supply the requisite elementary information in words of the necessary modicum of syllables. He must learn to suffer fools gladly and he must consider logic and business as likely in some quarters to count less than the personal equation. The fierce light that beats upon a swizzle party must leave him unashamed. My remarks, I should admit at once, are not of universal application but we are burdened with many who, if they were in a similar position official or non-official in any other country, would be assumed by virtue of that position to be acquainted with a number of general principles and established results of secular experience. No such assumption can be made in this colony.

Whether the requisite capital could actually have been raised on Colonel Link's terms in 1908, the date of the proposal from this source, it is now difficult to say. The writer is inclined to doubt it unless full advantage could have been taken of the rubber boom then impending. The terms were denounced by some at the time as extravagant, but the denunciations displayed no expert knowledge and the belief in many quarters that the colony could not afford them was the chief cause of their rejection. They were never submitted to independent actuaries. In fact they were never tested at all by any expert investigation. The late Governor thought the project had no foundation; the Colonial Office could only acquiesce in the conclusions of the man on the spot and the people of the colony quietly accepted the decision. There was no evidence "rather the contrary." Water Street in face of the agitation,

> Bowed low before the blast
> In patient deep disdain;
> She let the legions thunder past
> Then sunk in thought again."

It is at all events certain that no future proposals, if emanating from any financiers of standing, are likely to make smaller demands upon the colony's confidence in its own resources. Indeed the indications all point to the fact that if the railway into the interior is to be undertaken by independent capitalists, they will share the scepticism of the leading colonists so far as to require the securing of a sufficient rate of interest for a much longer period. The rate guaranteed by the other South American Governments is five per cent. for twenty-five years. On the other hand capital has been found for considerable enterprises within the boundaries of the British Empire at a lower rate. The Colonial Office has in the present year guaranteed four per cent. for ten years to Messrs. Pauling, the contractors for the Cape to Cairo Railway, for the extension of the Shire Highlands (Nyasaland) railway across the Zambesi, to link up Nyasaland with the South African railway system and to give it access to a suitable ocean port at Beira. The land grant on which the original line was built from Port Herald to Blantyre has been at the same time redeemed by the Government for £180,000. In this case, however, the native population along the route is large and the possibilities of Nyasaland, owing to the success of tobacco and cotton growing in that Protectorate, have been found to be considerable. In the case of British Guiana we have an unpeopled wilderness and the decline of the gold and diamond and the demoralization of the balata industries have destroyed, in the most sanguine, any hopes of the untold riches of Eldorado.

All such speculations will be unnecessary should the new Governor, whose experience of railway construction in Southern Nigeria and the Straits Settlements has been great, decide that a Government railway is within the resources of the colony to undertake. No doubt such a conclusion will only be arrived at after a careful consideration of the whole situation and no policy will be adopted without reasons which are likely to satisfy the Com-

bined Court when the question of ways and means arises. In this colony, as elsewhere, there is an aversion to some forms of Government enterprise involving the expenditure of money, and it may be admitted that the handling of the railway question by the Jamaica Government in the past has been fantastic and ruinously expensive and that the railway management of the Trinidad Government has been inadequate if not unprogressive. On the other hand the virtual monopoly of the Crown Agents, the pet bogey of the colony, of railway construction instituted by Government, appears in some marvellous way to have been recently relaxed. The construction of the extension of the Uganda railway has been placed in the hands of private contractors (Messrs. Pauling). Rightly or wrongly there is a strong conviction that construction by the Crown Agents themselves has involved excessive expenditure and unnecessary delay. Perhaps a higher standard of engineering and other requirements has been aimed at than would satisfy private railway companies striving for the same result. The necessity for strict economy is likely in the nature of things to be less strongly insisted on in the case of Imperial expenditure than in the case of the moneys of private shareholders. At all events it is with some satisfaction that one learns that Government construction need no longer involve direct Crown Agent control of the operations which may be let out to private contractors on the most economical and efficient basis obtainable under the requisite conditions.

The question of gauge for a trunk route would appear to be now definitely settled by the insistence on the metre gauge in the Brazilian railways, with which the lines of this colony must ultimately connect. Further South various gauges are still in operation. A good many of the Argentine lines are 3ft. 6 inches, but any trunk line northwards is certain to be a metre gauge. The Cape to Cairo and Nyasaland railways are 3 ft. 6 inches with their branches and feeders. The Uganda railway, on the other hand, is a metre gauge and that standard would appear to be a compromise which would have met the views of Messrs. Dorman and La Bastide who were in favour of the construction of light railways which can be widened with comparative ease and cheapness (as was shown in the alteration of the Beira line from 2ft. to 3ft. 6 inches) should the traffic render it desirable. The standard gauge of 4 feet 8½ inches, such as Mr. Luke Hill and Colonel Link both advocated, may now be regarded as out of the question for any railway into the interior. The difference in cost, however, would nowadays be nothing like as great as was estimated in 1902. It may be taken also that the starting point must be one that will not encounter the political opposition of Georgetown, which would suffice to wreck any proposal. This renders Bartica impossible even if the enormous expense of the construction of a second emporium of trade and of removing the various sunken rocks which endanger the Bartica anchorage did not already do so. The geographical advantages of Bartica are only apparent and vanish on closer examination. The rivers which converge there are great in length and bulk, but are navigable only for small boats; the harbour is dangerous and the bar of the Essequibo impossible to regulate, consisting as it does of shifting banks. Georgetown on the other hand has a bar capable of immense improvement

THE DEMERARA ESSEQUIBO RAILWAY.

and it only remains to ascertain whether the terminus should be the city itself or the Vreed-en-Hoop suburb on the opposite bank. Vreed-en-Hoop has the disadvantage of being on a lee-shore, but its adoption would enable the West Coast Demerara Railway to be utilized and would open up a district of considerable and ascertained resources.

Although some of the remarks of the writers and speakers of 1902 are of purely historical interest (for instance the adoption of the Lartigue system could no longer be seriously advocated and no other mono-rail scheme has found sufficient favour up to date), the whole discussion contains many features of permanent value and no apology is made for reproducing it from the last number of *Timehri*, which was to appear for nine years. It shows that we have gone patiently round and round the subject ever since and arrived where we began ten years ago, with diminished hopes and without resident experts capable of forming or expressing as independent an opinion as those who took part in the debate in 1902. Not the least melancholy feature of the colony's stagnation has been the steady deterioration of its personnel, a phenomenon of which nobody will venture to deny the existence. The history of the railway question in British Guiana during the past three or four years has been characterised by a masterly inactivity, combined with a simulation of movement by which nobody is deceived and in which nobody is interested. In 1909 the Combined Court rejected a proposal of His late Excellency Sir Frederic Hodgson for a vote of $20,000 for a Government railway survey. The members, who were not convinced that any definite railway policy had been formed, held that the sum demanded was utterly inadequate for any serious undertaking and, under the circumstances, were of opinion that the money would be simply thrown away. A few formed the harsh judgment that it would serve no purpose except to enable all concerned to announce that they had "done something." Indeed the statement that a line into the interior was actually in course of construction was circulated for some time and the colony congratulated by the *Morning Post* on its enterprise. The error was subsequently explained but much harm had been done. In the following year the proposal was repeated and with great reluctance the sum asked for was now voted. Nobody was any better satisfied with the prospects than in the preceding year, but the argument that a rejection of the proposal would be interpreted at the Colonial Office as showing an utter indifference to railway development altogether, secured the necessary majority. In 1912 an unexpended sum of $15,000 has been re-voted. In the interval a railway surveyor of some Indian experience has been secured at a moderate cost by the Crown Agents after not more than eighteen months delay and has been at work for some time in surveying a route from the Demerara-Essequibo railway line (which joins Wismar on the Demerara and Rockstone on the Essequibo) through the country between the two rivers to the point where the Potaro flows into the Essequibo. The country is as well-known as any part of the foreshore. The distance is about sixty miles, and no engineering difficulties of any kind have been known to exist. None, we believe, have been discovered during the

survey and none were ever anticipated. There is no special necessity for a railway in this locality as Sprostons' steam launches afford an excellent service from Rockstone to the Potaro at ordinary times.

An officer of the Lands and Mines Department is accompanying the party with the object of reporting upon the character of the country on both sides of the traverse. Possibly his trained eye may discover some timber lands which have escaped the researches of Messrs. Sproston, who own the Demerara-Essequibo railway and the adjoining timber grants, or may find balata reefs or gold deposits missed by the hordes of balata-bleeders and gold-diggers who have again and again passed that district through their sieve during the last fifty years. Whither the survey will be directed after reaching the Potaro is a matter as to which the legislative mind is in some doubt. Many think that the Kaieteur Fall was the original objective, with the remote intention of constructing a tourist railway, possibly crossing the sheer escarpment of 1,000 feet by a funicular or finding a gradient for a cog-wheel like that at Kikuyu on the Uganda line. Others say it aims at the gold-dredging operations on the Conawarook, a favourite plan of Messrs. Braddon and E. R. Davson, who for some time jointly advocated a development railway proposal, from which Mr. Davson subsequently withdrew, but which found some support from the late Governor, whose imagination recoiled from any trunk scheme. The fact is that, while there is a minimum of knowledge as to the whole project, there is a maximum of lack of popular and other interest in what is regarded as a mere flirtation with a serious subject and one vital to the colony. We have no doubt that the officers engaged will turn out a conscientious and useful piece of work commensurate in value with the expenditure, which will give us reliable official confirmation of what is generally known, including the fact that a railway to Potaro Mouth would open up an easy, well-timbered, but not very fertile country of small mineral resources, while a railway from Potaro to Kaieteur Fall would cost an enormous sum, possibly £12,000 a mile, and as a tourist railway would realise the prophecy which the Canadian Pacific belied as a trunk route and industrial line, viz., of not earning enough to pay for its axle-grease.

Tourist and mineral possibilities must be dismissed at an early stage as far as any serious influence on the policy of railway construction in this colony is concerned. They may be a useful walking-stick, if they are ever realised, and I see no reason to suppose that they will not contribute materially to the profits, but they will make a poor crutch. The gold and diamond prospects mentioned so hopefully in the papers and discussions of 1902 have vanished into *die Ewigkeit*. The really important mines at Omai, Peters', and Barima are no longer factors in the problem of the colony. Enthusiasts with zeal not according to knowledge will still talk of building a railway to the Conawarook, the Massaruni or some other river to open up gold or diamond country, but it must be remembered that that way madness lies. Many deposits have been worked out and, while we have no doubt that new deposits will be found as the country opens up, the deflection of the route of any railway because of any fresh reports should require most careful

consideration. Gold and and diamonds are generally capable of looking after themselves without any railway at all. By themselves they hardly justify a railway unless they give clear indications of having the permanency of a settled industry as at Kalgoolrie or Klondyke. Rich alluvial finds are certain to be made but the whole geological formation of this part of the continent renders it advisable to discount enthusiasm as to our mineral resources.

To what then do we look for remunerative traffic for a railway within the colony ? Firstly, we rely on the certainty that we can raise hundreds of thousands of cattle apart from tobacco, cotton and other produce, on the vast Rupununi and other southern savannahs. The northern savannahs around Roraima are of scanty herbage and thin soil owing to their vast antiquity as approximating to the old floor of the continent which the top of the Roraima plateau more closely represents. Millions of years of tropical rains have washed down the nutritive soil in those districts into the river valleys. The southern savannahs are of lower elevation, probably, not exceeding four or five hundred feet above sea level, and of a more fertile character capable of agricultural as well as pastoral development. Yet even here we must be careful not to exaggerate the possibilities. Our savannahs have not the lush-grass and deep soil of the North American prairies or the Argentine pampas. It is only where the patches of forests have protected and enriched that any great fertility is found. Nevertheless the district is capable of enormous development, by Europeans as well as by Africans or East Indians. The climate is excellent and fairly cool, with a constant breeze. Secondly, we rely on the certainty that we can create a market for those products and that the market will be a growing one. Thirdly, we rely on our inexhaustible forest resources in timber and balata. These are only at the very beginning of their development. The doubts recently expressed by a new-comer as to the future of the balata industry arose from inadequate acquaintance with the subject, the source of most of the gloomy dogmatism and of all the cynical pessimism under which the colony groans. Fourthly, we rely on the traffic which would come from the carriage of the present annual contingent of balata-bleeders and their supplies, nearly four thousand strong, even allowing for no increase, to and from the Siparuni, Rupununi and New River districts, a number sufficient on any reasonable relation of future railway fares to present transport cost, to pay the amount of a guarantee from this source alone. Half our entire export of balata comes from those districts now and they are mostly virgin tracts. Fifthly, we rely on the prospect of ultimately obtaning a considerable through traffic from the adjoining Brazilian savannahs, which are of vast extent and contain very large herds of cattle, from Manaos, the rapidly growing capital of Amazonas, and (if Georgetown rises to the height of its legitimate ambitions so as to become, as Mr. Nunan prophesies, a great South American port) from Southern Brazil and from Asuncion, Buenos Aires, Monte Video and Valparaiso. Perhaps too much stress has been laid upon the advantages of a through route and I merely refer to the possibility in passing. Brazil wants the best market for its produce

by the quickest route. It is no more likely to prohibit trade or railway communication with us than with any of the nine other South American countries on which it borders. I need only say that the completion of a through route to Buenos Aires would bring Georgetown within four days of that capital and within five of the capital of Chili. Georgetown is the natural terminus of the inevitable South-American Central Railway of the future, but our own apathy would destroy the effect of any natural advantages. There will be a long and uphill struggle to secure the realization of this ideal, even when the colony has grasped the geographical and economical position and girded itself, government, legislature and people, white, black, East Indian and coloured for an achievement which would make it the Capetown or Montreal of the South American Continent. We must not sit down like Horace's rustic beside the stream but must see that we get across. So far we have camped beside the ruts on the road before ever reaching the stream. Meanwhile the foreshore must not be neglected. Eighty thousand pounds would build a metre gauge line from New Amsterdam to Skeldon and if it is true that the present shocking road costs a dollar a rod to repair that sum would more than pay a subsidy for a decent line.

The amount mentioned by those engaged in the debate in 1902 for the cost of railways of the gauges referred to is astonishingly low. Mr. Dorman estimated £1,500 a mile for a 3ft. 6 inch railway. Mr. La Bastide placed it at £2,500 and mentioned £1,800 for a 2ft. 6 inch line. Neither quotes any authority or gives any figures for this low estimate. We can only say that it appears altogether too optimistic. The Uganda metre gauge cost about £8,000 a mile. The Straits Settlement lines and some of the West Coast lines are said to have run to £10,000. While these schemes were carried through under very unhealthy and often novel tropical conditions, entirely with imported labour and under the heroic conditions of Government expenditure, the possibility of extravagant outlay and the cost of importing a large part at least of the labour must always be borne in mind in making such calculations. The Hon. George Garnett, in his address at the Town Hall at the general election, mentioned £3,000 a mile as his estimate. I am inclined to fix £4,500 as closer to the real sum. I do so while realising that there are virtually no engineering difficulties except the inevitable bridging of the Essequebo. We have moreover none of the unhealthy conditions of other tropical countries. The death-rate of our balata industry is not even one per cent. I believe that a railway tapping the savannahs and aiming to link up with a line from Manaos would barely exceed 300 miles in length and could be built of a metre gauge for 1¼ millions sterling, the lengths mentioned in the debate being excessive. I also believe that even if the entire amount of any guarantee ever likely to be demanded by business men or given by a business Court were called upon from the colony it would be defrayed under an amortization scheme by a maximum increase on our present burdens of taxation of five per cent. There would be no need to fund the debt until it became due, (if it ever became due at all) by annual deficits, and payment of any guarantee for fifteen or twenty years could be spread over fifty or sixty. There is no reason why posterity should not pay a

TUMATUMARI FALLS ON THE POTARO.

reasonable proportion of the cost of our work in providing them with a modern state in which to earn their livelihood.

Borrowing from the able rhetoric of the First Lord we may ask: "What shall a colony have in exchange for its soul? A cheaper gin or whisky swizzle?" Such estimates, however, must be merely a working hypothesis pending a report by skilled engineers after an exploration survey and after consideration of the present cost of materials and labour, which varies from year to year.

The most important recent factor in the local railway problem has been the formation, on the invitation of the Hon. George Garnett, of a Railway Joint Committee by delegations from the Chamber of Commerce, the Planters' Association, the Royal Agricultural and Commercial Society and the Balata Association to study the question. The members of this Joint Committee are pledged to no particular scheme, not even to the acceptance of the principle that a railway would open up anything at all, and its personnel is well known to be representative in every sense of the mercantile and agricultural communities (sugar being especially safeguarded) and to be naturally conservative in leaning. The scheme involves the formation of a sister committee in London of proprietors and others to advance the interests of the colony in regard to this question while ensuring all proper precautions. This may be the present Demerara sub-Committee of the West India Committee or may be a body less exclusively representative of sugar, for the fact (for which I can suggest no remedy) that Mr. Mewburn Garnett is almost the only non-sugar representative of the colony permanently resident in London, exposes the West India sub-Committee to such a criticism. The Joint Committee will be prepared to give any necessary information to properly accredited individuals or syndicates who may desire to institute negotiations and will be ready to give assurances of a fair consideration of any proposals and, if they are found to have a business basis, of active assistance, to secure a full enquiry at the hands of the Government and the Legislature.

The theory of the Committee at least is sound and should re-assure any nervous sections of the sugar interest that no proposals involving increased taxation upon that harassed industry or a diminution of their present labour supply will be accepted without full provision for their special case. To this the industry is fully entitled as that with which the very existence of the colony is connected. It is, of course, expecting too much from human nature to ask the sugar people to be very enthusiastic about the opening up of the interior. The old individual proprietors have been replaced by companies centralised in London or Liverpool, which naturally can see very little benefit likely to accrue to an industry confined to the alluvial deposits of the foreshore from the large expenditure and increasing demand upon the available labour resources which the opening up of the interior will entail. They will have grave doubts as to the sufficiency of any safeguards in the long run. We believe that their Directors will be sufficiently patriotic not to stand in the path of the acknowledged interests of the colony. Many of them, as a matter of fact, have come out of their shell as advocates of a forward

policy but they will require to be satisfied that the real interests of the colony lie in the direction of any large expenditure in the interior. They will emphasize the quantity of unoccupied land on the foreshore and the smallness of our population. They will insist that without population we can do nothing and it must be admitted that unless a railway brings population it will be of little use. They will be sceptical about resources of which they know nothing, of which they have seen nothing and which in any case are out of their line. Few of them think the entire 90,000 sq. miles of hinterland equal in value to a single coast estate and a favourite attitude is "'Take the whole interior if you like and do what you can with it, but do not ask the colony to pay anything as we are already overtaxed and cannot afford it." Like the man from Missouri they will require to be shown. They have every right to ask to be shown. On the other hand they should not be encouraged or allowed to treat their reasonable suspicions and natural prejudices as Mr. Dooley treats the Bible and Shakespeare. "I suppose you always read them?" suggested Mr. Hennessey. "I never read thim" said Mr. Dooley; "I keep thim for purposes of difince." "I'll never read anything else till I have read thim." Their doubts must be met by schemes of colonization. Any Railway Company can be asked to formulate some on the lines carried out for the development of land subsidies in Canada and Brazil. The Government must formulate others and whatever the company is asked to do the Government must do also. Hand in hand the path of development must be climbed.

We have the statement on good authority that responsible persons are negotiating to secure the rights of the Rio Amazon Syndicate to construct a railway from Manaos to our frontier or to secure a further concession in case those rights have lapsed or are contested. The fact that the State of Amazones has twice granted a concession for such a line disposes of the question of local hostility. The Federal sanction to cross the reserved frontier strips has never been withheld from any of the numerous contemplated international lines. There is no reason why Great Britain should not get the full benefit of the "most favoured nation" clauses" of her treaties. It is a mere matter of negotiation by responsible parties. The idea of Brazilian opposition was another imaginary obstacle to the consideration of this question in the eyes of those unacquainted with the progressive character of our great Southern neighbour. The Syndicate in question has already made a flying survey over its intended route, but has recently shown no other signs of life. It will probably give place more to vigorous and better authenticated propagandists. It is also stated that leading firm of engineers already engaged in railway construction all over the globe and supported by a great financial house is quite willing to extend its operation to the colony for the construction of a trunk line on the usual terms. But proposals equally good may come from other sources. When interest is aroused a dozen wild cat speculators will also be on the trail and conjure the issues. Time alone can tell. If there is no competition of offerors we can only bide in patience the coming of any offer whatever, if any should ever come, see whether we can afford its demands, abate them if we can, but in any case carefully examine any scheme from a financial and political standpoint and in the light of the experience of

Canada and South Africa, before we reject it. Whether the Government can afford to build a railway and can do so on terms more favourable to the colony can be ascertained at the same time. But the will o' the wisp of a false economy must not be followed. A railway projected to end in the bush would be a disastrous failure and a hopeless surrender of the natural ambitions of the colony. No piece-meal scheme has any chance of success. It would be a line from nowhere to nowhere like the Surinam railway (only now beginning to pay working expenses). Following Lord Salisbury's advice we must use large maps. We are part of the South American continent or we are nothing at all.

A few words as to the experience and practice of other colonies may not be out of place. From a recent sketch of the progress of our great Northern sister in the *Westminster Gazette* we quote the following :—

" How clearly impossible it is to keep pace with Canadian growth is, per-
" haps, best indicated by the statement that during 1911 no fewer than 203
" new towns were established on the main lines and branches of the Canadian
" Pacific, Canadian Northern, and Grand Trunk Pacific Railways. Two hun-
" dred and thirteen new towns in three hundred working-days ! Of those 203

" 130 OWE THEIR FOUNDATION TO THE CANADIAN NORTHERN ;
" 41 WERE BROUGHT INTO EXISTENCE BY THE CANADIAN PACIFIC, AND
" 32 BY THE GRAND TRUNK PACIFIC."

On the refusal of the Grand Trunk Railway Co. to undertake the project of building a line to the Pacific the Dominion Government constructed 700 miles of track. The motive force at the moment was British Columbia which threatened to withdraw from the Confederation unless the undertaking by which she had been induced to enter it was fulfilled. In 1881, the Dominion Government concluded an agreement with the founders of the Canadian Pacific. As a result they handed over the existing 700 miles which had cost thirty-one million dollars. They paid the Syndicate twenty-five million dollars in cash and made them a loan of twenty-nine million dollars (since repaid). They granted them twenty-five million acres of land and agreed to allow no construction south of the new line for twenty-five years. This last concession was repurchased later owing to the opposition of Manitoba. The population of Canada at the time was only four millions but the first trans-continental train left Montreal for the Pacific on June 28th, 1886. As an engineering achievement it had never been equalled. It crossed unknown and unpopulated regions, the thousand miles of bleak rock and cold dark forest west of Montreal and north of Lake Superior, the solitudes of the vast and lonely prairies and the snow-capped Canadian Rockies. It has recreated Canada and made the fortunes of multitudes. It has made the names of Strathcona, Mountstephen and Van Horne those of imperial heroes. It is largely responsible for the inflow of population to the Dominion by its active campaign to attract settlers of every nationality to its lands and consequently an increase of traffic to its line. It is a great steamboat-owning-corporation both in the Pacific, the Atlantic and the Great Lakes and rivers.

It has a Pacific Coast service and is negotiating for an Atlantic Coast service to tap the West Indies. It owns a chain of mammoth hotels which attract tourists in thousands to Canada. Its founders are multi-millionaires. It is a corporation of vast wealth and Canada has, not alone, not regretted its own wonderful generosity to the original scheme, but has actively advanced other similar proposals, of which policy the end is not yet. It was prophesied, however, in 1881, and the prophecy was supported by expert opinion, the syndicate being at the same time vilified by every imaginable calumny and abuse, that the line, if it could ever be constructed at all, which was denied, could never make sufficient income to pay for its axle-grease.

I have already mentioned that the Canadian Grand Trunk missed the first opportunity of getting through to the Pacific. The appointment to its Presidency of an energetic American, Charles M. Hays, which with a short interval has lasted since 1899, marked the arrival of a more active policy. Hays planned the construction of another transcontinental railway running generally some hundreds of miles to the north of the Canadian Pacific from New Brunswick *via* Quebec, Winnipeg, Edmondton, and over the Rocky and Cascade ranges to Port Rupert on the Pacific, about 400 miles north of Vancouver. From Winnipeg westwards the line is between the 50° and 55° N.L. where a few years ago it was stoutly asserted by the "experts" that no wheat could be grown. We know better now. A vast new grain-growing country has been opened up, a great rival to the Canadian-Pacific created in a country regarded as almost uninhabitable from cold and barrenness, and the indomitable character of the English-speaking race in the face of difficulties has been again shown by a mighty engineering feat and by the settlement of an uninhabited country in the space of a few years with hundreds of thousands of the homes of men of many races who are now loyal citizens of the British Empire.

All this has been done since 1902 while this colony has sat still and talked of its lack of population, of the prohibitive cost of railway construction, of the unknown or uncertain character of the resources of the interior and of not being able to afford to develop its only asset. We have investigated nothing and attempted nothing. Needless to say our population has stood still, treading its patient round under the complex panoply of an old and wealthy community provided with every detail of civilised administration. The standard of government has been that of the four mile radius from Charing Cross. It is useless to hold the executive to blame in what is virtually a self-governing colony. The Combined Court has called the tune. A complete equipment of unproductive even if useful institutions—Poor Law, Orphan Asylum, Alms Houses, Tuberculosis Hospitals, Dispensaries, Soup-kitchens. Reformatories, elaborate and expensive educational systems, has devoured our resources. Our criminal classes on their arrival from Ondernecming Industrial School, where they have had every advantage an English public school can afford, are lapped in the arms of the Borstal System, tucked in with the goodnight chocolate on their lips and are met at the prison door on each fresh emergence by the Prisoners' Aid Society and all the other resources of local philanthropy. Needless to say that

the intelligence of criminals with those advantages shows an improvement every session. Their early association untrammelled by effective religious influence enables them to pool their viciousness. They matriculate at Onderneeming and graduate at Mazaruni. Not a costly fad of the most modern, most developed and most luxurious of civilizations has been left untried. Even wealthy Trinidad has not kept up the pace, It has no Borstal system, and in other ways reveals itself as relatively obsolete—a mere Crown Colony. *We are treating the symptoms of our diseased and not its cause. This colony in its struggle for life is not stripped for action.* Displaying no hope of betterment ourselves we have inspired no confidence in anybody else. Laws and regulations, the enforcement of which we resent, have come to be regarded by our people as progress. *Quid leges sine moribus?* Surgeon General Godfrey works hard and does his manful part, but he and his staff are as a voice crying in the wilderness. Our public health system is on paper, our infant mortality appalling, our population stationary and but for immigration declining, and the moral condition of the masses is what is to be expected where no serious attempt has been made to erect a social system in place of that which slavery destroyed. But this is a digression.

The terms on which the Grand Trunk Pacific is being built are very remarkable and are worthy of careful study in connection with the local railway problem. In the first place the Dominion refused to give any land grant at all. The work of the Canadian-Pacific had been well done, its settlement policy had been liberal and progressive, but the Government could not face public opinion with a proposal to create another gigantic monopoly in the shape of a land-holding corporation. Government assistance took quite a surprising form. It accepted and purchased the surveys made by President Hays for the eastern half of the line from Moncton in New Brunswick to Winnipeg in Manitoba. It will defray the entire cost of this section, about half the whole line or 1,801 miles. Upon completion it will lease it to the Grand Trunk Pacific for fifty years, with a possibility of renewal for another fifty, at an annual rent of 3 per cent. on the outlay. Branch lines or feeders are to be constructed by the company alone or with the aid of provincial subsidies or guarantees, which have in various cases been forthcoming in land and money. In regard to the western half, the Prairie section of 916 miles which offers no considerable obstacle has been built on a Government guarantee of mortgage bonds, both principal and interest, to the extent of $13,000 or £2,600 a mile for fifty years. For the Mountain section, 840 miles, which includes the part traversing the Rockies and the Cascade Range, the construction of which is certain to be exceedingly costly, the Government is guaranteeing the mortgage bonds to the extent of 75 per cent. both principal and interest, of the actual cost of construction for fifty years, the Company giving a similar guarantee for the balance of 25 per cent. To enable the Company to create its traffic the Government will pay the whole interest on the cost of the Mountain section for seven years and has made further provisions to assist the enterprise. In short for the Mountain section it has a full guarantee for seven years and a $\frac{3}{4}$ths guarantee for the balance of fifty years. The Grand Trunk

will be completed within the present year. The force of optimism, courage and the spirit of loyal co-operation and mutual confidence between the people of Canada, its Government and the promoters could no further go. No spirit of mean suspicion, no jealousy of President Hays as a foreigner, no terror lest by any chance the promoting Company should make or desire a profit from its work in conferring upon Canada a great national boon has so far marred the negotiations. If the Canadian-Pacific has earned the title of "Providence, Limited," President Hays has equally well deserved his name of "The Cecil Rhodes of Canada."*

Canadian railway enterprise does not say its final word with the Canadian Pacific and the Grand Trunk. The Canadian Northern, under the brilliant control of Sir William Mackenzie, is rapidly linking up its system with the intention of completing yet a third transcontinental line, opening out vast tracts of new territory and emerging on the Pacific at Vancouver in the near future. It even stretches southward and controls a large mileage in the States. It may be noted that each of the great trio of Canadian lines is larger by far than a line from Georgetown to Buenos Aires.

In our ten years of prattle the Trans-Siberian line has also been completed and thrown out great extensions, and Rhodes' mighty project, once the dream of a man regarded as a half-crazy visionary, the Cape to Cairo Railway, is rapidly nearing completion in spite of unparalleled difficulties of climate and labour supply, for the teeming population of Africa exists, so far as it exists at all, only in Nigeria and the West Coast, the balance being mostly a very thinly populated country. As for the South American trunk schemes, we will leave those for the President's address to deal with, merely remarking that what Mr. Luke Hill seems to have regarded as remote, the establishment of ordered government throughout South America, has apparently been realised.

Lest anyone should think that the difficulties confronting those engaged in the work of surveying and constructing the Grand Trunk Pacific were any less than those of which we have experience in the exploration of our own colony I venture to quote from Mr. Talbot's valuable *Making of a Great Canadian Railway* (1912), the local interest of the passages justifying the length of the extract :—

"In order to obtain a faint idea of the prospect that confronted those entrusted with the reconnaisance, conceive a vast country rolling away in humps, towering ridges, and wide-yawning valleys as far as the eye can see, and with the knowledge that the horizon can be moved onwards for hundreds of miles, without bringing about any welcome break in the outlook. On every hand is the interminable forest, a verdant sea, except where here and there jagged splashes of black and brown betoken that the fire fiend has been busily at work.

* Since writing the foregoing we learn with a shock that Mr. Hays was one of those who perished in the foundering of the *Titanic*. He was taken alive into one of the boats after the great liner went down but died from the effects of prolonged immersion in the icy water. The body was again consigned to the sea but seems to have been since recovered and identified. "So passed the strong heroic soul away" of one who like hundreds of thousands in the last ten years had become more Canadian than the Canadians.

BALATA BLEEDERS SHOOTING RAPIDS ON THE CUYUNI.

The trees swinging wave-like before the breeze conceal dangers untold beneath their heavy blanket-like branches, the existence of which are beyond contemplation until one is brought to close grips with them. Here it is a swamp whose vicious treacherous mass stretches for mile after mile to all points of the compass, until it attains an area sufficiently large to absorb an English county. There it is a litter of jagged rock as if Nature had been at play with the mountains, and after pulverising their solid masses had tossed the debris promiscuously on every hand. Covered with slippery, decaying vegetation their surfaces are as dangerous as orange peel on an asphalt pavement, and a slight slip may result easily in an ugly contusion or a badly broken limb. Could one survey the scene of solemn grandeur presented by the vegetation from a coign of vantage, nothing could be seen but a maze of fallen tree trunks, levelled by wind, water, and fire, piled up beneath the trees to a height of ten, fifteen, and twenty feet in an inextricable mass, and over which one has to make one's way with infinite labour, menaced with danger to life and limb. The forest is trackless, save for narrow pathways, some of which are scarcely distinguishable, and all merely inches in width, wandering in apparent aimlessness, through the gloom to one knows not whither. Maybe they come to a dead stop on the brink of a gulch, at the bottom of which a broad river is tearing along fiendishly. The opposite bank is one's objective, and there is no bridge to afford communication. In order to cross one must be dependent upon individual resource in contriving a flimsy vehicle, and even when afloat one must possess considerable presence of mind and skill in battling with the fierce current, sunken jagged rocks, snaggs, timber jams, sandbars, roaring rapids and whirlpools. One carries his life in his hands the whole time, certain in the knowledge that at any moment he may be called upon to battle for his life when his bark comes to grief and disappears far beneath his feet. One cannot wander far from the trail beaten down by the moccasined feet of the Indian without having to fight his way foot by foot with the axe, for the bush stands up impregnable, and bristling with snags. Advance must be made warily to avoid sudden immersion in a swamp, while if astride a pack-horse he must be ever on the alert to spring clear the moment one's mount gets into difficulties. In summer the ground is well-nigh impassable, for it is as soft and treacherous as quicksand. Advance is reckoned in yards per hour. In winter, when the ooze has become hardened by the grip of frost, and snow has covered the whole with a thick pall, progress is easier and more rapid. But winter brings fresh dangers peculiarly its own. There is the blinding blizzard, the relentless drift, the slush which superficially appears sufficiently strong to withstand one's weight, but collapses beneath one's foot and leaves one floundering waist-high in a freezing slough. Then there is the cold—the pitiless low temperature which penetrates the thickest clothing, for when the thermometer is hovering about 35 degrees or more below zero, supreme ingenuity is required to keep the blood circulating through one's veins, and to avoid that terrible enemy, frost-bite."

Such difficulties as are described by the writer pale before those encountered by the Australians in the construction of the first transcontinental railway of the island continent. When completed it will be four thousand miles

in length running east and west from New South Wales and Victoria to Western Australia and shortening the journey from Perth to Melbourne from five days to two. A link of 1,063 miles known as the Desert Link, is now in course of construction from Kalgoorlie, the mining capital of the West, to Port Augusta on Spencer Gulf in South Australia. It will cost four millions sterling and traverse the thousand miles of blazing waterless salt desert north of the Australian Bight, a land over the greater part of which "no man comes nor hath come since the making of the world." Where gold has cast its lure the terrible sands have been faced, as such dangers will always be faced for the same object, but the only beast of burden is the camel. The stern determination of the Australian patriots to allow no reports of barren desolation to hinder the closer union of the provinces is likely to meet with its reward. At first it looked as if every drop of water consumed over the entire stretch would have to be laboriously conveyed to depots at intervals, but at fifteen hundred feet they have found by artesian boring great reservoirs of water free from the desert salt. The Australian premier treats with scorn the prophecies of the pessimists. He reminds them that there was a time when the so-called experts declared that the famous Darling Downs would not raise a single cabbage. The railway will be finished in 1913-14 and apart from its advantages as a through route, the leaders of Australian opinion are convinced that it will make the wilderness to blossom like the rose. They are moreover determined to link North and South by still another transcontinental railway from Adelaide to Palmerston across the great Australian desert.

If we of this colony flinch from our duty to the British Empire and to our race and decide to take no risks upon our little shrunken selves in the development of the inheritance won for us by better men, then, in God's name let us draw our frontier-line along the sand-reefs which mark the verge of sugar cultivation five miles from tide-mark, and surrender the hinterland to Brazil. That youthful and hopeful Federation will know what to do with it.

THE RAILWAY DISCUSSION 1902.

THE POSSIBILITIES OF RAILWAY DEVELOPMENT IN BRITISH GUIANA.

By L. M. HILL, M. Inst. C. E., President, R.A. & C.S.

At the outset of my paper on the Possibilities of Railway Development in British Guiana, I may be excused for expressing regret at the unfortunate circumstances that have given us three different gauges on the three short railways that the colony boasts of at the present time : the standard gauge of 4ft. 8½ins. on the East Coast line, 3ft. 6ins. on the West Coast, and the metre gauge of 3ft. 3⅜ ins. on the Demerara-Essequebo Railway. Indeed I believe our colony holds the unique position of possessing a Railway company working two different gauges, with the many attendant drawbacks and inconveniences in the way of interchange of rolling stock and other appliances. I have heard it said—untruly and wickedly no doubt—that the gauge of the West Coast line was adopted simply to suit some second-hand condemned locomotives and rolling stock from Barbados ! It is true the Great Western Railway Coy. of England at one time ran two gauges, but that was only during the period that the Company was converting its system from the broad to the standard gauge, which is now in universal use throughout Great Britain, as well as the United States of America and many other foreign countries.

The Demerara Railway Company was established in 1846, the East Coast line opened as far as Plaisance in 1848, and extended to Belfield and Mahaica in 1854 and 1864. Here all railway enterprise in the colony seems to have stopped until the last decade, when the East Coast railway was extended to Rosignol on the left bank of the Berbice River, a new railway constructed on the West Coast from Vreed-en-Hoop to Greenwich Park, and a narrow-gauge light railway from Wismar to Rockstone, forming a sort of portage between the Demerara and Essequebo Rivers, constructed—largely through the energy and perseverance of Mr. Fred. White, General Manager of Sprostons, Limited, —as a ready means of getting over the difficulty of dangerous falls and rapids in the Essequebo River on the passage between Bartica and the Potaro gold fields. In this way it certainly has served, and is still serving, a useful end, although at the expense of well nigh ruining the town of Bartica, which was designed by it natural geographical position, to be the "jumping off ground," so to speak, for the Essequebo, Mazaruni and Cuyuni districts. The Demerara-Essequebo Railway must, however, rest content with its more or less evanescent life of usefulness as an aid in getting to the Potaro district, pending the construction of the great Central Trunk Line from Bartica ; as it seems to me like the bolstering up of a bad case to attempt to make it a sort of cross-country route to the Mazaruni diamond fields through the Potaro and Couriebrong rivers with a portage of some miles to the head waters of the Semang, and down that stream into the Mazaruni, as has been seriously proposed. To say nothing of the ever decreasing size of craft capable of navigating

to the upper waters of the Couriebrong—possibly reaching at the end the dimensions of an oil-motor driven Indian wood-skin !—the route would involve no fewer than thirteen changes or handling of goods between the Demerara River and the Mazaruni, made up as follows :—

> 2 at Wismar, 2 at Rockstone, 2 at Tumatumari falls (low side), 2 at Tumatumari (top side) 2 at Couriebrong head, 2 at Semang head, and 1 at Semang mouth :

with possibly others to surmount the difficulties of shallows and falls in the Couriebrong and Semang, which we know little of at present. As is well-known and freely admitted, every "handling" adds materially to the total cost of transport of goods in the Bush, as well as elsewhere.

Coming back now to the possibilities of further railway development in the colony, I shall deal first with our coast lands. The East and West Coast railways already supply the wants of our sugar estates on those coasts, the extension to Berbice taps the cattle ranches and farms of Mahaica, Mahaicony and Berbice, West Coast ; and all that remains to complete the coast connection eastward is the Corentyne Railway between New Amsterdam and Skeldon, the route for which has been completely surveyed the construction awaiting a comprehensive water supply scheme for the fuller development of the rice industry, for the cultivation of which the Corentyne Coast seems to be peculiarly well adapted. A railway from Suddie to Devonshire Castle, for what I might call the re-development of the Essequebo or Aroabisce Coast, and the re-establishment of its many abandoned sugar estates, is a possibility of the future, when the abolishment of sugar bounties may lead to the rehabilitation of our Sugar Industry. At the present time, however, the hopes of the colony, are largely centred in the successful development of its mineral resources, its gold and diamond industries, so our thoughts naturally direct themselves towards the vast area of our hinterland, with its possibilities of hidden wealth, and of which so little is known beyond the mere fringes of our principal waterways, and even to that extent only within the last dozen years. A large influx of capital and population, with the necessary amount of energetic push, is what is required for the further development of this *terra incognita*, and the opening up of its hidden store-houses situated in the several districts of the vast interior.

Having so far accepted Bartica as the main *entrepot* for the Essequebo, Mazaruni and Cuyuni districts, let us see how best to reach it from Georgetown, which, I assume, will continue to be the chief port and capital city of the colony. First, we have the existing Sproston direct steamer route, of about six hours along the West Coast and up the Essequebo River, which, I venture to think, will be found the most convenient and cheapest mode of transport. As an alternative, however, we have a possible 40 miles extension of the West Coast Railway around Parika and up the right bank of the Essequebo to a point opposite Bartica, whence passengers and goods would be transported across the Essequebo by steam ferry, or a wire rope way elevated high above the river. These wire rope ways are now largely used in many countries for short distances ranging up to say three miles, and are capable of spanning con-

siderable distances, such as required for crossing the Essequebo by a single span. The chief objection to this scheme of reaching Bartica, however, lies in the additional handling involved : there being five loadings and dischargings, as compared with one by the steamer route, all of which, as I have already pointed out, add considerably to the cost of transport.

Leaving Bartica, the route of the proposed central trunk line would take a ascending curve round by the back of Bartica Point towards the high land at the back of Kalacoon and thence along the ridge of the watershed between the Essequebo and Mazaruni Rivers ; crossing the Potaro River just below the mouth of the Couriebrong close to Potaro Landing, thence in a southerly direction crossing the Siparuni below the mouth of the Takoutu, on across the Purro-birro and the Rupununi Rivers and their tributary streams, tapping the great Rupununi savannahs, along the watershed of the Rewa River, crossing the Quitaro and Cassikitu Rivers to the upper reaches of the Essequebo, close to the Brazilian boundary, a total distance of about 420 miles. This would form the great Central Trunk Line, with branches right and left as found necessary in the future development of the district. Already a cart road has been formed along the proposed route, a distance of some 30 miles from Bartica, and so far as can be ascertained no serious engineering difficulties are likely to present themselves along the entire route.

The first of the branch lines to be constructed would doubtless be one to the Mazaruni diamond fields, branching from the main trunk line 30 or 40 miles north of the Potaro, bending round towards the Mazaruni, crossing the Semang and Karamang Rivers, skirting the Merume mountains and touching the Mazaruni River close to the mouth of the Merume River, clear above the numerous and dangerous falls in the Mazaruni, the length of this branch line being about 90 miles.

Another main trunk line, about 140 miles in length, might start from Cartabo Point, about 8 miles from Bartica, traversing the watershed between the Cuyuni River on the right and the Mazaruni, Puruni and Cartoonie Rivers on the left, tapping rich mineral country on either side, and reaching on to the Venezuelan boundary close by the mouth of the Acarabisi River, through which connection might be made with the Barama and Barima districts : though probably the present steamer route to the North West district *via* Morawhanna will be found the more convenient mode of approach to, at least the lower reaches of, the Barima and Barama Rivers. The North West district is so well watered by these two rivers and their tributaries that there would appear to be no necessity there for any main trunk line, short local railways as portages and accommodation lines to special mining centres, being probably all that would be required for many years to come.

We now come to consider the class of railway to adopt, and I unhesitatingly recommend one of standard gauge, 4ft. 8½ ins., for at least the main trunk line. Suitable timber can be had on the spot, so to speak, for sleepers, and bridges crossing the smaller streams, imported steel or iron structures being preferable for the larger rivers. In the absence of roads of any sort at present in the

interior, I would suggest that the stations or stopping places be arranged close to passing rivers, which would naturally lend themselves as highways of approach for passengers and goods to and from the railway line. For the shorter and more or less isolated lines used as portages and local accommodation tracks, I would suggest the adoption of the Lartigue or Mono-rail system, which has much to recommend it in the way of lightness and portability.

As to the motive power to be supplied to our proposed railways of the interior, I think the advantages of electricity are self-evident, with means of generating it by water power so ready to hand in the several districts, as compared with the long distance from a cheap coal supply. Not alone does the great Kaieteur Fall on the Potaro River offer itself as a vast source of supply in this direction, also the smaller falls and rapids in the other rivers crossed *en route*, all of which could be made available as sources of generating power.

In the absence of a detailed survey of the interior of the country, it is impossible to attempt anything approaching an accurate estimate of the probable cost of the railways projected; but as a more or less speculative approximation, I may venture to name a million and a half sterling for the Essequebo and Mazaruni trunk lines, and another half million for the Cuyuni: an expenditure which I feel sure is entirely beyond the capacity of the colony to undertake on its own account: the only possible way of accomplishing the opening up of the interior is by means of liberal concessions in land and mining rights, offered to outside capitalists. In submitting this paper, my object has been to ventilate the subject and thereby arouse some interest and discussion on the possibilities of our colony's future.

The President's paper was declared open to discussion on April 18th, 1902.

The President stated at the outset that he had been placed in possession of a paper issued in March, 1901, by the Colonial Office, with regard to the application for concessions in this colony. This document, of which he was unaware at the time of preparing his paper, was accompanied by a map showing a proposed central railway, starting from Bartica and running to the South as far as Takutu, thence branching off to the South-west touching a point close to Fort Joaquim,—a shorter way of reaching the Brazilian border, but not touching the savannah country as proposed in his (the President's paper). His attention had also been called to a monorail system, with a single rail close to the ground. This railway which had been termed the "wheelbarrow" railway, could be propelled by manual or horsepower at the side.

Mr. J. W. Dorman.

Mr. J. W. Dorman, General Manager of the Demerara Railway Company, who was present, opened the discussion. He said:—

I have read Mr. Hill's paper on the possibilities of Railway Development in British Guiana with much interest and would like to make a few remarks on it. For the convenience of those who have read Mr. Hill's statement I will go through the several heads in the order he has put them, and therefore commence

with the question of gauge. On the Berbice Extension of the parent line there could, of course, have been no question of the gauge to be adopted, and I will not therefore discuss it further. In the case of the West Coast Railway, however, the gauge received very careful consideration, and as the probabilities of any connection being made between the East and West Coast Railways are extremely remote, and interchange of rolling stock practically impossible, I did not allow the fact of the East Coast being 4 feet 8½ inches to influence me beyond the storing of "spares," such as axles and other parts which are affected by the gauge. As regards the Essequebo Railway, I have always looked on it as being merely of a temporary nature, and though extremely useful at present, hardly worth considering in connection with a trunk line. When running through hilly country there is a very large saving in both construction and working by using a 3 feet 6 inches instead of a 4 ft. 8½ inches gauge—particularly in rock cuttings, and in admitting of much sharper curves, which can be easily run round on a 3 feet 6 inches gauge, when a 4 feet 8½ inches gauge would be almost impractical. Next, the rolling stock for the narrow gauge (3 feet 6 inches) is, roughly, 20 per cent. cheaper than that for the broad gauge (4 feet 8½ inches).

The next point an engineer would consider is, where would this line be likely to end, ultimately, and I have no hesitation in saying that such a line would ultimately end by joining the Argentine railways. The latter are of various gauges; but, as far as I could ascertain, the 3 feet 6 inches gauge preponderated; this being added to the fact that it is a more favourite gauge than the 3.0 metre or 5.0, all of which, I understand, are in use in the Argentine and Chilian systems, I had no hesitation in recommending the 3 feet 6 inches gauge, and its advantage may shortly be summed up thus,—economy in construction of railway; economy in rolling stock; engines being lighter, there is less wear and tear on rails; and the wagons tare is also much less in proportion to paying load, all of which mean economy in working and less difficulty in purchasing stock ready built on emergency. The custom on Indian and Belgian railways is to have the main line of the broad gauge, with branch lines of metre or other narrower gauge, thus making a break of gauge at nearly every point of communication between the branch and main lines. A fuller description of this is given in volume 147 of the Proceedings of the Institute of Civil Engineers, pages 389-391, so that it will be at once seen that the Demerara Railway is by no means singular in working two lines of a different gauge. Another case occurs at Woodstock, where a narrow gauge line is run from the Great Western Railway to Blenheim Park; and there are numerous similar instances. There is just as much truth in the statement that the West Coast Railway was made 3 feet 6 inches gauge to suit Barbados engines, as there is in the story of Lartigue or Monorail Railway (which would be more properly named the triple rail), which runs,—that where a cow is being sent in a truck at one side of the rail another cow has to be borrowed to act as a counterpoise for the journey and then walked back to her home. I fear Mr. Hill is not quite up in his railway history when he states that the standard gauge is now in universal use throughout Great Britain, as all the following, at least, are narrow gauge. The Festiniog Railway, Corris Railway, Schull and Skibbereen Railway, Cork and

Blarney Railway, Cork and Muskerry Railway, Donoughmore Extension Railway, Bessbrook and Newry Railway, Blessington Railway, Castledere Railway, Cavan and Leitrim Railway, Clogher Valley Railway, Portrush Railway, South Clare Railway, West Clare Railway, Tralee and Dingle Railway, etc.; while nearly if not all the Isle of Man Railways are narrow gauge.

Now as to Bartica, which Mr. Hill states is the "natural jumping off line" for a trunk railway, I cannot agree with him. Take it that the trunk line starts from Bartica and is completed to its ultimate destination—what is the result? The bulk of the colony's traffic, including the South American mail and passenger traffic would be brought to Bartica, mail steamers and cargo boats run there and the result would be—first: great expense should be gone to in buoying and lighting the Essequebo river, stores, wharves, etc., should be built there at enormous expense, as the land immediately behind the shore is high and should be levelled; then, assuming all this to be done, Bartica would become the New York and Georgetown, the Washington of British Guiana. Take it, however, in its present state. You leave Georgetown at 8.30 a.m. and reach Bartica the same evening, too late (especially on an ebb tide) to go further by daylight that evening. As a railway engineer with a personal knowledge of a good deal of the district to be traversed, I have no hesitation in saying that the natural extension of railways in this colony is [illegible] Coast railway up the east side of the Essequebo River (with a station and steam ferry to Bartica, which would then be reached in two hours from Georgetown) to the falls, where it would cross to the west side and run up past Omai to near Potaro Landing. From this there should be a branch about sixty miles long to the Semang river, and thence about one hundred miles further to the boundary, where it would terminate at the Massaruni River, after running through the centre of the diamond fields. The main line would follow generally the valley of the Potaro to the 5th degree, and thence nearly due south in the valley of the rivers Tisaling, Mahoo and Takutu to San Joaquim. I believe the construction of this railway would be the making of this colony.

I estimate that the Essequebois about two miles wide at Bartica. Messrs. Bullivart, the great authority on wire rope traction, apparently consider 200 to 500 yards the best spans for such, and do not recommend it for passenger traffic; in fact, I do not myself know of any aerial passenger line being in existence anywhere. I believe the limit of span is 1,000 yards at present, so the Essequebo could hardly be crossed in one span at Bartica.

I quite agree with Mr. Hill that the first of the branch lines should be run to the diamond fields, while the main line should be run south to San Joaquim; both of which should touch as far as possible the larger tributaries of the adjoining rivers, when, I have no doubt, prospectors and workers would find it best to take their bateaux and provisions by rail to the nearest landing place above, and then run down the river to their destination. The first thing to be considered with a new railway is: Will it pay? if so, when? and if not, why should it be made? Now, in the case before us, I think you may take it that the traffic of the main line of 350 miles, which would cost about £1,500 for

construction and equipment similar to the existing West Coast Railway, may be estimated as follows :—200 passengers per day carried on an average 160 miles, say $5, $1,000 ; 100 tons of goods 160 miles say $13, $1,300 ; mails $100—$2,400 ; or £3,000 per week, being £156,000 per year, and when it is considered that practically all the traffic of the interior as well as that to the upper portion of the Amazon should pass over this railway, I think the estimate is moderate, and that a large traffic would very soon be developed in cattle, balata and sundry goods, to say nothing of the number of lives, gold and stores now so frequently lost on the rivers, which would be saved.

Railway construction, however, in such a country as this cannot be undertaken without liberal Government assistance, and land or cash guarantee ; as no matter how great the prospect of a fair return on the capital expended is, the British public say, when asked to invest, "we know nothing about this railway's possibilities. If it is as good as it is represented to be, why not get a guarantee from the colony, and then we will subscribe." While another danger to be guarded against is, trifling with a subsidy once given, as the merest suspicion by the Stock Exchange or public that such had been or would be possible would be quite sufficient in itself to absolutely condemn any future issue of stock under a guarantee by such a Government ; and there is no more senstive pulse in the world than the Stock Exchange. There can be no question that the motive power for any inland railway in this colony should be electric, as power can be obtained to any extent from the falls on the various rivers which the proposed lines would cross at frequent intervals.

The Rev. A. Campbell considered that in connection with a railway, such as that proposed, a reasonable risk should be taken, if there was a reasonable hope of success, and that railway development in the colony should be encouraged. The matter should be regarded not only from the standpoint of intercolonial trade, but of trade with other countries. The coast line bordering the Atlantic was the nearest landing point for Europeans, and if the proposed railway was constructed the colony might become the emporium of commerce for South American countries who would bring their produce to our boundary along their magnificent rivers.

Mr. Hargreaves remarked that for years past there had been a gigantic scheme before the United States Government to run a railway down the centre of South America. If, however, that railway ran on the west side of the Andes there would be insuperable difficulties in the way of making a communication with that railway by means of a railway from the Coast.

The President replied that it would hardly be possible to put the scheme referred to into practice, until the whole of the Spanish Republics ceased having revolutions. Continuing, Mr. Hill expressed his pleasure that his paper had evoked discussion, and that it should have brought back "a lost sheep to the fold" in the person of Mr. Dorman whom he welcomed back to the Society. With regard to the narrow gauge spoken of by Mr. Dorman, that gauge was to be found for the most part in Ireland, and he would be sorry to take Ireland as an example in respect of railway administration. The narrow gauge had been

promoted by the baronial guarantees in the different counties on the Congested Districts Board as the chief means of getting the existing standard gauge railways to take them up and leave them as feeders to their own railways.

Mr. G. V. de la Bastide.

The annexed paper by Mr. G. V. de la Bastide on Railway Development in British Guiana was read by the President. on December 18th, 1902.

Following Mr. Dorman's example, I will deal firstly with the gauge question. This question is one which has given rise to a great deal of discussion. It is, however, pretty generally conceded by British engineers that a break of gauge is inadvisable where it can possibly be avoided, and no engineer would hesitate to lay a standard-gauge line, if he were given a free hand as to finances. Yet it has been proved conclusively, on the Continent and in India, that light railways with a break of gauge can be made successfully both from a technical and traffic point of view.

Experience has taught that in sparsely populated and purely agricultural districts, or where it is desirable to open up a line of country by connecting it with a seaport where the traffic receipts will not warrant a standard-gauge line, it is better to lay a light narrow-gauge railway, with its consequent inconveniences, than postpone perhaps indefinitely if not entirely the development of a country or an industry until such time as the receipts per mile would justify a standard-gauge line. The American method of construction in uninhabited districts, or where the traffic is light, which has been adopted in India, the Cape, and elsewhere, is correct in principle, and is the one which should be followed in British Guiana. Briefly, it is to lay down the line as cheaply as possible with sharp curves and steep gradients so as to obtain a railway earning on the smallest capital, and as the traffic increases to improve first the road-bed and then the alignment. An engineer who departs from this principle should be able to give his reasons for such departure in pounds, shillings and pence. The Guatemala Central Railway is a good example of the American plan of construction and working. It runs from the Port of San José, is 75 miles long and crosses a summit of 5,000 ft. before arriving at the terminus in the town of Guatemala. It was first constructed with steep gradients and sharp curves, which enabled it to earn a profit from the beginning and from the earnings they have been able gradually to reduce the gradients, curves, and in some places, to alter the alignment entirely for several miles. Since then a branch line of 25 miles has actually been added, which was paid for entirely out of revenue. The Beira Railway, 212 miles, in East Africa, is also a good example. It was originally laid on the 2 ft. gauge, which was afterwards widened to the African standard gauge 3 ft. 6 in., the traffic having increased sufficiently to justify the improvement. The Darjeeling Railway in India, was built on the same lines. The chief objections to break of gauge are briefly, the necessity for: 1st, transhipment, and 2nd, duplication of rolling stock. Now, with the West Coast Railway and the Demerara-Essequebo Railway neither of these objections are to be considered, and as the traffic did not justify the construction of the standard-gauge lines it would have been the height of folly to have done so.

In a country like British Guiana where railway construction has only just begun, it would be better, no doubt, to standardize the gauge of its light lines. The gauge which the majority of English railway engineers most strongly recommend for light lines is the 2 ft. 6 in. gauge, and might be made the standard for light railways in British Guiana.

Mr. Calthrop in his paper read before the Society of Arts (Journal 1897, Vol., XLV., page 245) said:—"There is no doubt that as compared with all others it is the gauge possessing the greatest carrying capacity per cent. of cost of track. It has sufficient stability to carry goods of great weight and bulk, while the flexibility of its alignment is such that it can accommodate itself to country of mountainous and most difficult character at a fraction of the cost of a standard gauge line, negotiating similar difficulties." A railway is a commercial undertaking pure and simple, and the principle to be followed, both in its design and working, should be the same as would be adopted in any mercantile concern. No merchant, for instance, would dream of building or chartering a vessel capable of carrying 1,000 tons if his cargo was not likely to exceed for a given time 500 tons. A sugar planter would not erect machinery to manufacture 5,000 tons of sugar if his crop could not produce more than 2,500 tons. In Great Britain, up to the year 1897, narrow-gauge lines were to be found only in Wales and Ireland; if we except those in the colliery districts in the north of England. There is no doubt, however, that the construction of light railways in England was retarded chiefly on account of the restrictions of the Board of Trade, by which high rates of speed were rendered necessary upon standard-gauge lines. The evidence given before the Commissioners appointed by Parliament, of which Mr. Bryce, M.P., was chairman, conclusively proved this. To be a success, light railways must be rid of all the traditions of the main lines, which are too extravagant for them. These restrictions were entirely removed by the passing of the Light Railways Act of 1897. The evidence given before the same commission, and the proceedings of the International Railway Congress of 1895, showed also that a great deal of the agricultural depression in England was due to the want of light railways to connect the agricultural districts to the main line. The Light Railways Bill of 1897 is a very liberal Act which has been very liberally interpreted by the "Light Railways" Commissioners, and a large number of schemes have been submitted and approved of. Since the passing of the Act, several light lines have been constructed, and I believe the first opened for traffic was the Lynton and Barnstaple, 19¾ miles. It is laid with 40 lbs. rails in the 2 ft. 6 in. gauge. The majority of Irish railways and the Festiniog in Wales, although narrow-gauge lines cannot strictly be considered light lines, and the fact of the former not proving a financial success is not due to their being narrow-gauge lines but to the fact they were constructed on too pretentious a scale and, as was suggested by Mr. Balfour during the discussion in Parliament on Mr. Bryce's Bill, to the incidence of fixed and management charges, or they were worked independently on the old traditions instead of being grouped under one administration as obtained on the Continent.

Public opinion has been educated by such men as Mr. Calthorp, Mr. Ackworth, and Mr. Mackay to the fact that narrow-gauge railways are not the toys

which they were once supposed to be. Mr. Calthorp in his paper on the Parsi Railway has proved that a narrow-gauge railway laid down say at one-fourth the cost of the standard, is sixteen times more efficient than a standard-gauge line costing the same.

Mr. Hill has made a great deal—not to say too much—of the question of transhipment or "handling" as he terms it. There is no doubt that transshipment is a draw-back; but transhipment must take place, and is taking place daily the world over, and even on British main lines without much notice being taken of the same. Is it not a fact that farm produce, fruit, etc., from Britanny and Normandy which have to go through between five and six distinct transhipments, is put on the London market in better condition and at a much cheaper rate than the farm produce of the Home counties? Clearly, it is not transhipment which prevents the English farmer from competing with his foreign competitors. Mr. Leslie Robinson, who accompanied the Commission appointed by the Cape Government to report on the Continental light railways, gives the cost of transhipment from canals and narrow-gauge lines at 1d. to 1½d. per ton. In British Guiana, transhipment from a steamer or launch lying alongside a wharf where cranes and other appliances are erected, would not cost more than 2d. per ton. I found the cost at Wismar where goods had to be transferred from steamer to railway cars without any appliances, at 3d. or 3½d. a ton. At Rockstone, where there was no wharf, the cost was about 5d. a ton. There is one point in connection with transhipment which must not be lost sight of, and, that is, the very fact of the receipts per mile being too small to warrant an expenditure in a standard or even a narrow-gauge line shows that the traffic would be small and, therefore, the inconvenience (if any) of transhipment would not be worth much consideration.

The question of opening up the hinterland by a main line connecting the Brazilian frontier to the coast, is, in my opinion, so very remote, that I will not follow the author of the paper, nor Mr. Dorman, as to the route which a railway to the interior would take beyond merely stating that *so far as one can judge at the present time of future development.* Mr. Dorman's scheme is the proper one both from an engineering and financial point of view. It is quite certain that outside capitalists will not be tempted by land concessions and mining rights only, however liberal they may be, and that nothing but a cash guarantee, which the colony is unable to afford, will secure the millions necessary for such a gigantic scheme. The realisation of this scheme will depend to a great extent on the wealth of the diamond and gold-fields. Doubtless the results obtained so far are very encouraging, and although the colony may not afford an extravagant expenditure, there is no reason why the Government should not, with the money at its disposal, make the means of transport to the fields easier than they are at present, and thus facilitate the development of these industries on which so much depends. To argue that because the colony is unable to spend millions on a main-line to the frontier, particular districts which might be developed with profit must wait for an indefinite period, is no argument at all. It is evident that money spent, whether on roads or railways, in connection with the diamond fields should be spent with a view of future

development, and in undertaking the survey of the line of country between Tumatumari and the mouth of the Semang, the Government is doing the proper thing, as it is the only way of determining whether the first branch line suggested by Mr. Hill is practicable or not, and also the cost at which a railway could be constructed. With this knowledge at its disposal the Government will be able to decide whether a light railway is possible, and, if not, surely a road would be the next best thing as it would serve as a forerunner to the branch line if carefully traced and constructed. A road from Bartica, running far enough to tap the clear waters of the Mazaruni, could never be (except perhaps for the first few miles) of any permanent value even if that town were made the "jumping off" ground to the interior and Mr. Hill's line adopted. It is palpable, therefore, that those who advocate the Bartica-Mazaruni road are actually urging the Government to adopt the very system which they so strongly condemn.

The surveys should, in my opinion, be continued, firstly from Tumatumari southwards to the Potaro Landing, and then northwards to Omai following the course which the great trunk line would take. Then, as the finances of the colony permitted, these lines could be constructed. Surveys of this kind, however, should be carried on with judgment, and in a systematic manner, otherwise a fruitless expenditure may result. It is a well-known maxim in engineering that £100 spent on good surveys may save from £1,000 to £10,000 in the construction of either roads or railways, which should be borne in mind. I was surprised in reading Mr. Hill's paper that while at the outset he deplored the fact of a break gauge in the colony, he should recommend at the end of his paper the adoption of the "Lartigue" system, which entails not only a break of gauge, but what is still worse, an entirely new type of railway. A double-rail line, however, narrow the gauge, can always be adapted, as circumstances require, to be standard-gauge, and although laid with light rails could carry the rolling stock of a main line, if light locomotives are used on the branch line.

We have a type of locomotives now on the Bridgetown and St. Andrew's railway in Barbados capable of hauling 200 tons on a gradient of 1 in 60, which is not too heavy for even 30 lb. rails. These are 8 wheels coupled, built by Messrs. Baldwin & Co., Philadelphia.

The "Lartigue" system does not afford the advantages which a light double rail line does, as it cannot be converted to the standard-gauge were it necessary to do so, and would cost a great deal more than a light line of equal capacity. Its estimated cost is put down by the owners of the system at £3,000 a mile under ordinary circumstances, and it is a remarkable fact that although it was introduced 25 years ago the Listowell and Ballybunnion is the only line that was ever constructed. It has never found favour with engineers. I do not agree with Mr. Dorman that a 3ft. 6in. gauge railway could be built in the interior of British Guiana for £1,500 per mile. I consider £2,500 for a 3 ft. 6 in. and £1,800 for a 2 ft. 6in. gauge to be nearer the mark. A standard-gauge line from Bartica as suggested by Mr. Hill would not cost less than £6,000 a mile.

SURVEYING AND MAPPING BRITISH GUIANA.

By R. O. H. Spence.

That there is no reliable Map of the whole of this Colony and that there is the need for such a map, has attracted a considerable amount of attention within recent years, and it is now generally conceded that the making of an accurate map is of great importance at the present stage of the Colony's history.

At the meeting of the Combined Court on the 27th February last, the following motion by Mr. G. Russell Garnett, F.R., was discussed.

"*Whereas* the available information as to the resources and geographical "features of the hinterland of the colony is unreliable and insufficient, thereby "retarding the possibility of its development; Be it resolved, that this Court "authorizes a sum of money being raised by loan under the provisions of the "Public Loan Ordinance, 1896, sufficient to defray the cost of making a full "and comprehensive survey of the whole or such portions of the colony as "may be deemed expedient."

His Excellency the Acting Governor, in putting the motion to the vote, stated that it would be only an expression of opinion, and on the motion being put to the Court it was carried.

The subject of a survey of the Colony it will thus be seen, has already quite recently engaged the attention of the authorities.

The area of British Guiana computed from the existing maps is given as 90,277 square miles, and with this large area to deal with, and as the major part of the country is covered by, more or less, dense forest, a survey of the Colony of whatever nature, must necessarily take some years to execute and cost a considerable sum of money.

The portions of the Colony situate on the coast and the banks of the lower reaches of the rivers which have been alienated from the Crown; the boundary between this Colony and Venezuela demarcated by the British and Venezuelan Commissioners in 1901-1904; the portion of the boundary between the colony and Brazil extending from Mt. Yakontipu along the courses of the Ireng and Takutu Rivers to Mt. Win-tawa at the source of the latter river, surveyed by Mr. C. W. Anderson, I.S.O., in 1906; and other information on record in the Department of Lands and Mines, are available, but they together form only a small fraction of the data required to be obtained before an accurate frame-work map of the Colony can be made.

A detailed topographical survey of the Colony would be a most costly undertaking and is not required at the present time, but the want that is felt is the need for a reliable frame-work map, and I will therefore confine myself to dealing with the question from that point of view.

The greater part of the country, as already stated, is covered with thick forest, and triangulation is not practicable except in the western part of the hinterland. The method to be adopted, as pointed out by Major J. M. Gordon, in his memorandum dated 4th December, 1911, to the Right Honourable the Secretary of State for the Colonies dealing with an Estimate of the cost of a survey of the portion of the Colony lying north of latitude 4° N., and published in Combined Court Sessional Paper No. 638 of 1912, would be to run traverses up all the main rivers and to connect them by cross traverses through the forest, and to check the whole work by numerous astronomical observations.

In order to reduce the cost of cutting and chaining lines along the banks of the rivers for the main traverses, the Subtense method could with advantage be adopted wherever the nature of the streams admitted. The angles of these traverses would require to be carefully observed and checked frequently by azimuth observations.

Permanent marks with, if possible, a distinguishing number, should be erected at, say, every 5 miles along the main river traverses to serve as beacons for tying on other survey work which might be done in future years.

The portion of the boundary between Brazil and British Guiana and which is laid down by Treaty as "the watershed line between the Amazon Basin and "the Basins of the Courantyne and the Essequibo from the source of the "Courantyne to that of the Takutu" would have to be surveyed before the extreme southerly limits of the colony can be definitely ascertained. This boundary approximately 400 miles in length, would probably require to be done in conjunction with representatives of the Brazilian Government, and on account of the nature of the country and its distance from Georgetown as the base of supplies, necessarily cost more money per mile than the other traverses.

In the attached lists I give (*a*) the estimated mileage of the main rivers to be traversed, and the connecting lines across country to be cut and traversed; (*b*) the estimated mileage of the tributary streams to be surveyed, if possible by Compass and Float Line; which I think would have to be done to provide the data for making the frame-work map I suggest.

This work summarised is as follows:—

	Miles.
(1) River Traverses	5,350
(2) Traverses of connecting lines across country	950
(3) Traverse of South Boundary	400
(4) Surveys of Tributary Streams by Compass and Float Line, where practicable	6,700

To form an accurate estimate of the cost of executing this field work is by no means an easy task, and it is with considerable diffidence that I approach this aspect of the matter.

The rate of progress of a survey party consisting of two Surveyors and 16 men including 2 chainmen and a certified captain and bowman, I estimate as follows :—

(1) River Traverses, 2½ miles per day
(2) Traverses across country, 2 miles per day.
(3) Traverse of South Boundary, 1 mile per day.
(4) Survey of Tributary Streams, 3 miles per day.

The actual number of working field days would then, on the above basis, be as follows :—

Total miles.		Rate per day in miles.		
5,350	÷	2½	=	2,140 days.
950	÷	2	=	475 „
400	÷	1	=	400 „
6,700	÷	3	=	2,233 „
			Total	5,248 days.

As field work would have to be suspended during the wet seasons, it would be only practicable for 180 working days to be put in by a survey party each year.

With six survey parties employed, this field work might be completed in five years. I estimate the cost per annum of each survey party to be as follows :—

For first 2 years when the work to be performed would be below the Falls in the different Rivers :—

Surveyor in charge (year)	$ 1,920
Assistant Surveyor (year)	1,200
Personal allowance, 2 officers, for 240 days at $3 each ..	1,440
2 Chainmen, $30 per month for 8 months	480
10 labourers, $15 per month for 8 months	1,200
Rations, 12 men at 16c. per day for 240 days, say ..	460
Travelling expenses and contingencies	500
	$ 7,200

For the remaining three years when work would be carried on above the Falls :—

As above	$ 7,200
Certificated Steersman for 8 months at $35	280
Certificated Bowman for 8 months at $25	200
Rations for 2 men at 20c. a day for 240 days	96
Extra cost of rations for 12 men at 4c. per day for 240 days	115
Carried forward	$ 7,891

Brought forward	$ 7,891
Additional for boathands bringing up stores from Georgetown and extra labour required, say	1,709
	$ 9,60

The cost of the necessary boats, and tackling, tarpaulins, etc., can be put at an average of $300 for each party per year.

The surveying instruments required would probably cost for the whole work say $10,000, and a similar sum might be allowed for the cost of the permanent marks on the main river traverses.

The Surveyors when in Georgetown would occupy their time in plotting their field work, but provision would have to be made as well as for a competent draughtsman to carry on the preparation of the maps continuously and concurrently with the field work.

For the astronomical work, a separate party similar to that for survery work above the Falls will be required. This party, working from North to South for 180 actual field days per annum, would, I consider, be able in three years to cover the Colony with a net work of main and secondary observation stations. The Surveyors comprising this party should have a knowledge of Geology, and geological collections and observations could be made by them along the routes they travelled.

Maps drawn to two scales would be necessary. A large map in sections of say 3 feet square, to a scale of one inch to the mile and a wall map drawn to a scale of 10 miles to the inch. The large scale map would be prepared first and each section might be published as soon as completed. The wall map would be reduced from the large scale map.

SUMMARY OF COST.

Field Work.—	
6 Survey parties with boats, etc., for 2 years at $7,500 each per annum	$ 90,000
6 Survey parties with boats, etc., for 3 years at $9,900 each per annum	178,200
1 Observation party for 3 years at $10,000 per annum..	30,000
Cost of Surveying Instruments, say	10,000
Cost of permanent Marks, say	10,000
Office Work.—	
Draughtsman, Assistant, and Stationery, say, $2,500 per annum for 6 years	15,000
Lithographing and Printing 1,000 copies of each sectional Map and 1,000 copies of Wall Map, and Contingencies, say	26,800
	$360,000

I am much indebted to Mr. L. S. Hohenkerk, Government Surveyor, for the valuable assistance he has rendered me in the preparation of this paper.

(*a*) Estimate of Mileage of Main Rivers to be Traversed and Connecting Lines across Country to be Cut and Traversed.

	Miles.	Miles.
North Western District—		
Barima River—Kajtuma R. to Morebo Itabo, 30; Morebo to Betsy, 60; Eclipse Falls to Source, 70	160	
Branches—Aruka above Rubber tract	35	
Aruka to Amakura	20	215
Waini River to Baramanni, 70; Arawapai, 70; to Source, 25		165
Barama River to Kokerite, 60; to Towakaima, 50; to Aunama, 20; to Source, 60		190
Pomeroon.—		
Pomeroon River—Tapakuma to Source, 60; to Cozier Canal, 20		80
Lower Essequibo.—		
Branches—Supenaam, 50; Groete Creek and Branch, 45; Bonasika, 25		120
Cuyuni River,—H.M.P.S. to Akarabisi and both banks around Swarima and Kanaima		230
Puruni River, Main River	130	
Branches, Kartuni	60	190
Mazaruni River. Main River. R. and L. Banks to Turesi and tying across River, say 200; Turesi to Pimuah, 150; Pimuah to Source, 160		510
Essequibo River. Main River. On R. B. Makauria to Potaro, 100; on L.B. Muneri island up, 10; Potaro to Rupununi, 150; to Kuyuwini, 200; to Source, 125		585
Potaro River, Main River	130	
Kuribrong	100	230
Carried forward		2,515

	Miles.	Miles.
Brought forward		2,515
Siparuni River, Main River	120	
Buro-Buro	100	220
Rupununi River, Main River	300	
Rewa	150	
Quitaro	150	600
Demerara River, Main River		
Dalgin to Kumaparu, 80 ; to Canister Falls, 60 ; to Source and East branch, 60		200
Mahaica River and Branches, say		120
Mahaicony River and Branches, say		110
Abary River, from Bush Lot Waterpath to Source and branches, say		100
Berbice River, Main River.		
To Winter's Fall, 200 ; to Source 200, ...		400
Canje River, say		200
Corentyne River, Main River—		
To Malawai, 160 ; to New River, 200; to Source, 225	585	
New River, to Red Cliff, 125 ; to Source, 175 ..	300	885
Total for River Traverses		5,350
Tie Lines and Cross Country Traverses including Survey of South Boundary from Takutu Source to Corentyne		1,350
Total..		6,700

(*b*) Estimate of Mileage of Tributary Streams to be surveyed by Compass and Float Line, Chain and Compass or otherwise.

	Miles.	Miles.
Barima River—Kaituma and Anabisi, 70 ; Whanamaparu, 50 ; Whamma 35		155
Waini River—Arawapai, 40 ; Imotai and Arakabusa, 50 ; Upanubaru, 15 ; Mariwaru, 15; Kuyarow, 15 ; Morebo Itabo, 25		160
Barama River—Massowah, 20 ; Aunama, 60 ; Appaparu, 20 ; Ianna, 20 ; Wenamu, 10 ; Branch near Source, 25 ; Takie, 20 ; Torobaru, 15 ; Huri, 20		210
Pomeroon River, Shiruru and branch, 25 ; Harlipiaka, 25 ; Akawinni, 35		85
Carried forward		610

	Miles.	Miles.
Brought forward		610
Lower Essequibo,—Ituribisi and Ikuraka, 45 ; Tiger, Creek, 20 ; Makauria, 20		85
Cuyuni River, Right Bank.—Ekereku, 50 ; Urloowra, 20 ; Komang, 30 ; Otomung, 20 ; Waiamu, 20 ; Quartz Stone, 20 ; Arimu, 35 ; Oko, 30	225	
L. Bank.—Takutu, 20 ; Wapai, 35 ; Iroma, 30 ; Kopang, 25 ; Kutuau, 50 and branch, 25 ; Tupuru, 20 ; Ekrebisi, 20	225	450
Puruni River.—Mara-mara, 25 ; Puriari, 35 ; Kamawari, 20 ; Tiger, 20		100
Mazaruni River, R. Bank.—Oweang, 15 ; Partang, 20 ; Nembaru, 20 ; Weamou, 20 ; Karabung, 35 ; Aping 20; Merumé, 35; Kotoparu, 15; Kamarang, 25; Semang, 25 ; Issano, 15 ; Turesi, 15 ; Kaburi, 50 ; and branches, 60 ; Ikuribisi, 10	380	
L. Bank—Congoo, 15 ; Haieka, 25 ; Kukui, 65 ; Ataro, 25 ; Kako and branches, 95 ; Kamarang, 65 ; Siparimer, 15 ; Peaimah, 15 ; Issenero, 20 ; Putareng, 20 ; Enaku, 15 ; Rumong-Rumong, 15 ; Warima, 15 ; Morabisi, 20 ; Takutu, 35 ; Tupuru, 15	475	855
Essequibo River,—		
Right Bank.—Wineperu, 15 ; Irlakabura, 15 ; Moco Moco, 15 ; Dahalibana, 10 ; Akaiwanna, 15 ; Ortuhar, 20 ; Siroppa, 25 ; Creek opposite Smyth's River, 20 ; Creek at Manarowa Fall, 20 ; Creek opposite Cuyuwini, 25 ; Creek opposite Kassikityu, -35 ; Mataruki, 30 ; Urana, 20 ; Onoro 20 ; Wapuau 30 ; Branch above, 30	345	
Left Bank.—Wineperu, 10 ; Tipuru, 15 ; Baribara, 20 ; Omai and Branches, 50 ; Mowasi, 40 ; Muruwa, 50 ; Rappu and Branches, 75 ; Creek below Rappu, 25 ; Tussanu, 15 ; Smyth's R., 40 ; Creek below Kuyuwini, 40 ; Kuyuwinni, 225 ; Natti, 30 ; Tamanakiu, 15 ; Kassikityu, 100 ; Kamoa, 60	810	
Both Banks—Six branches above Kamoa say, ...	150	1,305
Potaro River—Amaila, 10 ; Kopinang, 30 ; Chenapowu, 20 ; Arnik, 25 ; Amakwa, 30 ; Ekureparu, 15 ; Maniparu, 15 ; Uewang, 10		155
Siparuni River—Tipuru, 35 ; Takutu, and Branch, 40 ; Surama and Tarramu, 45 ; Uruturukeng, 15 ; Kuriparu, 25		160
Carried forward		3,720

	Miles.	Miles.
Brought forward		3,720
Rupununi River—		
L. Bank—Ck. at Makarapan, Mts., 20; Watama, 20; Mora, 35; Bononi, 25; River and Lake at Pipicho, Vil., 35; Quatata and Moruka, 35; Awarikuru, 40; Kamarapa, 30; Uralli, 15; Maipuri, 15; Meneruau, 15; Purunaru, 40; Tawaiwow, 20 ..	345	
R. Bank—Marapa and Inlet, 20; Ikopu, 15; Rerekru, 25; Kurassawaka, 30; Simoni, 30; Kutoka, 30; Mapari, 20; Katuau-uru, 50; Arakwai, 25; Waipopo, 25; Waruwau, 25; Bakurua, 30; 2 other branches, say 60; 4 branches near Source, both banks, 80 ..	465	810
Rewa, 3 branches, say	60	
Quitaro, 9 branches, say	300	360
Demerara River—		
Left Bank—Haima, 20; Kuliserabo, 20; Tenabo, 15; Wineperu, 10; Manabadin, 15; Warabaru, 15; Darina, 20; Inaparu, 20; Anaimapir, 20; Paintekobra, 20	175	
Right Bank—Madewini and Branches, 40; Hauraruni, 35; Kairuni, 15; Kumaru, 15; Kara-Kara, 15; Wainibisi, 10; Kuruwabaru, 30; Orurokabra, 20; Itaribaru, 20; Itaburro and Branch, 35	235	410
Berbice River—		
Left Bank—Wironi and Branches, 150; Ituni and Branches, 60; Kibilibiri, 20; Kamudikaboura, 15; Yuwakuri, 35; Marlissa, 35; Rattlesnake, 20 ..	335	
R. Bank—Taurnama or Sari, 10; Bartica, 10; Kimbia, 15; Ibini, 15; Wikki and Bissaroni, say 100; Mora, 15; Huroromuni, 15; Gt. Hubudi, 15; Mambaka, 15; Harduri, 25; Kuruduni, 25; Hareraru, 15; Crabwood, 25	300	
8 other branches on both banks, 20 each, say ..	165	800
Corentyne River—		
Left Bank—Tiger, 10; Kanakaburi, 15; Mapenna, 30; Epira, 20; Alapalisso, 15; Mawarli 5, ; Urowa, 15; Little and Big Timehri, 35; Wonotobo, 20; Pani, 30; at Sir W. Raleigh's Fall, 25; Aramatau, 70	300	
Branches of New River, say	300	600
		6,700

BRITISH GUIANA TIMBER.

THE COMMERCIAL CLASSIFICATION OF COLONY TIMBERS.

By the Rev. James Aiken, M.A.

The exploitation of the colony's timber is at present engaging more attention than ever before. A few years ago the Government awoke to a mild sense of the value of this asset, and the result was still milder—the appointment of one Forest Officer, who was attached to that Department of all trades yclept the Agricultural. The preparation of this officer for his important work was a strenuous three months at Kew. Some useful tree counts and the collection of identification data have been reported since his labours began. This is in its way good and useful and it may be that, by-and-bye, the Government may see the advisability of strengthening the Forestry staff and doing even more than they have so excellently, if inadequately, done to spread a knowledge of the timbers of commercial value, quite a few of which undoubtedly exist. Their efforts may be stimulated by the sudden appearance in the colony of a firm hailing from the States who seem for the first time to have brought knowledge of the market values of timber and practical methods to bear on the export trade in colony woods. It has been something of a revelation to our local wood merchants and saw-millers to see them shipping even the great Silk Cotton tree, hitherto looked upon as a worthless giant of the bush, useful only to the chortling bunya and industrious ant.

That there are other—many other—eye-openers awaiting the circumscribed vision of colonials, I have very little doubt. This it is which brings me to the matter of my present essay. We want as soon as possible an adequate investigation of the colony woods from the market point of view. We may quote here a brief but illumining paragraph from a timber journal which outlines what we mean :

"Recent explorations in Papua have revealed the fact that this little known territory abounds in valuable timbers. Altogether 79 useful woods, many of them new to the timber world, have been found to exist in payable quantities along the margins of the great rivers. The Queensland expert who was employed estimates the amount at a million square feet to every 500 acres. Fifteen varieties of cabinet woods, 15 suitable for joinery, 16 suitable for beams, girders, etc., 10 adapted to carriage work, five for boats, four for under-water piles, and 14 miscellaneously useful woods are among the discoveries which are regarded by the Government of Papua as of exceptional value."

As will be seen this was not a scientific determination of the systematic place of the Papuan timbers. That is not what the Dutchmen went after. They wanted to know the market place of those timbers and that is the first thing the Government of British Guiana wants to know. In this connection the systematic naming of timbers is, of course, useful and intensely interesting

from a scientific point of view, but what is really important is the grouping under well-known and clearly identified local names, collated for district variations in nomenclature, of as many of our timbers as possible, in categories of the uses to which they may be put.

This matter of local names is indeed very important because it is easy to get them wrong from vagueness and differences in pronunciation and from the fact that an external character often gives the same name to quite different woods.

An illustration of this is the name "Broad leaf" (Creole "Brad leaf"). This name is given to at least two, perhaps three, woods. There is a reference, in the Journal of the Board of Agriculture. January, 1911 (*vide* Forestry Officer's Report) to "Mahoe (Broad leaf) Sterculia sp." Probably a timber known as "Matura" is meant, a close-grained somewhat hard and decidedly toughtimber quite commonly seen pushing its head up with a crown of handsome broad leaves in secondary bush. The name is also given to "Suradanni," a rather open-grained timber resembling teak in grain and colour but of a richer and darker brown, the sp. g. of which is just under 1.0. To make matters worse, I have still another timber under the name of "Mahoe" which unlike the two preceding has a marked and handsome silver grain, splits easily, on the radial lines, is much lighter in weight and colour than either, differs in structure in many ways, but probably belongs to the "lace bark" order.

The same kind of confusion arises in the case of "Saka" or "Sacre." The name is generally given to a heavy dark coloured timber, purplish brown in transverse section, lighter in tangential section, but from the Canje creek I have specimens from two wood-cutters one of which agrees with the "Saka" of the Berbice wood-cutters, another is a very light yellowish timber which in working gives off a strong carnation smell, somewhat like keritee, but more pungent. As in structure it is similar to the Laurus woods ; it may be placed provisionally among them while the other Saka is likely one of the Urticaceae.

These examples indicate the kind of work which is urgently wanted if the assortment and selection of timbers for the markets of the world is to be made easy for, and the reasonable share of the proceeds of their sale to be pocketed by merchants on this side.

The local merchant once in possession of a sound knowledge of the creole names of timbers, will then have to group them, for marketing purposes, as far as possible under names known to the timber user and justified by their character and uses. As, in a paper contributed to "Timehri," Vol. I, New Series No. I., I pointed out, "Mahogany" in a commercial sense is applied to half a dozen or more timbers occurring in half as many different botanical orders, so with Oak, Satin Wood, Rosewood, Walnut, and other market names nothing whatever is alleged botanically when these names are applied. They simply indicate that the woods sold under the names have certain similarities to a given timber, or certain qualities associated with it, so that they may be

ON THE ESSEQUIBO.

put to the uses to which those timbers are usually applied. Thus English, Spanish and American Oak are of Quercus species, but the African oaks are Lophira and Oldfieldiana spp., one a Dipterocarp, the other a Euphorbia, botanically wide as the poles asunder from each other and from the Cupuliferous oaks of the temperate regions of the North. The West Indian Satinwood is a relative of the Orange while the East Indian is a cousin of our Crabwood. The Rosewoods may be either Thespesia Dalbergia or Pterocarpus spp. according to the port of origin, and Walnut may belong to any one of three or four different botanical orders.

It will thus be seen that, after the sound knowledge of local names has been acquired, before the local merchant can arrange his timbers for sale, he wants an equally intimate acquaintance with the timbers in use in the United Kingdom, the States, Germany and France at least. He should know the different mahoganies in use and be able to guess at the value of a log from the run of the grain or mottle, for while plain wood is selling at 5 to 7 cents per foot, "fiddle mottle" or "peacock mottle" may fetch anything from 24 cents to a dollar, and a rich stop mottle at times sells at $2.40 per foot superficial. He should be able to judge of the fitness of an oak log for quartering for furniture uses, splitting for staves, or sawing for waggon planks. A knowledge of the many peculiarities of Birch wood, perhaps the most difficult of timbers to handle successfully, would be full of suggestion. The necessity after felling of quickly chipping the bark, removing the log and exposing under cover to free action of the air, the danger, after a long confinement in the hold of a ship, of finding your cargo doated and discoloured by fungus, or of decay due to close piling in the yard, or of shakes from too rapid drying, all this would be an education badly wanted by the timber men of this colony in the tender and loving treatment of forest products, and suggestive of ways in which local woods, at present considered valueless, might be turned to some useful purpose.

The secrets of seasoning Boxwood should also be a liberal education, as everybody knows this timber is used for turnery and engraving, and it is liable to split in seasoning. To avoid this, it is generally seasoned for four or five years in a dark cellar. The sap wood is then stripped with a hatchet and the hard wood blocks stored in the cellar till they are wanted. Its further preparation for turnery includes soaking in clean water, boiling, wiping dry and burying in sand or bran till put on the lathe. The supplies of this wood from Europe and the Black Sea are rapidly running short, and a good deal of the Boxwood now in use comes from the East, some from the States and some from East Africa. These latter timbers are botanically far away from the Buxus genus, and are not Euphorbias at all. A hint of the value of the roots of trees may be got from the fact that the root of the European box tree is used for turnery, the trunk generally furnishes the engraver's blocks.

The history of American Satin Walnut is also of interest, as an example of difficulties of a different sort successfully overcome. When first put on the home markets this wood got a very bad reputation for warping. It would twist and curl, after sawing, into drain pipe bends until there was not much exaggeration in the story of the joiner, who told a merchant that he had been

compelled to lock his shopdoor to keep in the wood the latter had sold him. The undaunted Yankee exporter, however, knew that wood was worth taking some trouble over. He made numerous trials and at last hit on just the right way of kiln drying it, and to-day its reputation is restored and it is a favourite wood with the maker of sewing machine stands, instrument cases and so forth. After all this, it gives one a sardonic joy to hear complaints of the splitting or warping tendencies of some commonly used colony woods, of a distinctly docile character when treated with even a modicum of knowledge of the idiosyncracies of timber.

It is useful to remember in this connection that even the obedient pine has quite often a twisted growth amounting to a complete circle in the length of the trunk, and that it all depends on the seasoning whether you get straight-lying or warping lumber. If pine were generally handled in the brutally callous way in which colony lumber is treated, there would not be an unwarped or unsplit board in a thousand.

For the classification of unknown timbers, a little erudition on another side is desirable for the expert timber exporter. Three or four years in a wood-worker's shop would do him good. A knowledge of the use of plane, saw, and turner's tools will be very valuable. While, for many market purposes, the eye for grain, knowledge of the moduli of rupture and elasticity, or judgment of the character of the silver grain is what is wanted, the placing of other timbers involves trial with various tools, and the trade name to be given will depend not only on the appearance of the wood, but also on the result of these trials. In ascertaining specific gravities, shrinkage, breaking strains and elasticities, the Government Department should take the burden off the traders' shoulders. The necessary equipment for accurate determinations of that kind are not within the reach of most private concerns, and again, results of this sort, arrived at by a working exporter, are not likely to be made available to the trade, as he will keep his knowledge for his own profit. Some of the technical points of the timbers, such as suitability for turnery or for carving, also fall within the scope of a Government Forestry Office, but the appreciation of values dependent on grain, colour, and weight is the proper sphere of the trader. No Government department can give him much help in picking and valuation for the market. On the other hand, he can do a little for himself in testing the comparative strengths of timber with very simple apparatus. Two rigid supports 12 inches apart, pieces of the wood to be compared, say 1 inch section and 14 inches long, a bag of sand hung on the middle, load till the stick breaks, weigh the sand, note the nature of break, long or short, fibrous or otherwise and there you are, you know the comparative strength and some of the qualities. Oak, tested in this way, breaks at 431 lbs., Teak at 403 lbs., Best pine at 224 lbs. Oak gives a long fibrous break, Teak a short sudden break, Pine a very short break. Ash breaks about 500 lbs., and gives a long break. The modulus of elasticity of our colony wood Yaroura is double that of Ash, Greenheart nearly so, while Bullet-wood Bartaballi, Kakeralli, Mora, Wallaba and Locust come in the order given, all superior to the best Ash. As these timbers are fairly plentiful, over several

thousand square miles of the colony, the timber exporter need not be stuck for wood in which strength is required. Some of these apart from their strength have points of beauty also, which make them suitable for ornamental work and furniture. Thus Bullet-wood requires only a dark polish to make it a Rosewood and some nicely grained Locust will pass as Mahogany. Waimara and Arimatto is still more like Rosewood, while Determa, Brown Silverballi, some Dullis, one of the woods known locally as white cedar and several others are all Mahoganies. Then for some of the uses of Birch some of the above—the silverballis for example—would be suitable, and to these a lot of sapwoods, such as Wooley, Longjohn, Ooloo and a dozen others similar in grain may be added for the purposes of the cheap furniture maker, whose demands are large and constant. For the purposes of Beech at least one wood I have met with is highly suitable in its appearance, resistance to shock, smoothness and ease of working. It was supplied to me under the name of Simarupa, but is a totally different wood which I have not yet been able to place. Packaballi, of which I have only a small specimen, seems also a Beech in quality as it is in appearance. For Satin-wood we have Coracororue and, for Satin Walnut, Saman and Hoobooballi; the finer grains of this timber would, however, take a place of its own, as it is among the most beautiful of the many lovely woods of Guiana.

For Lignum-vitæ we have the Guiacum itself, another wood introduced to me as Maihaihiba of even more horny character than true Lignum-vitæ, and a third known as Calmacatl in density much the same as Guiacum.

Of Oaks there are an abundance, beginning with Cautaballi and Itaballi and an unidentified wood brought me from a Georgetown boatbuilder's yard, we have besides Kakeralli and Mora, sometimes called Guiana Oak, Wadaduri, Baramalli, which in boldness of silver grain is more like oak than any of them, while, for waggon planks, some of the above and Yakasauri might come into the list. The best representative of Ash I have seen is wild calabash, which, when dressed, might deceive even an expert. Boxwood would be fairly well represented by Guava for turning purposes, but the baulks obtainable would be small.

The great demand for Yellow Pine might be met by some of the Melias, one or two of which for panels and wainscotting should, if they could be placed on the market at a reasonable price, answer exceedingly well. In the same category Oorilla or Bloodwood and some other light woods could be marketed as Guiana "Deals." This question of cost is of first importance, and unless the method of averages is applied, it may appear that many of them would only be put on the European market at a loss.

The price of Oak in the United Kingdom runs about 2s. 3d. per cubic foot for American and 2s. 5d. for English; as I have already said mahoganies fetch from 5 cents to $2.40 per foot superficial; yellow pine of the best class is difficult to get and runs to 3 or 4 cents per foot superficial, while white deals, of a class superior to any New York lumber we see in the colony, sell about 2-2½ cents. Greenheart is in demand at about 5s. per cubic foot

and Domingo Satinwood commands 22 to 34 cents. In shipments of one or two thousand logs to the United Kingdom an average price of about 60 cents per cubic foot would cover expenses and leave, probably, a margin; but if a market may, as is probable, be found in the United States, the lower freight might make it more profitable to ship certain timbers there. Some of our woods such as Purpleheart Ducalliballi, Letter-wood, Haviboodie and some figures of Itikibouriballi and Lana hold a place by themselves, they can only be considered as fancy and rare and, when they become known, their price would doubtless be high but doubtless also uncertain. Still, in cargoes in which they occur, they might help the average. The point is that the holds of a large vessel might easily be filled with timbers selected from timbers well known and in use here, and some of those named not so well known. If the lower-priced logs realised the freight on the bulk of the cargo, the finer and higher priced timbers would give the merchants profit on the shipment.

Within the limits of the space allowed me by the Editor I have not attempted an extended classification even of the timbers I have seen and handled. I hope shortly to see published the exhaustive treatise by Mr. Stone and Professor Dunstan which has for over two years lain in the pigeon-holes of the Government Secretary's Office. When this work at long last reaches the public, many points of confusion and doubt will be cleared up, and it will be possible with more confidence to attack the work of arranging a market catalogue. It will serve the present purpose if some of those interested in handling timber are stimulated to inquiry into the large business prospect that is daily widening for anyone who will take the trouble to make practical acquaintance with timbers of commerce and their uses. There is certainly no agency of development, which will so speedily bring that subject from the clouds to the earth, as that of the timber feller equipped with modern ideas and knowledge, which is power and in this case wealth, in measure probably not contemptible.

THE MINOR INDUSTRIES.

By Edgar Beckett.

Somehow the very name seems provocative of ridicule; there is an air very often, of contemptuous reference to such products as cacao, limes, cocoanuts and rubber. Again, those engaged in the growing or starting of these products seem to speak of them with an apologetic manner, as if they were to be taken not with that seriousness which is associated with the cultivation of the sugar cane.

This is explained, possibly, by the fact that, for so large a number of years, practically only one crop has been really cultivated in the colony—namely sugar. So that gradually it has come to pass that other crops have been looked upon as not worthy of serious consideration, mere abortive attempts only fit to be classed as weak efforts of inexperienced would-be planters. And yet if it were only realised that these products, though they may not pretend to vie with importance with that of sugar, can be made to form very valuable *subsidiary industries* to the staple crop, we think that one step in the right direction will have been taken. Unfortunately in the past for various reasons, chief of which we might mention the question of a labour supply, the cultivation on a commercial scale of these minor products, or as we would prefer to style them, subsidiary industries, have had to meet with strong prejudice, not from proprietors but their local employees, who, rightly or wrongly have seen in these industries not aids, but menaces, either to their employers' purses or to the local supply of labour. Nevertheless not a score of years ago this feeling of prejudice was strong against the Rice Industry and many a sugar planter in the days now happily gone-by, viewed with utter dismay, and even attempted to discourage, the growing of rice by their East Indians. True there were many notable exceptions, but as a whole the Industry was considered a dangerous menace to the well-being of our staple industry and incidentally to those actively engaged in promoting its welfare. But to-day a new order of things has arisen. Land and even leave of absence, is willingly and freely given to the East Indian labourers to pursue this occupation by a mutual and sensible agreement. With what result may we ask? Turning to those admirably-prepared leaflets issued by the Permanent Exhibitions Committee we find that in 1902-3 about 5 tons, in value of about £60, were exported from British Guiana, while in 1909-10 it had leaped to an export of 5,489 tons valued at no less than £64,699. Rice then has forged ahead until to-day this, at any rate, may be classed as an industry that is distinctly subsidiary, *i.e.*, a support, not a hindrance to the staple crop, and therefore to the colony in general.

The other industries, in the past, have lagged dismally. Nor have we far to seek for a reason for this.

It is always found as a universal fact that the majority will follow the line of least resistance, and the line of least resistance in this case has been decidedly the sugar cane. First and foremost it is an annual crop, it furnishes a quick

turn-over for capital invested: in the old days when a sugar property, owing to the extraordinary prices that prevailed proved a veritable gold mine, it was natural that all thoughts, all energies were directed to the growing of this crop. When prices became normal, or perhaps we should say abnormally low, we found ourselves with a knowledge of how to grow the sugar cane and convert it into sugar—and nothing else.

Further, to those engaged in the pursuit of cultivating an annual crop, the idea of having to wait for so lengthy a period for a return on capital invested struck dismay at once, and, with the exception of one or two stout-hearted planters, it was voted an impossibility to attempt to strike out upon, not be it understood, new lines, but old paths, long grown out of all recognition since the days the dauntless Dutchmen shook the dust of the colony from their feet. For it must be remembered that in "the good old days," cotton, coffee, cacao and fruit were all assiduously and skilfully cultivated by the Dutch planter. Berbice coffee was noted for its superior flavour in the world's market, and to-day one has but to visit some of our rivers to see the remains of old cacao plantations, very probably over a century old, a cacao tree of which, here and there, has become a veritable forest tree, holding its own proudly in that struggle for life which is so typical a scene of the Guiana forests. Not merely do some of them just hold their own against their native enemies, but they even rival some of their neighbours in size and importance. A fitting memorial indeed to the Dutch planters, who even if the several tombstones erected to their memory, which lie scattered here and there on the upper reaches of many of our rivers, had long crumbled into dust, need never fear that the work of their hands when alive and vigorous has been effaced. The fingers of decay may have swept away many of these tombs but the beauty of the trees they planted still lingers with us. Further still, though these trees are growing as forest trees they have not forgotten their duty and still they produce pods plentifully, which drop to the ground and eventually release the seeds, but strain as it may, any seedling that may have germinated stands no chance at all in the terrible fight which literally takes place for existence in our forests, and so they perish miserably. In 1886 Mr. Jenman mentions that Mr. Perkins, then in the Department of Mines of this colony, sent him a pod which he had gathered from one of these old and forest-grown cacao trees in the Essequibo river, "whose spread of branches was a hundred feet in diameter." So it came to pass that as the growing of cane was understood, enormous capital sunk in the industry, a crop could be reaped and returns counted upon every year, and like all grasses it was easily propagated and established,—the line of least resistance (natural enough in the tropics) was followed and has been followed since, with the inevitable result that we forget all about the fact that in "ye olden days" we grew and exported in large quantities crops other than sugar. It was after all very natural too that even if we could revive the growing of such-like crops as coffee and cacao, that fears as to the labour supply should predominate. But yet we have in some way been able to supply labour for the establishment of a subsidiary industry in the shape of rice, and still we find that the Balata Industry has at least found the labour necessary to collect

from 1905-1909 no less than 3,278,683 lb. Nor do we find that the exports have shrunk in sugar during these years, our total having been 555,984 tons.

Happily now we find that the fact that any colony which relies solely on one product for its prosperity, nay for its actual existence, stands in a perilous position, has taken deep root in the minds of proprietors of sugar estates, and already the fruit of this growth can be seen in the fact that efforts at growing rubber, limes and coconuts are being made on an extensive scale, by the sheer force of will of the proprietors themselves. wh many years ago abandoned that conservative policy which was often adopted by their representatives in the colony, some of whom were honest enough to have nothing to do with any attempt of this kind and bluntly told their employers so, others of whom possibly "played" at establishing other crops and saw to it that any attempts were complete and hopeless failures.

But the interest of the proprietor, once awakened, was not to be so easily put to sleep again, and this is a very healthy sign. He very soon showed in some instances, that he was in deadly earnest and at least a start in the right direction has now been made.

Then came upon the colony the effects of the wonderful "boom" in rubber, and though we may not have taken that advantage of such an opportunity that we should have, yet we do possess companies engaged in growing Para rubber. Again the idea of growing limes on British soil possibly to prevent any Sicilian monopoly of citrate of lime, resulted in an English Company sending out an expert to the West Indies to report upon the suitability of soils, etc., for the growing of limes on a large scale in this part of the world. Happily British Guiana, for a variety of reasons, was definitely settled on, and with the result that in more than one place limes are being grown on a really commercial scale. Difficulties innumerable have been met, but they have been surmounted; the idea that nothing serious was involved and that such crops should not be taken as earnestly as the cultivation of canes, was imbued even in the mind of the ordinary labourer, who, just a short time ago, considered it was a privilege of his that, for work outside a sugar plantation, wages which he would consider fair and reasonable if offered by the manager of a sugar estate should be scoffed at when offered by a lime or rubber planter. Even he considered the whole idea of growing such crops as something to be laughed at, something which he might fairly exploit for his own benefit by demanding unfair wages out of all proportion to the value of the work to be done. Gradually this has been displaced. This too is a healthy sign. In the hands of properly trained men, equipped with a knowledge of local prices for clearing forest lands, weeding and shovel work, who enforced discipline as strict as that exacted on a sugar estate, in short of men who knew their business and who intended to do it, there has developed already the idea that after all the cultivation of these subsidiary products, as we hope they will prove to be, is not a mere farce, something to be jeered at and ridiculed. Though, perhaps not much, this is something. For already we have, on the one hand, sugar proprietors growing these crops on an extensive scale, and various companies actively engaged in this direction also; on the other hand they are now being regarded

with due seriousness, they are no longer open to ridicule,—they are becoming a business and are being conducted on business lines. Interest then of the right sort has been awakened. The seed has been sown, it only requires, let us hope, to be watered and nurtured and skilful treatment for it to develop into a full-grown tree, which in course of years shall produce fruit "an hundred-fold."

It must be carefully borne in mind that, though we consider that there is abundant room for these subsidiary products and though we hope to see them multiplied and extended considerably, yet, in our opinion, the sugar cane is the ideal crop for large areas in this country. Judicious care, with the routing out of all spirit of rivalry, must then be the duty of all growers of these crops, which, advocate for them as we are, we yet only consider them as props to the colony's welfare, not as substitutes for King Sugar, which by reason of the numbers of labourers it is bound to employ, the turning over of large sums of money annually, etc., must, probably for a very large number of years, retain the superior position it now holds. A more fatal mistake than to take up the growing of any of the numerous crops, which come under the category of "minor products," in a spirit of antagonism to the staple crop could not possibly be conceived. On the other hand the sugar planter should on his side deal gently with the infants now struggling up, if he has the welfare in the future of this colony genuinely at heart. To smother them at their birth will be a crime, which in course of time will re-act on his own head in a manner that may possibly surprise him.

A hopeful feature, we take it, will be the reflection which this activity of the large capitalists will have on the smaller class of farmer. Is it not reasonable to hope that ere long he too will realise the potentialities of these miscalled Minor Industries? The small farmer has, in our opinion, opportunities that few places in the world offer so readily of becoming an independent, prosperous proprietor, if he would but take an intelligent interest in these industries. The East Indian knows, and has known, for a long time how to grow rice, when he discovers that he can grow such crops as cacao and limes (and we may rest assured that he will learn) and make an excellent living from their cultivation, he at any rate will require neither whip nor spur to urge him on. He will then become more thriving and prosperous than he is even now, and will prove more than any other agriculturist what these crops can be made to do for the proprietor of small means, and he will by such methods become so important a social and economic factor in the future that the Black, aye, and other races, will have to gird up their loins, East Indian fashion, and run their hardest and fastest, if they are not to be left completely behind. Already they are forging ahead, they have paid their price for prosperity by hard and daily work, self-denying thrift, careful living and absence of luxury, and they are bound in any case to come still more to the front. By means of these minor industries their way to the winning tape will only be shortened, they will get there in course of time in any case.

In a paper such as this it is out of the question to deal with the merits of the various crops, their methods of cultivation, the care and attention necessary

for their success, which are usually regarded as the minor industries. At the same time a review of some of the salient features will not be out of place. The choice of selection from such crops as rice, rubber, coconuts, cacao, coffee, cotton, tobacco, maize, plantains and ground provisions, fruit, fibres, poultry breeding, kola, vanilla and what not, at once displays what has been termed somewhere a "round aboutness," that is in itself a very hopeful feature. Nor should we complete this picture of possibilities unless we at least touched upon some of the problems of what has now already grown into a tree bringing forth good fruit—namely, Balata, no longer mark you, any of your "Minor Product" about this industry, for this like rice, has proved itself a reliable prop, which for all its "ups and downs" was yet able at the close of the financial year 1908-9, to furnish the colony with so substantial a contributory aid to its export tables, as 1,090,405 lb. which in monetary figures means £98,128, which is a prop by no means to be pushed aside easily, even with the aid of clumsy legislation and any amount of mad management. To deal roughly with the crops that go to make up these subsidiary products, would, as we have remarked, demand a paper for this subject alone, but we can briefly touch upon them.

Rice.—This has now become an industry, but, unfortunately, an industry which still relies entirely upon the weather conditions for its success. The unparalleled drought which we have just passed through proves at once that it is still a precarious prop to the resources of the colony. The feature of this industry is, of course, the enormous strides it has made within a short period. The fact that just a few years ago the black peasant thought it beneath his dignity to plant this cereal, and that we have lived to see the East Indian hiring black men and women to work in his rice fields, is indeed significant. With so well-watered a country as ours it does seem as if we should be in possession of some well-thought out scheme of irrigation—doubtless this will come. The fact that American capital has been attracted to this industry and that one Company at least, is making rapid strides towards the utilising of steam and mechanical power, is probably the healthiest sign for the future of rice growing in this colony. One point that must exercise an influence for good is that enormous areas of our coast-lands are most eminently suited to the cultivation of this cereal. The clay lands of our colonies with their impervious sub-soils, can hardly be beaten by any other rice-growing country. We have the land, we have already interested outside capital, we have experiments in connection with the substitution of manual labour for merchanical, and we have a native variety—the Berbice Creole—which for length and quality of grain cannot be easily surpassed. We can then certainly consider that our rice industry is one full of good promise for the future.

Rubber.—Thanks to the "boom," the interest taken in this cultivation by that distinguished Botanist, the late Mr. G. S. Jenman, F.L.S., has been renewed. True it is that we cannot be proud of the progress we have made with this product, and that our knowledge of the indigenous Sapiums and Heveas cannot be said to be very great, but we can feel that the developmet of this industry should be only a matter of time. Sugar Estate authorities are plant-

ing areas on no mean scale, and our local scientific authorities have told us that a large proportion of our lands "is eminently suitable for the cultivation of rubber." Companies are in existence which are steadily increasing their area of *Hevea brasiliensis* and though from our present knowledge of *Sapium Jenmanni* apparently it is unsafe for plantation purposes, nevertheless we can still have every hope of Para rubber being extensively planted. Unfortunately, so far as we know at the present time, our native species Hevea *pauciflora* and *Hevea confusa* do not produce rubber on a commercia lscale, but still the genus is represented amongst us and we can certainly claim to be nearer the conditions of the famous Para tree of Brazil (*Hevea brasiliensis*) than are the fortunate planters of the East. As rubber has thriven in the East we can have every confidence it will thrive nearer its own home. We can, too, learn lessons from the mistakes of the Eastern planters. Everything points to a hopeful view of the rubber industry in this colony. The growth of the Para trees planted in the three counties has so far proved at least as satisfactory as the records given for other prosperous, well-known rubber-producing countries. While, as to yield, the trees distributed from the Botanic Gardens by Mr. Jenman, in the early nineties have, on being tapped, not only given very satisfactory yields but a product that has been described as one of a "high-grade" quality. With satisfactory yields from the few full-grown trees and excellent growth of the young trees, and large areas of land available eminently suited to its culture, why need we fear for the future of Para rubber-growing in this colony?

Coconuts.—It has been accepted as an axiom that coconuts do well on our coastal lands, wherever the soil is light and porous. Unfortunately this industry has been neglected, in spite of the fact that our oldest colonists will tell us that coconuts "pay" better than any other product. It is an industry that has been sadly neglected and all around us we see signs of ignorant cultivation or gross and wicked neglect. But now that agricultural light is being shed abroad more and more throughout the colony, and that various writers in the local press and elsewhere are persistently calling attention to errors in the cultivation of this the "prince of palms," and that the authorities are alive to the importance of keeping in check the scourge of what is probably a disease of bacterial origin—namely, Bud Rot, and that the havoc wrought in late years by the larvæ of the butterfly (*Brassolis sophorae*) has compelled coconut planters to be more alive to their own interests, we can, we feel confident, look forward to an enormous expansion of this industry. The value of the products yielded by the coconut palm has directed considerable attention to the possibility of this cultivation being extended, so that there are rumours of a forthcoming boom in coconuts, which, though it may be mild compared to that of the famous boom in rubber, will, nevertheless, have its effect on this industry in British Guiana. Already an English Company has secured options on several valuable properties;—so that although we must feel ashamed at the small progress we have made there are not wanting signs that in the near future we may yet have a coconut industry forming a most valuable adjunct to the staple industry.

Cacao and Coffee.—Of all industries we consider this the most suitable to the man of small means. We have large areas of land in this colony quite

as good as the best cacao soils of Trinidad. With increasing agricultural knowledge we can hope to see other colonists following the example of that plucky pioneer—Mr. R. A. Barclay, who established what has been called by high authorities a "Model Cacao" estate, on the Demerara river.

It is true that on old abandoned estates the dangerous fungus known as Witchbroom exists, but in these days of enlightenment, the trained man can keep his cultivation free from this pest.

Cotton.—We have, it is true, done nothing with this cultivation, but as there are hopes of our technical officers producing a promising hybrid, we may yet be able, like the little island of Tobago, to grow a hybrid cotton at a profit.

Tobacco.—We can grow a very excellent leaf. Our trouble has been the curing of the product in this moist climate, but the Rupununi Savannah Indians produce a tobacco which we have smoked very often with every satisfaction As the country is developed we have hopes that the cultivation of this crop may become one of great importance.

Plantains and Ground Provisions.—These products forming as they do, the staff of life for the inhabitants of the colony, are worthy of much more care and attention than they receive. Unfortunately the plantain disease has made its presence felt in this colony. Every effort should be made to eradicate it. The experienced Black farmer if asked what crop is the most profitable in this colony will tell you, canes, first, and then plantains. This industry is one that is certainly capable of expansion in the future.

Fibres.—We have native fibres from the "Kratta" to the common wild Hibiscus that will repay investigation and already interest of a practical nature has been evinced in this industry by at least one Company, which has planted sisal hemp on an extensive scale.

Bananas and Fruit.—Probably it will be a long time yet before bananas can come to the fore as a product of importance, but the fruit industry in the hands of skilful agriculturists can be made to perform an important function in our midst. At present nothing could be worse than the existing state of affairs. A few "middle-men" grasp all the profit, there is no cultivation worthy of the name, and good fruit is an expensive luxury not to be thought of by the ordinary individual. And yet things might be very different. The development of the colony, in course of time, must mean improvement in the method of distribution, and this may mean a brighter future for this industry. With a tourist "trade" too, well-bred and cultivated pine-apples, good varieties of oranges and well-flavourd mangoes from grafted varieties, should have an attraction which, by business methods, may be expanded by growers into something pertaining to the nature of an industry.

There should be some hope for a country which can range with some degree of success from cacao culture to fruit-growing, and from rubber to the exploiting of indigenous tanning material.

The recent experiments, by the late Mr. Thomas Wardle, in the substitution of mechanical appliances for mere manual labour on sugar estates, if they should prove successful, and in the course of time we believe the problems will be solved, must have a happy effect on our subsidiary industries. With the reduction of necessary labourers on a sugar estate there must be a falling back on their own resources on the part of the labourers, no longer required, and these will, in most cases, be compelled to take to the soil as a means of livelihood. At present they are content to work for a weekly wage on an estate, because they shirk facing the risk, care, forethought and responsibility, which farming land for a living means, even in this productive country.

Balata.—A subject such as this, of course, requires a paper for itself alone but one or two features might be mentioned. First as to the method of tapping or "bleeding" as it is called. It seems to us that this could so be improved upon that a tree might be bled or tapped every other year instead of requiring a rest for five years, so that the bark can be renewed. Again we understand that once water gets into the latex the bleeder throw the product away as useless. This, on investigation, might prove a needless waste.

The methods of registration, monetary advances and the thousand and one ills to which this industry apparently is heir have been discouraging no doubt, but when leading men of ability have formed themselves into an Association the better to remedy these evils, surely we can, without being unduly optimistic, feel that the future of this industry is a bright one. There is one point in connection with these subsidiary products which we cannot refrain from touching upon. In British Guiana there seems to be lacking that pioneer spirit which has done so much for other colonies when their resources were unknown. Here we have lusty and sturdy lads coming to the colony as overseers, clerks behind the counter, etc., who, apparently, are quite contented with their lot in life. We also have English and other creole young men of ability and strong sinews, who seem to know nothing at all about the land of their birth—and what is still worse, appear to have no ambition at all in this direction.

Surely the independence, the freedom, the tempting feeling of being engaged in the work of a *man* should, if nothing else does, appeal to them. Life for these should not have for its goal, a clerkship in the Government Service, or a perch on the mercantile stool. There should be some satisfaction that in re-claiming forest lands, and winning the produce from the soil, this, is work that cannot, by any means, be performed by a woman. The life has its discouragements and its risks and shortcomings, the beginning is fraught with care, and brimful with anxieties, the gall of the slanderous tongue will, at times, annoy, but in any branch of life this "working-day world" will be found to be "full of briers," which must scratch and irritate. But even all the obstacles that will beset the path of anyone who engages in pioneer work of this sort cannot take away the joy that lies in "doing," the feeling of satisfaction in conquering difficulties.

And if success should crown his efforts cannot he feel more satisfaction in having proved his manhood by being a producer—one who has done something,

and should his confreres rise to important and high Governmental offices of trust and power, need he feel any regret at his choice.

Purae rivus aquae, silvaque jugerum
Paucorum, et segetis certa fides meae,
Fulgentem imperio fertilis Africae
Allit sorte beatior.

Yes, "a brook of sparkling water, and a copse of a few acres and a sure trust in my crops, is a lot happier by far than his, *though he cannot see it*, who glitters in the lordship of fertile Africa."

This is as true to-day as when Horace was singing his odes. For such a one "Black Care" will not for ever cling behind him.

But such a prospect can only be hoped for by those who are made of the right "stuff"; those who lack industry and are unsuited to the life will develop into mere "squatters" of no use to themselves or the colony, such will only become idlers until their degradation brings its due punishment, and more important still they will bring the minor industries into very bad repute.

BALATA BLEEDERS LEAVING ROCKSTONE (ESSEQUIBO RIVER) FOR THE BUSH.

THE BALATA INDUSTRY.

By George C. Benson.

I promised the Editor-in-chief of "Timehri" a short article on the Balata Industry. The promise must have emanated more from a soft nature than from a controlling brain; because as so many of my views are opposed to existing theories and to present arrangements, I shall only be facing hostile criticism. However, as I feel I am right, I follow the example of President Roosevelt by throwing my hat in the ring and take my chances.

The Balata Industry must always be by its very nature a somewhat precarious one. The element of speculation must always exist, but there is no reason why it should not in spite of this element of chance be on an average exceedingly remunerative to the operators. Like all forest gums, balata is extremely dependent, not only on the quality of the soil on which it grows, but also on weather conditions. Too much rain is detrimental, and too much sunshine is equally so, but an equally proportioned alternation of rain and sunshine tends to produce the maximum of yield.

If balata is to be profitably produced and to be made to give a splendid commercial return, a different plan to that which is now followed must be adopted. To begin with, the trees must be bled in a totally different way. The present method of bleeding not only endangers the trees, but does not produce a maximum yield. Many others, besides myself, certainly believe that with scientific bleeding the trees could be tapped without detriment every year instead of every five years, and that naturally means a very much greater yield of latex than is now obtained. Again it must be borne in mind that the milk of the balata tree has highly combinative qualities. Balata is so strongly tenacious that it can advantageously absorb and combine quite 50 per cent. of many of the abundant common gums in our tropical forests. Samples of compounded balata which were sent to England, and which contained nearly 60 per cent. of carefully prepared Brittle Balata, quite surprised the British market and orders were at once despatched to my firm for very large quantities of the compound at the highest market quotations for pure balata then reigning. Other samples containing 40 per cent. of true balata, 30 per cent. of brittle balata, and 30 per cent. of the very common and abundant Hya-hya, so attracted Mincing Lane that it not only offered for the consignment the very highest market price fetched by pure balata but also wanted to know how large a quantity it could obtain by way of a regular supply. The way a great deal of our Balata is prepared often shows wanton carelessness and reflects great discredit on many of the bleeders and others. Through this the different balata companies suffer financially. It would be well if the doublées or dabrays were done away with, and arrangements made for the balata milk and other combinative gums to be sent to Georgetown in large tins or in small casks; because then they could be so easily manufactured into clean, uniform, and beautiful amber-like sheets, which are so much esteemed

both in Europe and in America, and for which those countries are alway so willing to pay the very highest market rate.

The Balata Industry, in addition to suffering from an influx of newcomers and an epidemic of mismanagement, has lately suffered from both indifferent and unreliable labour, and it is very likely to continue to suffer until forcible steps are taken to weed out the offenders. No doubt the Balata Committee may help to find a solution. Apart from that the only way to obtain something akin to reliable labour is by a strong combination amongst the different Balata Companies themselves—all working in a business-like way, and all agreeing on a business-like procedure.

The labourers here can, as a very general rule, by the adoption of any regular system of discipline be made to conform to a befitting conduct. They are, on the whole, in the absence of special temptations, a well-behaved body of men. When once they recognise that by violating the law, or by serious default towards any one of the Balata companies, they are liable to be discarded by all the others, they will think twice before they play the double part which so many have played in the past and which we regret to say, so many of them are still playing. It was principally on this account that the Balata Association was formed and the first promoters of this association deserve the greatest credit for endeavouring to put the Balata Industry on a sounder footing. Persisting in spite of discouragement and criticisms, Mr. Joseph A. King saw it eventually comprise the entire body of employers before he laid down his office.

There is something to be said for the labourers, for all the blame for recent troubles must not be ascribed to him. Except the native Indian, the creole black man or the acclimatised black man, is the only worker that can successfully withstand the many hardships consequent on tropical forest life. Experience has too often and too fully demonstrated this. The black man's vitality, his power to bear hunger and fatigue are blessings which he does not appear to sufficiently recognise ; and which his employer insufficiently appreciates. They are valuable qualities for wealth-production in the colony which are not to be lightly overlooked.

The foreman should preferably be a black man of long forest experience. He should thoroughly know his men and how to control them ; because to a very great extent on him rests the curtailment of unnecessary expenditure, together with the expedition's successful issue. Ignorance or want of tact or absence of control in such a man is ruinous.

An attempt was lately made to produce elastic balata, and to a slight extent it succeeded. Although the balata gum is so rigid and so tenacious, yet as it admixes so readily with other of our forest gums there is good reason to hope that an article of great commercial value will not be long in forthcoming.

In this brief outline of the Balata Industry only facts have been enunciated—such as experience has led us to believe are indisputable. I believe the industry is still in its infancy and that instead of declining in consequence of recent troubles and their disastrous financial results it will rapidly increase as a source of wealth to the operating capitalists and to the colony as a whole.

THE GOLD MINING INDUSTRY IN SURINAM.

By J. W. Donaldson Aiken, F.R.G.S., A.M.I. Mech. E.

Failure with a capital F. seems to be the net result of all efforts hitherto made to exploit the undoubtedly rich placer ground known to exist in this dependency of Holland. As the country itself is not to blame, a cause of failure must be found, so "the awful climate"; the almost insuperable difficulties of the transport problem; and the usual hundred and one "reasons why" of "the man who didn't" are forthwith trotted out. The reasons given only illustrate the adage "A bad workman blames his tools." Dutch Guiana, unfortunately, has been no exception to that peculiar fate which seems to dog almost every tropical country where mining is embarked upon, the early years of the industry being marked by a decided preponderance of failures over successes. This peculiar state of affairs may be directly attributable to any or all of the following causes, viz. :—

(1.) Inaccurate reports, due to careless or incompetent prospecting of the property.

(2.) Injudicious selection of machinery due to irresponsible management and want of knowledge of local requirements.

(3.) An expensive and unreliable labour force.

(4.) A badly organised and consequently expensive transport.

(5.) And finally—"slackness." This is a very prevalent microbe in the tropics, and affects some people so seriously that six months suffices to transform them into "devotees of the long chair," and disciples of "Let it slide."

Observations made during a recent trip to the Surinam goldfields, indicate pretty clearly that any and all of the causes enumerated above have figured largely in keeping this district in the backward condition in which we find it to-day.

During my investigations I came, everywhere, upon evidence of the extravagant and ill-advised dispersion of capital which seems to have been the rule rather than the exception. To-day that capital is represented by tons upon tons of more or less unsuitable machinery cast down anyhow in the Surinam bush, and the once high hopes of the trustful investor are now as far from realisation as the machinery is from civilisation.

I think it was a gentleman hailing from America who once said, "You can fool all the world some of the time and some of the world all the time, but you can't fool *all* the world *all* the time." This man was evidently a person of some worldly knowledge and the true inwardness of his philosophy is seen and appreciated when one looks around at the heterogeneous and rusting mass of miscellaneous hardware which has been fired into this colony at the instance of the self-styled "mining engineers," who ruled the destinies of these unfortu-

nate companies, now defunct (not the mining engineers alas! but the companies), and one cannot but marvel at the glaring mistakes which have been made. So marvelling we leave it to turn to something more *pro bono publico* than weeping over the lost hopes of former ventures.

Looking at the map of Dutch Guiana we find that the country is watered by five principal rivers, viz.—working from west to east—The Courentijne, the Saramacca, the Suriname, the Commewijne, and last, but by no means least, the Marowijne. These streams flow generally from south to north and the first and last form the boundaries between the British and Dutch, and French and Dutch Guianas respectively.

In all of these rivers and in some of their tributary streams gold can be found in the gravels in the stream beds.

The nearest prospect of improved exploitation of the riches of Surinam is in a proposal now on foot to establish gold-dredging on the Marowijne river. As this scheme is in the hands of thoroughly competent and experienced people, the result of their operations will be viewed with particular interest by the mining public, and should prove almost certainly of great value to the colony.

The Marowijne gives promise of being an ideal dredging proposition, as the gravels are deep, regular, free of boulders, with a shallow overburden, and a soft and easily cleaned bedrock, whilst the values per cubic yard appear sufficiently good to warrant the investment of a large capital in the venture.

On the Saramacca also there are indications which point to its becoming a profitable dredging field. Up to the present no dredging data are available which are at all worthy or indeed possible of consideration. One company operating a small prospecting dredge (which does *not* pay) has a staff of six!! European and creole engineers to keep it in order, but in spite of "*hard times*" this merry crew closed the dredge down for ten days holiday at Easter. It would be hardly fair therefore to accept data from an opera-bouffe concern of this sort, and solemnly proceed to pass judgment on the possibilities of a whole district from figures which could only prove the incompetence of those responsible for a state of affairs such as the foregoing.

Next we come to the possible existence or non-existence of lode formations of sufficient value and permanency to warrant their exploitation. On this question, as no development has yet been done on any of the lode formations discovered, it would be premature to form a decided conclusion. That gold-bearing quartz does exist in well-defined and workable lodes, my own observations prove, as I have examined and tested two separate and distinct lodes on one property, which have been traced from the stream beds on each side of the mountain to the top of the range giving something over one thousand feet of backs, and both of these lodes carried payable gold.

Labour is a question on which any company proposing to operate mines in Surinam must bestow careful consideration. The local black with his high

days and holy days, his comparatively limited intelligence, and his expensive taste in haberdashery, is a luxury almost unattainable to a careful manager.

The question of imported labour and the various conditions affecting it is one which is altogether too large to discuss in this short article, but it is, at the same time, one which must be taken into account seriously, by any company proposing to operate on proper lines in this field.

In conclusion I can only add, that it is, in a way, surprising to me to find a country, so phenomenally rich, over a large area, in placer gravels as this colony assuredly is, and served by a really well laid railway system, in such a backward condition. and sticking so universally to the methods which were old and mildewed fifty years ago.

There is no doubt that given a proper opportunity Dutch Guiana will one day take a place as a gold-producer of some importance.

THE COLONY'S FINANCIAL POSITION.

By J. Van Sertima.

Sir Walter Egerton will assume the administration of the colony under most favourable financial auspices. Never during the life of the present generation has the Exchequer been in such good case. It is experiencing a rare fulness : a surplus balance of $418,322 at 28th February, 1912, against a debit balance of $73,045 at the end of 1905-1906 is a pretty picture to look at and gratifying to reflect upon.* During that quinquennium a wave of prosperity has passed over the West Indies, and it would have been strange indeed if it had left the shores of British Guiana unlaved. For the government of one colony, I conceive, is not much better nor worse than that of another ; trade is interdependent and catholic, especially in a given small area producing much the same commodities for export, and requiring much the same articles for use, consumption and enjoyment ; within that domain adversity or prosperity can hardly have any striking preferences except where (as in Trinidad) Nature conspires ; and, above all, there is the constant desire of every colonist to better his position—a force-power which has often been sufficient to offset the effects of imprudent State management. Every encouragement, therefore, should be given by the State for the play of this dynamics in the social economy, for State finances depend ultimately upon the production of wealth by individuals.

The surplus balance to which reference has been made is handsome enough, but from the point of view of State economy it seems to illustrate the truth of the saying that there can be too much of a good thing. In the case of a commercial company when the accounts of the year are cast up and ends are seen just to meet, the enterprise is not thought to be in a prosperous condition. The larger the excess of revenue over expenditure the more successful is the result deemed to be. In the case of a State, however, too large a surplus is a sure sign of mismanagement. For one thing, it predicates an undue call upon the taxable capacity of the people, which is a sin, although it does not appear to have been specifically mentioned in the decalogue. How, in this respect, a State should manage its finances, was long ago laid down by one

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*The following figures show the annual fluctuations and the gradual extinction of the Floating Debt from 1886 to 1906-07 :—

		Debit Balance.			*Debit Balance.*
1 Jan.	1887	$ 290,209 58	1897		$ 442,931 18
	1888	390,550 68	1898		787,660 74
1 Apl.	1889	510,641 77	1899		819,370 28
	1890	580,364 04	1900		767,532 09
	1891	464,234 45	1901		746,134 47
	1892	376,591 47	1902		572,528 05
	1893	283,260 39	1903		305,424 21
	1894	110,789 56	1904		182,408 06
	1895	144,087 59	1905		151,380 60
	1896	275,811 76	1906		73,045 91

of the most successful Chancellors of the Exchequer England has had. "The training," he said—Gladstone is meant of course,—"the training I received from Sir R. Peel was that the right and sound principle was to estimate expenditure liberally, to estimate revenue carefully, to make each year pay its own expenses, and to take care that your charge is not greater than your income" So far as the finances of our Government are concerned, I think it will be found a safe rule to budget for a surplus of from £4,000 to £5,000.

What will be the state of the surplus when the Receiver General closes his books as at 31st March last, I am not in a position to say; but the very few persons who take any interest in these matters must have noticed that the balance has swollen very rapidly during the past two years. The pace, for all the world, seems too hot. This cannot be commendable when there are lots of other things to do with the taxpayers' money than to accumulate it with miser-like fondness. Now at the end of 1907-1908 the excess of the colony's assets over its liabilities was shown to be $160,122. Although during the next year the revenue included an extraordinary receipt of $11,225 made up of various unclaimed deposits that had been transferred, the surplus increased by only $4,112—$164,235, to drop the next year to $133,314, there having been a deficit of $30,920 as the result of the transactions of the year 1909-10. It was the first time since 1897-98 that the expenditure had exceeded the revenue. Since then there has been a remarkable turn for the better: there has been a large accretion to the floating balance. The year 1910-11 saw the revenue exceed the expenditure by close upon $100,000—$97,646, to be exact. This added to the balance of the year before brought the accumulated surpluses to $230,960 at the end of March, 1911. Since then, as the financial statements issued from time to time from the Treasury have disclosed, the surplus has been mounting.

To what extent settlement of the Crown Agents' accounts as at 31st March last will make a dent in it remains to be seen. Also, the Executive Government, screwing courage to the sticking place, may charge to Expenditure account the sum appearing as assets against, and having reference to their dealings with, lots 70 and 71, Corentyne, Tranquility Hall, Plns. Windsor Forest, Hague and La Jalousie. It amounts to $61,778. It is stated in the Auditor General's report for 1910-11 that the surplus shown at the end of that period "was due to some extent to the increased taxation imposed during the year but chiefly to the curtailment, wherever possible of expenditure, and to the change in the system of accounting authorised by Combined Court Resolution No. XII of the 3rd November, 1910." This means in plain language that inability, within a few months of the close of the year 1911, to foretell the behaviour of the revenue, caused some of the Government services to be neglected, and frightened the Executive into increasing the burden of taxation unnecessarily. They introduced an export tax on balata. The Government have since acknowledged their precipitancy. Unfortunately the act was not a spontaneous one. It was impelled by the obtrusive interference of a

third party who, we must take it, was actuated by considerations of the ultimate best interests of a colony which should treat tenderly the capital of whose incoming it is in so much need. There remains the fact, however, that the tax was imposed at a time when revenue was not badly wanted. The opportuneness of its remission will be appreciated—at a time when the purchasing power of the community (the fount of the revenue) has been sensibly impaired by a drought of unprecedented duration, at a time when a large amount of revenue is to be sacrificed in terms of a reciprocal trade agreement whose ratification cannot be far off now.

But there is something more pleasing to comment upon. A Government which have so managed their finances that during the course of six and thirty years, the expenditure has exceeded the revenue only eleven times, can hold their head high in the pride of a respectable achievement. For, as Wilson has it, "Finance is not mere arithmetic ; finance is a great policy. Without sound finance no sound government is possible ; without sound government no sound finance is possible." It is worthy of note that during the fifteen years immediately preceding the reform of the political constitution of British Guiana the expenditure was allowed to exceed the revenue as many as seven times. Since then such a phenomenon has occurred only four times. Let them halt, however, who would regard this as *prima facie* evidence of the greater vigilance of the elected members of the Combined Court whom an extended franchise sent up. For whereas up to 1891 the deficits of the preceding seven years amounted to $674,902 those of the four bad years in the succeeding four lustrums total a sum only $54,674 short of the figures just mentioned. In the three years ended 1898 the governing body made a tortoise of the constable : in that short time the deficits totalled $589,308. In the year 1895-96 the expenditure reached the highest point known to the present generation or indeed ever known. It amounted to £596,493. The optimistic local Chancellor of the Exchequer of the day who so deftly put the watchfulness of the elected members to sleep has since enjoyed the emoluments of two Governorships. He now enjoys *dolce far niente*. Since his time more efficient measures of financial police have put a period to extravagance, and so the pantings of the constable have become less distressing.

The colony has no Unfunded Debt, but rather a surplus balance of appreciable dimensions. As shown, it was not always so. How then, arises the question, did the Government manage to carry on when their income did not quadrate with their expenditure ? They never had the authority to issue Exchequer Bonds or Exchequer or Treasury Bills. They had always, however, lots of money belonging to other people lying uninvested in the Chest, and it is on these that they must have operated. The Public Debt is very small. Everybody seems to be agreed that the time has come when the industry of posterity should be mortgaged for the earlier material advancement of the colony. Not only is the Public Debt insignificant in amount, but much of it has been incurred on acount of other people than the taxpayers. At the end of the financial year 1911 the Public Debt stood at $4,258,152, but of this

amount the colony owed on its own account, that is, for its own benefit, a sum of only about $2,400,000. In the Auditor General's report we note that the position of the colony as against the indebtedness on loan account was

(*a*) Sinking Fund	$ 1,344,895	92
(*b*) Repayment of Loans by Corporations, Reserve Fund	782,308	82
(*c*) Outstanding Loans to Corporations ..	581,942	62
(*d*) Immigration Notes and Cash	336,000	00
	$ 3, 45,147	36
Less the capitalised value at 3 per cent. of the repayment in respect of Vlissengen lots	33,249	00
Making	$ 3,011,898	36

Regarding the loans to Corporations, Mr. Robson makes the following remarks, at once interesting and instructive:

"The amount of $581,942 shown as loans due by Corporations, includes the balances owing by estates taken over by the Government.

"Repayment by Corporations of Loans.—(reserve fund)—

Ordinance 3 of 1886	$ 547,034 34
,, 19 of 1896	235,274 48

"The amount at credit of the fund shows an increase of $14,283.26 during 1910-11.

"The loans raised by the colony under the Ordinances mentioned are for a term of 50 years repayable out of sinking funds; many of the loans to Corporations are, however, for shorter terms, and in these cases the repayments will cease long before the colony loans are repayable.

"The theory was that all instalments received on account of loans made by the colony out of money raised under Loan Ordinances—No. 3 of 1886 and No. 19 of 1896—should be credited to the reserve fund; while on the other hand the equivalent (as nearly as possible) of the amount provided on the annual estimate for Public Debt charges should be taken from the fund and carried to revenue.

"As regards that part of the reserve fund relating to loans made to Corporations from money raised under Ordinance 3 of 1886, it was the practice prior to 1899 to credit to the fund only an amount equivalent to the amount provided on the estimate for redemption of the loan, the whole of the remainder being carried to revenue. This practice tended to deplete the fund and it was consequenty no longer possible to take from the fund the full equivalent of the annual provision on the estimate; a sum ($32,500) was therefore calculated which was estimated to exhaust the fund simultaneously

with the colony loan, which amount since 1899 has been paid into revenue and will continue to be so paid until the colony loan matures; the equivalent proportion of the Public Debt charges borne by the colony in respect of this sum is $43,294.00, so that the present generation is paying no less than $10,794 per annum more than it would have had to pay had only the proper amount been taken to revenue prior to 1899.

"The whole of the instalments repaid in connection with loans made out of moneys raised under Ordinance 19 of 1896 having been credited to the Reserve Fund, the full equivalent of the Public Debt charges is taken from the fund and credited to revenue."

Strictly speaking—and this is a point which used to be laboured by the late Mr. Patrick Dargan—it is no function of Government to lend out moneys not for the benefit of the contributors to the State in their capacity of taxpayers. In theory, there is a tendency for taxation to be increased by reason of such transactions, but as a matter of fact some small profit does accrue to the State. Thus the moneys that have been lent from time to time to the corporations and the bodies responsible for the management of the water conservancies, pay interest at the rate of 4 per cent., whereas a large portion of the Public Debt has been raised by the Government at rates varying from 3 to 3¾ per cent. In 1898 a sum of $720,000 was raised in bonds paying 3 per cent.; in 1900 a sum of $138,720 bearing interest at the rate of 3½ and 3¾ per cent. was borrowed; in 1901 a sum of $22,656 was raised at a price of 3¾ per cent. The East Demerara Sea Defence Commissioners have borrowed from the Government a sum of about $130,000. For this accommodation they pay interest at the rate of 4 per cent. These moneys came out of the floating balance in the Receiver General's hands; if invested in the ordinary way they would have earned only 3¼ to 3½ per cent.

There can be no hard and fast rule as to what proportion of revenue should be put aside for works of a permanently useful or reproductive nature. When surpluses accrue, provision having been made for the service of the Funded Debt, it should be found not impracticable, and it would not be unwise, to appropriate some 10 to 20 per cent. of the year's revenue to such works, and this without harbouring such an intensely selfish thought as that involved in the unsophisticated query: "What has Posterity done for us that we should do anything for her in return?" We do no harm in earning in anticipation a benison from those distant people called Posterity. If we regard surpluses as "capital receipts," and we do well so to do, they should be devoted to the purposes for which money now raised on Loan Account is put. We should, in short, borrow from ourselves, a proceeding which Posterity would or should applaud. Probably the next best use for a surplus is to regard it as a buffer, and use it for emergencies, an idea which Governor Hodgson once entertained. We had a practical illustration of this just a few years ago when a series of surpluses unbroken for more than a decade suffered the accident of a $30,000 deficit. Then should come the turn of the taxpayer for a lightening of his burdens. But taxpaying man never is but always to be blest. Aided and

abetted by the Press, he is ever clamouring for better treatment, more efficient services, the idea of a *quid pro quo* being prominent. The ideal Government, proud in the privilege of doing as much good as they can for him who supplies and sustains their wealth-health, are ever anxious to meet him, even to anticipate his wishes. Such conspiracies beget expenditure. This has to be met by the proceeds of increased taxation, except where Crown lands opportunely yield their treasure abundantly, or some Government enterprise (we have only the Post Office) make appreciable profit.

The expenditure of the colony is growing, but the rate of expansion is to my mind disappointingly slow. Thus in 1881 it required a sum of $2,021,218 to carry on. This year the Combined Court granted a sum of $2,788,698 for the supply services. An increase of less than 2 per cent. a year does not seem good enough for this undeveloped estate of ours. Our capabilities, some would say, are being left to rust in us unused. The growing expenditure of a colony is presumptive evidence of its growing greatness. The Government can spend as much as they like, the more the merrier, provided always, as the lawyers say: they do not allow Treasury outgoings to exceed its incomings; so long as the taxpayers' taxable capacity is not strained; so long as provision is regularly made to meet obligations incurred; so long as extravagance is not indulged in, which connotes the getting of full value for money spent. There being no transgressions in these respects, increasing expenditure would be a gratifying evidence of progress. It is no particular business of Government to regulate their finances as the private individual does, that is, according to income. Herein lies the difference of the two economies. It is for Government to provide good, efficient services according to general conditions and the pressing needs of the hour, and then to cast about for the money that is required. Our Combined Court votes the supplies before it gets into Ways and Means. Always, however, must the Government have a becoming appreciation of their metes and bounds, of the capacity of those upon whom they make compulsory levy. They must not entertain the idea that there is any truth in the maxim discussed by Hume that every new tax creates a new ability in the subject to bear it, and that each increase of public burdens increases proportionably the industry of the people. The plucking of the taxpaying fowl must be done with sufficient skill as to prevent a squeal. There will always be divided opinion as to whether taxation in this colony is high. It tickles the ears of the groundlings to say so. The question is not the particular concern of this essay. It should be interesting to state, however, that a generation ago the value of the imports was returned at $9,932,017. The duty collected thereon was $1,059,002, or about 10.6 per cent. The value of the imports in 1912 was returned at $7,536,603, yielding a duty of $1,713,791, or nearly 23 per cent. Roughly, then, colonists are paying in respect of Customs duties a little more than twice what they paid at the birth of the present generation. They are infinitely better served will be the spontaneous suggestion. A higher price must, of course, be paid for better services. Most conspicuous among these is the improved means of locomotion. It will be observed that we seem to have

done a far bigger trade in the years gone by than to-day. By leave of *laudatores temporis acti*, that can hardly be the case, if we have regard even only to the growth of population. Take into account, too, the many items that have been added to the export list, not the least valuable being balata, gold and rice. What then is the explanation of an import trade of nearly ten million dollars in 1879 and one of considerably under eight million dollars in 1912 ? It is simply that the purchasing power of money has appreciated, another way of saying that the price of commodities has cheapened. But while this is so, the standard of living has gone up. And with regard to the figures, it can hardly be libellous or untrue to suggest that the Customs that was not so careful in its statistical preparations as the Customs that is.

The new Governor, as I have said, is happy in the opportunity of his coming in so far as the state of the Exchequer is concerned. It is not a question, however, of " What will he do with it ? " For it does not lie with him alone to administer the funds. His powers are severely limited by the political constitution of the colony The Combined Court as part of the Government is all-powerful in the matter of the disposition of the finances ; and while in the lust of its retrenchment it can demolish a temple it is not allowed to build even a hovel. That is to say it can reduce but it cannot initiate expenditure. It has no less power over the finances than Parliament over the finances of the British Government. Money can only be expended in the manner and for the purposes authorised by this Court. It grants supplies only for a year ; and, as in the case of the House of Commons, " redress of grievance " precedes supply. The estimates of expenditure it not only discusses " freely and without reserve," but it can reduce or strike out any item. The Court is composed of eight official members and fourteen unofficial members, the latter representing the electorate in the several districts and divisions of the colony. Whenever " the representatives of the people " vote solidly together against the official section, however much the Executive Government may have set their heart upon any measure, the will of the predominant partner, as representing Demos must be supreme. This is a tremendous power. Used soberly and in a statesmanlike way, it can do an infinite deal of good. Misused, it can easily set the hands of the clock of progress back. On the whole there has been a temperate, sensible use of this power. This is partly due to the fact that there has been no machine at work, no Cabal or semblance of clique on the part of the electives. And it is only fair to say that the Executive Government are not in the habit of offering provocation for defiant and concerted action on the part of those upon whom falls the larger portion of the responsibility for the financial management of the colony's affairs. The Combined Court is the only body that can " raise and assess " taxes, and this it does only for a year. But even if it did grant supplies for more than a year, say, by passing the Customs Duties and the Tax Ordinances in the same way as other laws are passed, that is, until amended or repealed, no money could be appropriated except in the way previously sanctioned by the Court. Thus it exercises a power which the

House of Commons was unable fairly and squarely to exercise before the unhappy and perverse Stuarts were got out of the way.

Whether the colony is doing well or ill it will ever become the electives to be vigilant as to expenditure. There is ever a tendency for this to increase, markedly so in the days of seeming plenty. Heads of Departments are human, and it is but natural that they should think highly of their departments and desire to see them spick and span and going forward with maximum efficiency. It is for the electives to keep strict watch and ward over extravagance. This is not always easy, for as a general rule the head of a department is persistent in this matter of expenditure. He will wrestle with you all night for form's sake, but at the breaking of day he will put the hollow of your thigh out of joint with a touch. *Impar congressus Achilli.*

THE ABOLITION OF ROMAN-DUTCH LAW IN BRITISH GUIANA.

By L. C. Dalton.

It is more than twelve months now since the President of the Royal Agricultural and Commercial Society delivered his first inaugural address to the members of the Society. Amongst the subjects referred to in that address which was remarkable not only for the thoroughness with which the several topics were dealt with, but also for its literary ability, the subject of Roman-Dutch Law may be said to take the chief place. It is intended, therefore, in this paper, to set down a few remarks on that subject, remarks which will have some reference to some of the statements made in the address and which, I hope, may be read by those interested at the present time when the adequacy or otherwise of the law, as it exists in this colony, is under consideration.

Some persons are apt to rely upon to a great extent and to read only the headlines of their newspapers when matters are dealt with in which they are not greatly interested. There is also a class in every community which regards a statement in print to be necessarily true and correct. It may, therefore, possibly be that many persons who received their "Argosy" containing the President's address, in so far as it referred to the subject now under discussion, a dry subject to most at any time, preferred to rely on the headlines of the report, instead of reading it for themselves. If that is so, they could not obtain thereby a true impression of what was really contained therein. Such startling expressions as "Vigorous attack on the Roman-Dutch Law," "Inadequacy of the Roman-Dutch Law," "An anachronism," "Superfluous and antiquated" and so forth, would lead one to expect much more than follows. Whether or not the President of the Society intended to attack "Roman-Dutch Law" as might possibly be inferred from these additions to his address, I am unable to state, but he certainly does not deal with the subject as a whole. Reference to the report will show that the part in question opens with the words: "For the Commercial Committee no more serious or pressing subject could present itself than the consideration of the suitability of our present Common law for existing requirements and possible developments of trade"; that is, the proposition raised is whether the Common Law of the colony is adequate to its trade and commercial requirements. It may here be pointed out, however, that at a later period in his address when he is showing how the Common law has been encroached upon by statute and by the introduction of English law, he calls attention to the fact that Ordinances dealing with Companies, Insurances, Merchant Shipping, Bills of Exchange and other kindred matters on the English model have succeeded one another in this colony. In experience, it will be found that the greatest changes that have been made in amplification of or in the place of Roman-Dutch Law here have been made in the law as it affects and deals with trade and commerce. If, therefore, the law as it now exists is insufficient for the purpose for which it was introduced, it seems somewhat

hard that "Roman-Dutch Law" should be made to bear the blame. It may be pertinent to add here that another prominent supporter of the proposed change has stated that the introduction of "the entire commercial law of England" is an additional argument in favour of altering the law in other respects. If that is so, the Commercial committee of the Society will not have to concern themselves with many of the delinquencies or shortcomings of Roman-Dutch Law.

A few remarks on the system that we have as it is administered in another colony may be of interest. For some nine years prior to my transfer to this colony I had some little practical experience in South Africa with the law as it exists there. The inroads and encroachments on the system have gone much further here than there, but I have no hesitation in saying at once that the law as it exists and as it is administered there, fully satisfies all classes and interests in the community. The following is an extract from the introduction to Advocate M. Nathan's book, published a few years ago on the "Common Law of South Africa," and it so admirably expresses what I wish to say that I may be excused for making use of it to some length: "The Roman-Dutch law "is practically the Roman law, gradually adapted to the growing needs of a "modern community; and the Roman law is the basis of the jurisprudence "of most modern countries where it has been found to work admirably. "During a working experience in South Africa of a century under British rule, "the Roman-Dutch system has fulfilled all that could reasonably be expected "of it. There is no reason why it should not remain to the end of time. In "matters for which it does not provide (such matters mainly as Roman "lawyers were never called upon to deal with practically) the English law is "invoked for decision, and hitherto the two systems have not clashed. "Modern commercial usages have evoked and evolved a peculiar and special "code of rules known collectively as English Commercial Law. In connection "with such usages it would be manifestly absurd to apply the Roman law. But "for all the personal everlasting relationships of life the great Roman and "Roman-Dutch lawyers made provision, and modern experience has shown "how equitable were the rules which they laid down and enforced."

Another extract from the notes of one who was one of South Africa's men of mark, namely Judge Watermeyer, of whom it is well said "His life was indeed a great gift to South Africa, and it remains still not only a memory but a power," has direct bearing on this point. For those here to whom his name may be unknown it may be well to state that he was a Doctor of Civil Law in Holland, and an English barrister who became a Judge in Cape Colony at the age of 31 and died at the early age of 43. In his "Notes on the Roman Law in this Colony" we read:

"When in 1652 this Colony became a colonial possession of the Dutch East "India Company, the law of Holland became the Colonial law.....general "legal principle was sought only where for centuries Europe had found it, in "the Roman law, this being modified only, by the special enactment of the "Mother country. Such was the state of the law on the cession of the Colony "to England in 1815; and it is the state of the law now. Vast improvements

"have taken place especially in the mode of trial, both in civil and criminal "courts, great reforms have been effected by Imperial and local legislation, "but the common law of the country remains, as before, that of Rome, as "adopted in the Netherlands. *For this no statesman or lawyer who has given "serious thought to the subject would substitute what is vaguely called English "law for an English Colony* (the italics are mine), although special legal "reforms introduced in England have been, and will continue to be profic- "ably incorporated with the law as here administered."

Just as in South Africa, so in this colony, "modern commercial usages" have necessarily required and have obtained the application of law which is not Roman-Dutch Law. As already mentioned, such matters as Companies, Insolvency, Insurance, Bills of Exchange and others of like nature have had specially to be provided for seeing that as stated in the extract quoted Roman lawyers were hardly called upon to deal with them. And there will be further changes in the future. Law is a perpetual growth and as Lord de Villiers states in the case of Henderson and another v. Hanekom (20. S.C. 519): "However "anxious the Court may be to maintain the Roman-Dutch Law in all its "integrity, there must in the ordinary course be a progressive development "of the law keeping pace with modern requirement." The Bench in the Transvaal has also given expression to the same sentiments in the case of Blower v. Van Noorden (1909 T.S. 890): "Old practice and ancient formulæ "must be modified at times in order to keep in touch with the expansion of "legal ideas and to keep pace with the requirements of changing conditions." Wedded as they are to their common law it will be seen then that they are by no means to be called bigoted. But it is not only "racial pride, local patriotism, and long custom" that have wedded them to their law. English, Scotch, Irish, Australian, and Canadian colonists in the country in addition to those from other European countries are all supporters of the system of law which is now theirs, and no suggestion or hint that it is not satisfactory to them has ever reached my ears. "Litigants, lawyers and Judges have been brought up in its atmosphere" is a sentence taken from the learned President's address, but he will, doubtless, remember that his own island gave in the last century some distinguished and eloquent lawyers, advocates, and Judges to the Cape, to whom the Cape owes much. To-day there are on the Bench of each Provincial Court Judges who presumably never breathed a Roman-Dutch atmosphere until they sat on the Bench in their adopted country. In one of the provinces an ex-Chief Justice of this colony, where he probably first came into contact with the system of law which he now administers, is a capable and much respected member of a strong Bench of Judges. English barristers are numerous in all the Courts and they doubtless recognise, after arrival, that the system fulfils all that reasonably expected of any system of law.

Questions and differences will necessarily arise from time to time and reference has been made to the difference of opinion arising between the Cape and Transvaal Benches in 1904 on the question of Causa (oorzaak). It is doubtless a question of much interest but it has now been finally settled in favour of the view taken by the Transvaal Judges. Such a difference of opinion cannot, however, be used as an argument against the retention or sufficiency of Roman-

Dutch law. If such questions did not arise, and all questions of law have to be settled sooner or later, the ranks of the legal profession would not be so crowded as they are now. Whether, however, the Transvaal or the Cape Judges took the most reasonable view of the matter, to residents of this colony an opinion expressed in an extract from a recent article by Mr. S. G. Morice, a barrister and late Judge of the Transvaal in pre-war days, in the South African Law Journal will be of interest. It need not be pointed out that "Causa" is not strictly identical with "consideration" in English law. Whilst in the majority of cases it is certainly "consideration," in others it is rather "motive." The extract to which I refer, which sets out in no undecided terms an opinion the English doctrine of consideration, is as follows:

"Although the English Doctrine of 'consideration' has much to be said "for it, we do not want it in South Africa. It is definite enough but it is too "narrow. Apart from its being foreign to our system of law it is repugnant to "the moral sense, and even, as in the case of a promise to keep open an offer, "to ordinary ideas of business."

This extract does not, I think, state unfairly the exact difference between the two systems, and on this point there can be little doubt that on principles of equity and justice the Roman-Dutch doctrine of "causa" (oorzaak) is much to be preferred to that of "consideration" as interpreted in English law.

Another frequent argument here in favour of the change is that it would facilitate the creation of a Court of Appeal for all the British possessions in this part of the world, and if this argument is sound it is one that should receive all possible consideration, for such a Court is eminently desirable for many reasons which it is not necessary to set out here. The difficulties to be overcome are, however, numerous and formidable. Local jealousies, vested interests and geographical divisions are all opposed to the success of any scheme. I will not say more than this, that in South Africa, prior to the union of the four colonies in 1910, it was found impossible to erect a Court of Appeal for the four colonies and native territories there, although the boundaries between them were often nothing but narrow rivers and wire fences, whilst the system of law is the same in all. That Court has only come with political Union. I would submit, therefore, that the argument is not a sound one; it is not based on any definite facts and has no certain foundation at all, experience being all the other way. It seems, rather, a suggestion thrown out by those who would like to see the change in law made, a suggestion to obtain votes as it were in support of the change, with a pious wish rather than any definite idea or opinion that the birth of the Court of Appeal might thereby be made easier. I am told that there are elements of Spanish law still existing in Trinidad, whilst in St. Lucia the code of civil law is, with modifications, framed on the principles of French law. Whether or not any of the other islands have elements of foreign law (i.e., other than English) in their systems, I am unable to state, but this is sufficient to prove that British Guiana is not alone in its position.

I am reminded that the law of Holland is no longer that which we know as Roman-Dutch law. It has, however, a codified system based on the same

principles as those of the Napoleonic code and I have little doubt that Roman-Dutch Law has done more towards the building up of that code than ever English law did.

I do not think I shall be wrong in stating that the local controversy was brought to a head by the decision in the case of Synada Bee v. Craigen in the Limited Jurisdiction at the end of 1910. The facts of the case are doubtless well-known and it is not necessary to say more than that the defendant was sued for the price of goods sold to him. It was held by the Judge who originally heard the action that there was no evidence that any price was agreed on and that therefore there could be no contract of sale. If, however, as was pointed out by the Full Court when the matter came before them on appeal, there was no evidence that would support a contract of sale, it cannot be presumed that therefore a donation has been made but that compensation would necessarily follow. The law as to a contract of sale is fully set out, as regards this question, by the Full Court, in the case of Teixeira v. Gomes (July, 1903.)

"Under the Roman-Dutch law a fixed price is an essential ingredient in a "contract of sale, and although the price is deemed to be fixed when it is left "to the decision of a determinate third party, still the fixing of the price cannot "(save under circumstances not existing in this case) be left to the decision of "an individual not definitely determined (Voet. Ad. Pand. XVIII. i. 23), and "even when left to the decision of a definite individual, if he fails to fix the "price, the contract becomes void (ib.)." In the case of Craigen v. Synada Bee (March, 1911) the Full Court stated: "None, however, of the cases cited support "the view that under Roman-Dutch law, where there has been no contract of "*sale* but goods have been supplied by one party to another at his request "under circumstances showing a donation was not intended, the party receiv-"ing such goods is not liable to compensate the party receiving them."....

"It is, we think, clear that in a case like the present where a shopkeeper "requests a merchant or commission dealer to supply him with goods *quae* "*usu consumuntur*, the presumption necessarily arises that a donation is not "asked but it is intended compensation shall be made and if no price is fixed "then under the Roman-Dutch law, the person to whom they are "supplied is liable to pay 'fair and reasonable' compensation. (Dig. L. 17, 74 "and 155; Humphry v. Kaps, 28 Oct., 1905. Grotius III. i. 16 and 17.)"

Presumably on hearing the original decision in this case the ordinary layman thought that if he purchased goods at a store or shop and did not "fix" a price at the time he might thereby avoid payment. It is frequently impossible when translating from one language to another, to exactly convey in one word in the second language what is meant by a word or series of words in the first language and it appears to be so in this case. As there are certain definite requirements to constitute the contract of sale, so there are certain requisites for the price which must be "verum, justum et certum." These words have probably been loosely translated into English as "fixed" which does not by any means convey all that is contained in them. "The price may be certain in itself, or by relation to something else as where it is made to depend

on what another thing of the same kind will fetch, or it may be left to the decision of a third party." It can also be fixed by custom, as in the case of market price, if that is sufficiently certain at the time.

It will be seen, therefore, that there was no cause for the cry of dissatisfaction that arose when the original decision was given, apart from that which naturally arises from an erroneous judgment. Whilst on this subject, however, it might be recommended for the consideration of commercial readers and lawyers whether the existing law might not be profitably and reasonably amended or consolidated by the introduction of some such measure on the lines of the English Sale of Goods Act, which codified the law in England. Legislation on those lines has on several occasions seemed to be not only wise but necessary and not only in this colony but elsewhere, and it appears to me to give proper scope for those who wish to make some change in the existing law. Whether such a change should involve the introduction of all that is contained in the English Act, rather than be merely a codification of our common law and existing practice, or whether some or any of the principles of our law should be retained is not for me to say here.

In British Guiana, of course, *laesio enormis* may be pleaded as a ground for rescinding a sale whilst a further difference deals with the question of warranty. In English law the presumption is that the principle of *caveat emptor* applies, whereas in Roman-Dutch law, warranty is presumed unless it is expressly excluded. Differences such as these would necessarily have to be carefully considered in the course of the drafting of any bill.

That Roman-Dutch law is based on principles of equity and justice, is perhaps rather a needless statement as it is also when speaking of English law. Cases, however, come to mind in which the latter seems harsh and inequitable when compared with the law in this colony. Take a case which especially rises in our minds here: It is well-known that over fifty per cent. of the children born in British Guiana are illegitimate. Various explanations have been given as to the cause of this, but whether those explanations are right or wrong, unfortunately there seems not much prospect of improvement. However that may be, under the existing law, provided illegitimate children are not born from adulterous intercourse, their parents are enabled to remedy the wrong they have done to them by a subsequent marriage together. Such a marriage will legitimise the offspring here, but it is not so in England. In English law an illegitimate child is the child of no one, without name and without parents, an outcast; Roman-Dutch law would soften this, supplies a remedy, and even if that remedy is not made use of, yet leaves the child a mother with the right of inheriting property from and through her.

One other example may be mentioned and one which it is now sought to introduce into English law. If divorce is recognised by the State, why should a distinction be made between the acts of men and those of women. In English law man is placed on a different plane to woman, but Roman-Dutch law would treat them alike.

Whilst I have touched upon what is merely the fringe of so wide a subject, yet I hope that what I have written may throw some rays of light upon the scene. I do not set up to be an out and out protagonist on behalf of the existing system of law in this colony, but I do say we should look before we leap. If we are going to change the law, look carefully at what we are going to put in its place, and also try to see what effect it will have on existing conditions and circumstances. Ill-considered changes will have far-reaching effects. The proposal to replace Roman-Dutch law with English law in this colony is no new one, for I have read it suggested in local newspapers dating from the first half of the last century. Violent diseases often require violent remedies but any such disease in the body politic which requires a revolution in its system of law must be violent indeed. The Commission to be appointed by the Government to enquire into the adequacy of the Common Law for our requirements will doubtless act the part of the physician, will diagnose the disease if it exists, and it is to be hoped will recommend a gentle remedy.

ROMAN-DUTCH LAW AND THE WEST INDIAN APPEAL COURT.

A REPLY.

By J. J. Nunan, b.a., ll.b.

I welcome with pleasure Mr. Registrar Dalton's thoughtful contribution to the subject raised by my address. A representative Commission has recently been appointed by the Acting Governor to consider the matter and to make any necessary recommendations. Whatever views its Chairman or any individual member may hold, the question is unlikely to be prejudged.

Mr. Dalton has shown very clearly that in South Africa the Roman-Dutch law is a living thing, warmly supported by the general public and by the local bar, and that lawyers born in Europe, including my own fellow-countrymen (the shades of Porter and Upington, no doubt, being called upon me by an argument *ad verecundiam*) become in those surroundings most brilliant exponents of a jurisprudence to which they were not born. The Judges themselves are appointed locally from the leading practitioners. The case of the importation of that very able lawyer, Sir William Smith, from the Roman-Dutch Chief Justiceship of this country to a seat upon the Transvaal bench, was due to the special necessities of the post-bellum reconstruction and is not likely to form a precedent. The Judges of this colony, on the other hand, are usually appointed from magistracies or judgeships in other colonies, and have to begin the study of a wholly new system of law on their arrival, a Herculean task for any men who have passed the grand climacteric, especially if they are men who have been long severed from or never actually engaged in practice at the bar.

Mr. Dalton has made no attempt to show that in this colony the Roman-Dutch law is not a dead thing, beloved by none, seriously studied by none, unattractive to a community from which the last Dutch element vanished generations ago, a community which looks to England or to English-speaking Canada and the United States, where English common law prevails, for its supplies of capital and fresh colonists. Whether English or Roman-Dutch law is the more equitable system is a matter on which opinions may differ, and on which such South African writers as he quotes, can hardly be considered unbiassed. Pure Roman law or the various codes based upon the Napoleonic, considered as organised moral and ethical philosophic structures are probably superior to both. Both Holland and Surinam abolished Roman-Dutch law a century ago, but we have proved more Batavian than the Dutch.

Mr. Dalton's arguments are mostly quite beside the issue, which is that what was once a more or less uniform structure is now a mere wreck. It is not a case of aiming at a higher ideal, which is an

object very laudable in itself but which will not appeal to men of affairs as readily as considerations of practical convenience. Has our law as it stands at present the essential quality of being readily and definitely ascertained by lawyers and Judges even if, like the law nearly everywhere else, it is an esoteric study to the man in the street? Most emphatically it has not. Mr. Dalton himself has conclusively shown that the remnant of Roman-Dutch law in this colony creates hopeless confusion in minds trained to think only in the English terms as to contracts, sale of goods, warranty, and other elementary features of commercial life. He might also have taken quite another department of its activity and have referred to the astounding result produced by the piecemeal efforts to reconcile the Roman-Dutch law as to husband and wife with more modern ideas. Community of goods (a Teutonic not a Roman institution grafted upon the earlier law during the Middle Ages) was abolished by the Married Persons' Property Ordinance, 1904. So far as the statute law serves as a guide, the surviving spouse for the next five years became a stranger, and inherited nothing not left by will. With the question of the claims ot the fisc I will not deal at all. The problem is already complicated enough. By the Deceased Persons' Estates Ordinance, 1909 the surviving spouse inherits one-half on intestacy *if there are no children or grandchildren.* If a wife has done her duty to the community and to her husband, or if there are children of another marriage, the statute law ignores her as regards his estate. If the husband is the survivor he also is ignored. But perhaps the common law may come to the rescue or did the abolition of the community in 1904 dispose utterly of the application of any common law right? The answer will turn on the measure of that Judge's foot who will first have the painful task of attempting to find a path through that labyrinth of black-letter law. At present we can only give a guess. The colony was blessed with the luxury of no less than two of the many Roman-Dutch methods of intestate succession, which in their turn were complicated by modifications, the extent of which is at present undecided. Only Bynkershoek or Voet or Sandé or Groenewegen could fully explain the position. Demerara and Essequebo have the New Aasdom's Law of North Holland, a creation ot 1599 by Placaat. Berbice has the New Schependom's Law of 1580, a Political Ordinance embodying in the main the existing common law of South Holland. If the other common law rights outside of community remain unaffected by the statutes and Professor Lee in his article in the Journal of the Society of Comparative Legislation for May, 1912, is inclined to that presumption, a surviving spouse in Demerara and Essequebo will succeed to the whole of the deceased intestate's estate in default of all relations by blood. In Berbice there is no such right under its ordinary law, but the matter does not end there. The legislator was at work on the improvement of that law as early as the 17th century.

In 1890 the problem of Berbice was considered in *Ex parte Administrator General re Estate of Alexander* but as the intestate was unmarried it did not decide what are the rights of a surviving spouse. It decided only that in Berbice the surviving parent, in case there are surviving brothers and sisters, takes one-half, the brothers and sisters taking the other half in equal shares.

Berbicians will be delighted to learn that the States-General granted to every person settling in Berbice power to choose such known law of succession as might please him but in case of no choice being made the law in such cases is the law laid down for the East India Company by the resolution of 1661. (I shudder at what may happen if a people so "town-proud" as that of New Amsterdam ever realizes the advantages of the law of succession in Kamschatka or Timbuctoo.) This was the law of South Holland modified as described by Van der Keessel 352 by the said resolution in the direction of the law of North Holland (which prevails in Demerara and Essequebo), as regards the succession, when there are a parent and a brother or sister or both brother and sister surviving, and perhaps in some other respects which judicial ingenuity may determine. The editor of the local Reports for 1890 cuts the Gordian knot by saying hopefully:—"The distribution of an intestate estate in Berbice is *prima facie* under the North Holland law. Professor Lee adds: "This is quite wrong." It is obviously wrong, but who can define the extent of the error? The learned Judges of 1890 dealt with the subject as Dogberry ordered the watch to deal with malefactors: "If you meet a thief you may suspect him by virtue of your office to be no true man; and for such kind of men the less you meddle or make with them, why, the more is for your honesty."

This is an attitude to the legal conundrums of the colony which has since been religiously observed. In his remarks on the surprising case of *Synada Bee v. Craigen* Mr. Dalton has unwittingly shown the difficulties with which new Judges are faced in the year 1911 in having to extract the reasons for their decisions from authorities couched in or imperfectly translated from the Low Dutch or very unclassical Latin of the 16th and 17th centuries. His single example of the liability to error involved in such cases is all embracing. West Indian Magistrates and Judges cannot be expected to be linguists as well as lawyers. Mr. Dalton has referred incidentally to *laesio enormis* as still capable of being pleaded in the colony. He is quite right. It has been abolished by statute in South Africa but lingers in this home of lost causes. It means that if a purchaser pays more than twice the value of the article he can have the sale set aside. It is opposed in every respect to the British principle of *caveat emptor* but is the law here. Yet in a hundred years only one or two cases have ever been decided on the point. When it has arisen, as it has arisen, Judges bred to the English ideas of contract have decided on other grounds, and, like Dogberry, have presently called the judicial watch together and thanked God they were rid of a knave. The very Rule of Court by which the Bench binds itself to deliver its judgments only in writing is an outcome of the sheer necessity of having to avoid the snares of an antiquated and mutilated system. Frequently it entails a delay of months in the deliverance of the judgment. But in such matters caution, even if expensive, is better than the precipitancy of little knowledge. A whole issue of *Timehri* might easily be taken up with the appalling anomalies of the present common law.

Taking the situation at its most hopeful, viz., that as regards surviving spouses at all events, there is one law of intestate succession for the

colony under the common law, on the theory that the practical effect of the resolution of 1661 was to alter the South Holland law of Berbice so as to make it the same as the North Holland law of Demerara and Essequebo on this point, we have to remember that relations by blood ousting the right of the surviving spouse to a single cent mean any cognates of the deceased within the sixth degree under the Praetor's edict *Unde vir et uxor*. The position in a prosperous or populous community would not last a month. In our backwater it is merely humorous, at least until an influx of new citizens is confronted with the muddle and uncertainty to which the long-suffering older residents have become more or less resigned. The colony believes itself to be on the eve of development. It is holding out its arms for fresh population and capital. It should not cling to a dead legal system merely because a similar system has survived in the friendlier atmosphere and conditions of South Africa.

I have no doubt a long process of careful legislation conducted by Crown lawyers of wide practice under the Roman-Dutch law and procedure in our Courts, and of sound acquaintance with English law and procedure, might succeed in removing many anomalies, and at least in accommodating the commercial law of the colony to the English law merchant, while still preserving the name and the empty shell of what was once the Roman-Dutch law. A drafting Committee of the Court of Policy might be of use. But these are counsels of perfection. The Attorney General, in our colony, has no private practice and except on rare occasions deals directly only with the Criminal Law, which is English. The Solicitor General has no legislatorial functions, and such functions are hardly reconcilable with his existing duties and conditions of service. My own contention is that any heroic project of this kind is impossible, unnecessary, and uncalled for by any local sentiment or other demand. Nobody cherishes the Roman-Dutch law in this colony. It is merely a tolerated nuisance, a chartered libertine whose eccentricities have hitherto been regarded as full of quiet fun, but which are incompatible with progress,. The laborious and confusing process should be simplified by a single legislative act accompanied by two provisions preserving the simplicity of our law of immovable property, and codifying the local requirements as to succession. As to the law of divorce, while as Christians, we admit the equality of the sin, the laws of nature ordain in the physical difference of the sexes, more disastrous results to the family and the race from the guilt of the woman than from that of the man. The law of England is a sufficient protection to society. That is only a detail in any case. Protection for illegitimate children, however, is a part of the law of succession which should be retained. The right of legitimation by subsequent marriage might also be preserved. It may be urged that its general effect is towards the construction of ordered family life, even if it is open to the charge of serving as an excuse for licence by limiting its disastrous results. It still exists in Scotland.

Mr. Dalton's reference to the difficulties of creating a West Indian Appeal Court are less well-informed. There is no longer any Spanish law in Trinidad. A series of Ordinances from 1844 to 1907 has removed its last traces. In St. Lucia the old *Coutume de Paris* has been superseded by the Code Civil of 1879

and offers no difficulty. The Criminal and Criminal Procedure Codes are English. A few French *arrêtes* may survive as historical lumber in St. Vincent but French law has otherwise disappeared in that island also. The law of the British West Indian Islands, it may be stated without hesitation, is English law. The procedure is English procedure. The South African Appeal Court was promptly created when the two independent republics became British Colonies and the other points at issue were disposed of in favour of a Union. It could not have been done before 1902. West Indian difficulties in the way of federation are neither political nor racial nor linguistic. In South Africa they were all three. They are rapidly vanishing and the end will not require a civil war for its accomplishment. We are no further from Jamaica than Durban is from Capetown either by time or distance, and insular particularism is vanishing in face of the pressure of modern needs. The West Indian Appeal Court will be created when any person in authority works out a reasonable financial scheme, while meeting the local requirements of Trinidad and Jamaica, the most important of the communities from a litigious standpoint, for the rapid disposal of their own numerous appeals. Permanent headquarters in Trinidad with half-yearly sessions in the other colonies, and a single additional Appeal Judge, the various Chief Justices and Acting Chief Justices sitting by rota would meet the case. One of the three British Guiana Judgeships could be dispensed with and other savings effected elsewhere. No additional expense would be incurred. It may be necessary to leave Jamaica out of count at the outset until the success of a less ambitious scheme is assured. But if the duty of beginning a study of Roman-Dutch law to meet the requirements of British Guiana is added to the other duties which the scheme will inevitably entail upon Judges even now underpaid, and in Trinidad by no means under-worked, its realization will be indefinitely postponed. But I will not further anticipate the work of the Commission to which Mr. Dalton's assistance will, I hope, be forthcoming. While differing from Mr. Dalton's opinions, or rather from their applicability, for as regards the merits of Roman-Dutch law as a system in the abstract, or as suitable to South African requirements, we are at one, I think the readers of *Timehri* will be pleased to see his able paper upon a subject of vital interest, which cannot be disposed of until every point of view has been carefully considered.

ELEMENTARY EDUCATION IN BRITISH GUIANA.

By the Most Rev. Dr. Galton, Bishop of Petenissus.

In the July number of *Timehri* there appeared an article on "Education in British Guiana" by Mr. A. A. Thorne, which gave a clear account of the history of primary education in this colony. The present article is written at the request of the President of the R. A. & C. Society who states: "What we want is a comprehensive survey of the position from the point of view of those who believe in religious education and religious control in the schools."

In treating the subject of Education as it is at present carried on in the colony, we must at the outset distinguish between the primary or elementary education and secondary education. I am here concerned with the former, Elementary Education in the Colony is regulated by the Elementary Education Ordinance of 1876. This Ordinance was passed, as the preamble to it states, "that the requisite provision should be made for enforcing elementary education." In 1900 several amendments were passed, now embodied in the Ordinance as it appears in the "Laws of British Guiana," to make the compulsory clauses effective.

By this Ordinance two kinds of elementary schools were established, as appears in section 2, in which the terms employed in the Ordinance are defined: "Elementary School" means a school or department of a school, at which "elementary education is the principal part of the education there given: "Aided School" means an elementary school, the managers of which receive "any grant-in-aid from the Colonial revenues: "Colonial School" means an "elementary school established by the Inspector of Schools and maintained "from the Colonial revenues: "Industrial School" means any elementary "school in which theoretic and practical instruction in agriculture or in any "trade or trades or in both is given and which is recognised under the regula-"tions as an Industrial School."

These are the different classes of Elementary Schools recognised under the Elementary Education Ordinance 1876, which is still the law of the colony regulating such education.

Putting aside, for the present the Industrial Schools, which are only ordinary elementary schools, which undertake a special branch of instruction in addition to the ordinary work of the school, we have two classes of elementary schools established under this Ordinance, viz.: the "aided schools and the Colonial schools." Aided schools are those built and equipped in the first instance by a private individual, or some body of men, and when satisfactorily established, assisted by the Government from the Colonial revenues.

Taking the state of things at present existing, we find that there are two hundred and twenty-four such schools, in the Colony. In the report of the Inspector of Schools for the year 1910-1911, which is the latest I have in my

possession now, there appear two hundred and twenty-four aided schools. All these except thirteen estate schools, which are the property of sugar estates, belong to various religious denominations. In the same report, no trace whatever of the existence of what are called by the Ordinance Colonial Schools can be detected. Thus after the lapse of thirty-six years, for no such school has been started in the last year, the Inspector of Schools has not found it either convenient or necessary to establish a school. Apart from the two Government educational institutes, the Onderneeming School and the Orphan Asylum, no school established by the Government exists. As no mention of those two schools appears in the Inspector's report, we cannot draw a comparison between the education efficiency of those schools, and that of those belonging to the aided class.

The Government has, therefore, it appears, left the establishing of schools to private individuals or religious bodies. Though it may be objected, that these bodies were already in possession at the time of the passing of the Ordinance, that objection will not hold especially with regard to many sparsely populated districts where no school existed, and where with advantage the Inspector of Schools might have established a school. The truth of the matter, therefore, is, that the religious bodies alone in the colony have had the welfare of the people sufficiently at heart to expend money and labour for their education, and yet some pretended educationists are opposed to the schools being under the Religious Denominations. What the principles are on which this opposition is founded, they have not clearly defined. The Teachers' Association has expressed its desire for Colonial schools and their motive is quite apparent to anyone who has followed the various speeches and discussions on the subject. They are convinced that if they served in Colonial schools their status would be improved, as they would then be Government servants. Their position as a class might be better, though it is very doubtful whether individuals would always receive as much consideration, as they usually do from the Religious authorities. Some years ago there was a certain outcry about arbitrary dismissals of teachers by the Denominational Managers and a system of appeal was introduced by the Education Code, 1900. The appeals under this section have been singularly few. In my own denomination, a board to hear appeals was appointed, consisting of a clerical president and two lawyers. Only two cases have come before them in the twelve years. One was a dismissal for immorality, made summarily by myself, in order that the teacher might have the opportunity of an appeal and trial. His dismissal was confirmed. The other was the case of a teacher whose dismissal was demanded by the Governor, because he was alleged to have helped, to incite to riot, in 1905. His appeal was upheld and he still holds his school. There have been very few appeals, in the same period, made to the Executive Council. In fact, most of the teachers, of large Georgetown schools, as also of the more important country schools, have held their posts for a long series of years. Certificated teachers, who are clearly efficient, have every opportunity for employment and it is only the inefficient ones, who find it difficult to keep their positions.

How the system of Colonial schools, as contemplated by the Ordinance, would have worked, we cannot tell, as such school do not exist. Under that

system the Inspector would be in the peculiar position of having to establish and maintain a school, and regulate its administration and also to inspect and report on the results of his own administration.

To return then to the present existing state of elementary education in the colony. Of the two hundred and twenty-four existing schools for elementary education two hundred and eleven belong to various Religious Denominations. What has been the action of these bodies and what their motive ?

In order to establish these schools, they have in the first place, expended a considerable amount of money in acquiring the sites and erecting the buildings. As things are at present, a school, before any Government aid can be obtained, must for six months previous to examination, have been maintained in accordance with the conditions of the Code. As, however, no payment is made till the following financial year, the school will, as a rule, have to be maintained entirely at the cost of the denomination for at least a year ; and generally more, before a Government grant can be obtained. The expenditure of money, however, is only a part of the work done by the denominations. The manager will have to devote a certain amount of time to the school and this he does perfectly gratuitously. He receives not only no salary as manager of a school, but derives no emolument whatever from the school. Nor does the denomination, as a religious body, derive any pecuniary advantage from the schools under its care.

We come then to the motive, which has impelled the various religious denominations to undertake this work. The authorities of all religious denominations, which profess and teach the Christian religion understand the importance of training the young in principles of morality and religion, if they are to do any good among the people for whom they are working. There is no teacher of the Christian religion, of whatever form it may be, who will not admit that morality must be founded on Christian principles. Their duty is not only to lay the truths of the Christian religion before their adherents, but to train them to direct their lives by those moral principles, which are based on the teaching of Christ. Some, however, of the Ministers of Christian denominations contend, that the day school education should be entirely confined to secular subjects and religion be imparted only on the Sunday. They agree with those, who hold, that as the State prescinds from all religion, it should not even indirectly help religion in schools, by allowing any of the time devoted to elementary education, to religious instruction. On the other hand, those who uphold the denominational system of education contend, that there can be no true education, which is not based on true religious principles. Education does not mean simply imparting information or knowledge to a child but developing the child's faculties and among the faculties it is to develop, not the intellect but the will should hold the first place. The following quotation copied some years ago from an article in the "Spectator" expresses this well : "The mistake, which the extreme panegyrists of popular education, seem to make, consists in this : they narrow and impoverish their conception of education by confining the word to the process of acquiring a certain amount of mere book-learning, or of passing through a certain

curriculum at school. All progress that we make in true education must be a gain, but true education does not end, with the attainment of a certain standard of literary knowledge, or even of a certain degree of technical aptitude. It includes all manner of preparation for life and the worth of any system is determined far more by the moral than by the intellectual discipline which it imparts."

On this principle the various religious denominations have undertaken to establish schools in the colony. They desire to have the means of training the children, at the same time inculcating Christian principles as the foundation of moral training. On those principles the whole morality of Europe was trained in the past. Modern France, which has excluded religion from the schools and tries to teach the children moral principles on the basis of the good of Society and Humanity, shows as the result an alarming increase of juvenile crime and suicide, and the destruction of family life and patriotism. A similar result is noticed by thoughtful observers in the United States. There the State is not actively hostile to religious teaching, as in France, but negatively, takes no notice of any form of religion and subsidises schools for purely secular education. The schools there, which receive State aid, are devoted to secular subjects alone and no religion whatever is taught. The Catholic Church, which has always adhered to the importance of religious training for the young, maintains, at great expense a system of parochial schools. In those schools there are more than a million and a quarter children. A New York newspaper remarked about this "The Roman Catholic Church is staggering under a tremendous burden of expense in order to maintain its parochial schools." The ministers of other denominations are beginning to note the necessity for a change. At a convention of Baptists, recently held in Vancouver, the Rev. Mr. Diarmid, speaking on the Education Question, said that "State education was becoming commercial to an alarming degree. It aimed solely at getting on in life. The better spiritual purpose of life was entirely left out of it. Was that the kind of education, they intended to give their children ? He believed that now as never before in the West, there was a necessity for a Christian Institute that would save their young people from these materialistic ideals and give them a higher purpose in life." In 1909 the Rev. Frank De Witt Talmage, pastor of the Chambers-Wylie Presbyterian Church at Philadelphia, said : "If the years which the child passes before he reaches his twelfth mile-"stone are the most important years of the human life, what are you and I, "as parents, doing for the physical and mental and moral and spiritual training "of our little children ? First, how are we caring for the physical bodies of "the children, so as to make them healthful animals as God wants them to be ? "It is a surprising fact to me how a great intelligent city like Philadelphia will "allow its thousands of little children to be born in our congested streets and "give them no adequate play-grounds, where boys can stretch their legs and "develop their lungs and run and play as they ought to play.....Then, what "are we doing for the moral and spiritual lives of our little children ? Most "of us are willing to confess that our children are not receiving at home the "religious training, which they should. How are they to get that training ? "In our Sunday schools ? Most of the children do not go to Sunday school.

"Indeed, half an hour a week of Bible study will never make strong Christian "men and women out of our children. Now, I am going to say something, you "may not agree with me in, and which will shock some of you here present. "The only Church, which is dealing with the spiritual development of her "children aright, is the Catholic Church. The Catholic priest says 'Let me "mould the child up to twelve years of age and I care not who has the child "after that.' And, mark me, on account of the parochial school the Catholic "Church is to become the universal or the conquering Church of America's "future. And when I say this I am not attacking the Catholic Church. Mr. "Beecher used to say that some people had two requisites for heaven: 'First, "do you believe in Christ? Second, do you hate the Catholics? Well then "pass into heaven.' Like Mr. Beecher, I am no bigot, I would infinitely prefer "one of my children to be a Catholic rather than have him go to no Church at "all. Indeed, I would prefer one of my boys to be a good Catholic rather than "a poor Presbyterian, although I would prefer to have my children good "Presbyterians, than good anything else. But whether I like the Catholics "or not, one fact is certain, the Catholics train their children for the Church. "The result: the Catholics are simply going ahead by leaps and bounds. "The coming universal creed of this land is the Catholic creed, unless we as a "Church have the brains of the Catholic priest and put the chief emphasis of "our spiritual work into moulding our children under twelve years of age for "God."

The speaker of the above clearly admits the necessity of religious teaching in schools, if the spiritual and moral welfare of the children is to be provided for.

Ruskin says: "Education does not mean teaching people to know what they "do not know. It means teaching them to behave, as they do not behave." "The same sentiment is expressed by a recent writer who remarks: "A "school system, which gives the child no instruction of a definite and earnest "kind in conduct, as well as in knowledge cannot but be regarded as defective."

On these principles the different religious denominations of the colony admitting their duty of contributing, as far as they can, to the moral and spiritual training of the children, have gone to the expense of opening schools. It may be objected, that in spite of the denominations having such opportunities, the moral standard of the people is deplorably low. That must be admitted. There is, however, much to be said in their favour. The circumstances under which they were living a century ago were such as to tend rather to their moral degradation than elevation. They were kept in ignorance of all religion. Since then little has been done directly by the Government for their spiritual and moral elevation. And the example, of many of the Europeans, has not been such as to put higher ideas, either of spiritual purpose, or of morality before them. If the schools, instead of professing a religious purpose, had been merely materialistic, the state of the people would have been far worse.

The system also leaves very much to be desiderated. Only of late years, has the system aimed, at all, at anything beyond the mere mechanical reading and writing, and working out arithmetical problems. Practically, till the last

revision of the Code in 1904, very little attention was paid to the meaning of what was read and, only in the highest standard, was composition even nominally required. The greater part of the time was devoted to Arithmetic. This was necessary, as it is the subject to which the Inspector of Schools particularly turns his attention, as it is most easily examined and deficiencies most easily detected. The Arithmetic, though it is fairly advanced, does not in the case of most of the children, even in those who pass, denote much mental training. It is, by great efforts of the teacher, in most cases so drilled into the children that they do the sums by rule of thumb without much intelligence. For the mental advancement of the children it would be an advantage, in my opinion, if the reading and literary side were increased and the Arithmetic diminished. Then some attention could be paid, to accustoming the children to speak more correctly. This cannot be done by teaching rules of Grammar, but by constant attention.

There does not seem to be any really founded objection to the system of denominational schools as they exist. Nor can it be truly said that there is a true movement in favour of schools belonging exclusively to the Government. Such a movement to be genuine, should spring not from the teachers, who are looking to their personal advantage, nor from a few theorists and politicians, who are trying to raise a fictitious cry, but from the people, who demand such schools. There is no sign that such schools are demanded by any appreciable number of the people concerned. The parents are not only willing, but pleased to have religious teaching given to their children. The theorists above mentioned contend, that if Government schools were established, devoted solely to secular education, the primary education of the colony would become more efficient at the same cost to the colony. We can test the probability of this result, by looking at the report of the Inspector of Schools in Trinidad, where two classes of schools exist. The following, from the *Catholic News* April 20, 1912, shows how the Government schools compare in cost and efficiency, with the Denominational schools: "On the 31st March, 1911, there "were 263 schools, 210 being Denominational schools and 53 Govern- "ment schools. The expenditure on the former was £33,883 and on "the latter £11,530 5s. so that though the Denominational schools are "about four times as numerous as the Government schools, and do the "same educational work, with the addition of religious auspices, they "cost proportionally much less, than the latter. Each child in the "Government schools costs £1 19s. 10½d., which is six shillings and ten- "pence above the costliest—and something like eight shillings above the aver- "age—of the Denominational schools..... If the Government schools main- "tain the primary place as regards expense, and this in a more marked degree "than in the preceding year, they certainly do not do so as regards educational "efficiency. The average percentage of passes in them is 81.9 while in the "Denominational schools it is 84.3." So the result of the report is that in Trinidad, where both classes of schools exist the Denominational schools produce better results at a lesser cost. That religious instruction is not a hindrance to proficiency in the other subjects is shown also by the report of our own Inspector of Schools for 1910-1911 in which it appears that in the Roman

Catholic schools, where religious instruction is regarded as of the greatest importance there is the highest grant earned per caput, $4.25, of any of the Denomination. If we compare the expenditure of Government money per head here with that in Trinidad, we find that the total money expended for the year 1910-1911 in this colony including teachers' certificate salaries, but excluding as the Trinidad computation also does, the salaries of the Education department was $128,162.03. This with the average attendance for the year of 21,555 children gives $5.94 per head total expenditure, or £1 4s. 9d., which is much lower than the cost per head in Trinidad. And this will be lower still if we reckon the number of the children examined, not to mention the number in the books of the schools.

Before concluding this subject, I should say something with regard to a real grievance. The Code of 1904 was devised with the object of keeping the annual Education vote stationary. The obvious injustice of this was soon apparent, when the more efficient enforcement of the compulsory clauses of the Ordinance, brought a great increase of numbers to the schools. Each year the amount earned by the schools, as grant, has been proportionally diminished to suit the vote, and subsequently granted in answer to an appeal *ad misericordiam*. If in the scheme, a provision were made for the increase of the vote, in proportion to the increased number of children in average attendance, this injustice would be removed. In the Inspector's report for 1903-1904 the average attendance appears as 17,323 and in 1910-1911 as 21,555, which gives an increase of 4,232 children. It is only just that the Education vote should take this increase into account.

This niggardly policy on the part of the Combined Court accounts for another real grievance. That is the miserable pay given to Assistant Teachers. With higher pay a class of more efficient Assistants, which is the great want, would be obtained.

To sum up. There seems to be no real reason for wishing to change the present Denominational system. Government or Colonial schools would not only entail an enormous initial outlay, but would probably in the end be far more costly to maintain and not as efficient. A purely secular system which the present Minister of Education in England recently called "the counsel of despair" would fail to give our children, that moral training, which cannot have any secure foundation except in definite religious teaching. It would be far better honestly, to work the system we have and allow new denominational schools to be opened, where a considerable number of the parents in a district, desired a school of a particular denomination.

It should likewise be borne in mind, that the Government owes special consideration to the Denominational bodies, which trusting to the good faith of the Government, have saved the colony a great amount of expenditure in the past by building and equipping schools in accordance with the Ordinance, regulating Education, and which have done good work in producing good citizens as far as they were able. No one, I think, will fairly contend that the result in that way would have been better, if the Government had opened Colonial schools, as the Ordinance contemplated, in which there was no definite religious or moral training.

EDUCATION IN BRITISH GUIANA.

By A. A. Thorne, M.A.

Part II.

No fundamental changes in the system of primary education have taken place since the colony was introduced to the vicious system of payment by results; and from 1890 onwards there have been open hostilities between the Inspectors of Schools, as representatives of the Government, and the teaching fraternity, the one party being charged with the administration of a limited grant-in-aid for distribution by examination results, and the other party being compelled to regard the pupil as nothing but a money-making unit. The Government would require a definite number of attendances to make each pupil eligible for examination, which, again and again, was shown to be composed of unfair and money-saving tests; the teachers would be caught with falsified registers here and there, and the improper possession and use of Government test-cards! Scandals were grave and numerous throughout the 'nineties, and yet no determined effort was made by the authorities to put a speedy end to this sad state of affairs. A Commission was appointed and reported adversely on the system and the administration, but nothing tangible was done. Each Governor seemed afraid to appoint a Board of Education; and, when a resolution was carried in the Combined Court in 1907, by the unanimous vote of the Electives, to get a Board to see after the educational needs of the colony, it was damned by the covering despatches of the Governor to the Secretary of State for the Colonies, who refused to accede to the wishes of the Court, although he should have seen the palpable errors of the official Government which had been forced by the said Court to pay Teachers balances of annual grants earned and withheld on their own bad system. This Governor, however, made a wretched attempt at a compromise in the appointment of a Standing Committee of the Combined Court to advise the Executive Government in the matter of Primary Education. But the mover of the original resolution was strongly imbued with the sense of injustice done the masses in not making the requisite move onward to get the machinery to bring about the sadly needed changes in the system of education, and so he in the following year, 1908, brought in a second resolution with a full preamble to get the Board of Education; and his persistency and strong advocacy of the good cause met with a fair response, for the Secretary of State for the Colonies (a change having occurred in Downing Street) made the local Government fall in line with the wishes of the inhabitants as voiced by the Elective members of the Combined Court.

The official Government always readily admitted that the existing system of education was not productive of much good; the pupils trained under this system had not been making as good citizens and inhabitants as those had done under the Longden and prior systems; the tendency to despise menial work and to aspire to clerical work had more than grown apace; insubordina-

tion, scampishness ("tickling the 'vance," etc.), unreliability, and studied villainy, were daily becoming more rife among the rising generations fresh from the elementary schools.

Just here it is fair to add that the teachers had been seriously handicapped in matters of discipline by the Children's Protection Society, which did much mischief in the wholesale prosecution of parents and teachers for punishing young scoundrels whom its officers did not know, and on whose upbringing they expended no proper care as an alternative to corporal punishment by those whose authority it undermined.

Between 1898 and 1904, the Sendall and Swettenham-Ashmore administrations had inaugurated a Board of Agriculture, and had begun to give the teachers a knowledge of agricultural science, and to extend it to some of their pupils in the upper standards. But these administrations lost sight of the very important fact that the teachers' salaries for a year depended on the result of the short examination day, and that they had naturally to look after themselves and see that the pupils mastered higher arithmetic which, though not required by the majority in after-life, was in school-life considered by the Codes of infinitely greater value than school-gardening. The limited number of Industrial Schools had never been fostered to become rivals of the other schools; and though Christ Church nobly fought on for a while in this useful direction, yet it had to abandon the well-meaning attempt which a sensible administration could have easily sustained, developed, and modelled to the needs of the colony. And, as irony would have it, legislators of the day, and one of these Governors, expressed the desire to have our local education of the practical kind given at Booker Washington's Tuskeegee Institute! But so wedded have the teachers become to the "cram" system that they, as a body, either actively oppose or give a very passive support to the proposed system of the recently appointed Board of Education, which the Government would do well to adopt and modify as experience is acquired. The general good is always to be preferred to that of a few individuals; and statesmen should not be such popularity-seekers as to venture the public assertion, for instance, that an ex-convict should be a teacher recognised by the Government for the evasion of compulsory attendance legislation if some parents are willing to patronise his school; and that school teachers should be free to teach what they please in elementary schools, supported entirely by the colony grant-in-aid. Sir Walter Egerton would be well advised to alter the constitution of the Board of Education, and strengthen the hands of the Government by freedom to put in as its representatives men of proper scholastic attainments and liberal minds capable of understanding educational systems and needs, and to have them assisted by electives of the Combined Court, and a few representatives of the interested denominations. Then this Board should get to work to see that the elementary education in the colony should be such that pupils would not as its products be more and more alienated from farming, trades, and menial work; that they would learn steady and consistent work as preferable to intermittent spells of stiff labour; that mutual confidence should exist between employer and employee, with the examples before them in childhood of

teachers and their employers ; that teachers should have every inducement to love teaching and to make good citizens for the State ; that zeal and industry, obedience to authority and respectfulness, truthfulness and honour are essential qualities and of more value to the individual than any scraps of knowledge, even if they included languages or mathematics. A howl will be raised against this by a few self-seekers, but what are they in comparison with the masses to be benefited by a strictly rational and adequate system of education ? Few men will honestly attempt to gainsay the fact that the present system has caused the ranks of the unemployed of the colony to be swelled out of all proportion ; many of our leading colonists know that industrious, hard-working parents of the labouring classes again and again confess that their children on leaving the schools cannot get a start in life, being above their respective stations in life with their lofty ideas of the book knowledge acquired in school, and being quite below that to which they unworthily aspire. Of course, care must be taken to give the clever boys and girls every chance of rising to the higher places in the world, a benefit not only to themselves, but also to the colony. In 1894 Mr. Howell Jones, C.M.G., got Primary Scholarships inaugurated to effect this ; and the Government need only carry out the recommendations of the Committee which sat three years ago to bring the scheme up to present requirements, and to save the constant waste of the Scholarship for private schools.

The Hodgson administration has to its credit the inauguration of the much needed Board of Education, with far more limited powers than was sought for it in the Combined Court, and with quite a different composition to what was expected. Undoubtedly, the next administration will develop that Board as occasion requires ; and all the educational needs of the colony, whether classical or scientific, technical or agricultural, will come under the sway of a single body, and that body should be the Board of Education, composed of a larger number if necessary, but with the Government always distinctly in the majority.

Security of office to teachers is actively engaging the minds of the majority of the interested, and it is to be hoped that the Government will early make that *un fait accompli*. Surely that need not clash with the denominational system, for so close at hand as in Barbados we find an example of the two co-existing. No assistant teachers should be allowed at two or three dollars a month under any plea, for this practice is not only immoral, but also adverse to State economy, making inhabitants enter unremunerative channels from which they can hardly be extricated.

Our elementary system of education should aim at inculcating in the young minds the dignity of manual labour, and it should be so arranged as to give our youth the taste for farming and trades, for domestic work and dairying. Steadily before their gaze should be kept the independence that can be so acquired, and every assistance should be given them to make themselves good farmers and artisans, thrifty housekeepers and domestics. The Board of Industrial Training, which owes its birth also to the Hodgson regime, is doing excellent work with its evening continuation classes for apprentices and others ;

the Agricultural School, for which the necessary funds were provided also in the Hodgson administration, should early be established and got into full working order. For the girls, a school of Domestic Science is sadly needed, and, it may be, some legislator will champion its cause into existence during this Court, if the Government will not initiate. Imagine the trade in preserves and pickles that must result from the existence of such an institution! Imagine the increase in population with more wholesome cooking and better feeding! Will this not confer greater benefit on the girls of the colony than the Needlework Scholarships recently created? Parents are severely taxed to know what to do with their daughters; surely the Government will not continue to look on with supine indifference, and merely to join the religious authorities in deploring the lack of morality in our midst. Let honest labour receive due recognition and be made possible for all of our intelligent and well-disposed girls; let the industrious daughter of the farmer, artisan, and labourer, receive more respect from those in authority than the girls of doubtful repute, of lighter complexion, and fashionable appearance; let moral worth be given preference by the State and leading citizens; then quite a healthy impetus will be given to the women of this community.

Now, a few remarks on higher education. Much real progress has been made in secondary education within the last two decades, and the colony can boast to-day of giving the boys an education that attains to the open Scholarship Examination Standard at Oxford or Cambridge. The local press has done much to bring this about, especially the "Daily Chronicle" and the defunct "Echo." They pleaded rightly and vigorously for making the secondary education more valuable than obtained at the Queen's College prior to the appointment of the Committee of 1898 to enquire into and report upon its work; they desired greater attention to scientific education. There has been marked progress ever since, but the modern side of the College requires greater development, and possibly the next administration will accomplish that.

It is difficult for one actively engaged in anything to offer criticisms on it, and especially is this so for me where persons are wont to consider men actuated by selfish and improper motives, though their public spirit has again and again been manifested, and though they have never sought to make profit thereby; and, in contributing this article, I have studiously avoided criticisms and suggestions that could even in the remotest way alter or affect individual interests, while I have written thoughts which I hope will be useful to those who in no carping spirit condescend to read my unworthy contribution.

STRING-FIGURES FROM THE UPPER POTARO*.

By Frank E. Lutz, Ph.D.

Often apparently trivial things are, when looked at from another viewpoint of importance, as well as interest. This is true of string-figures or "Cat's Cradles." Such games are played throughout the world, but the manner of playing them differs greatly, and anthropologists are taking an increasing interest in them, hoping that they will eventually throw some light upon racial and tribal relationships.

Although many such games have been described from widely-scattered regions there is a dearth of data for South American natives. Dr. W. E. Roth collected twenty-four string-figures from the Arawak and Warrau on the Pomeroon and Moruca Rivers (Revue des Études Ethnographiques et Sociologiques, 1908, p. 193), but did not give directions for making them. With the exception of the "fish trap" they are totally different from anything I saw on the Potaro and, on the whole, are much more complicated than the latter, or for that matter than the world-wide average. As the ones here described are from near the Brazilian frontier they represent one of the wild interior tribes in contrast to those from the coast among whom Dr. Roth collected.

Introduction.

While on a zoological expedition in British Guiana, I camped for about a month in the vicinity of Kaieteur Falls. Our Indian helpers came from near the Brazilian border, still further up the Potaro River. Among them was a bright little fellow about twelve years old, who was with me nearly the whole time and who taught me the figures described here. As usual, he would not tell his real name, but, as "Crickety" described his happy disposition and sounded something like the one he gave, it was the name that was used.

These Indians called themselves Patomana. The name is doubtless synonymous with Paramona, a sub-tribe of the Ackawoi, of Carib stock. They are almost entirely untouched by civilisation although most of them have at least seen strangers and a few of them wear white man's clothes. Crickety was apparently a champion string-figure artist, as ten or a dozen of the Indians with whom we came in contact tried to show me figures he had not, but failed. The notes given here include all that either rivalry or promises of gifts could extract, so that they are probably rather complete for that section.

The chief point of difference from the figures made by other primitive peoples, as a whole, seems to lie in the common use these Indians make of the shift of loops from the fingers of one hand to the corresponding fingers of the other hand. It is interesting that, with the exception of "tricks" none

* Reprinted with slight changes, from Anthropological Papers of the American Museum of Natural History Vol. xii. Part 1. By permission.

of these games seem to be duplicated in other parts of the world. To be sure, the end results of two of them are the same as the end results of games by other peoples, but the method of getting these results is different (Figs. 4 and 10).

Position 1, which is the basis of so many string-figures, consists in having the string back of the thumb and little finger but in front of the other fingers. All the figures are made with a string (these Indians made their strings of fibre from the inside of bark) tied to form a circle. Unless otherwise stated, position 1, means that the string is placed in this manner on each hand.

Opening A consists in placing the string in Position 1 and taking up the palmar string of the left hand from the proximal side on the dorsum of the right index finger. Then reach between the strings of the right index loop thus formed and take up the palmar string of the right hand from the proximal side on the dorsum of the left index finger.

Parrot.

Place a short loop between the index and middle fingers of the left hand. Bring it to the palmar side, passing one string between the thumb and index finger and one string between the middle and ring fingers. Rotate it clockwise, looking at the palm, through 180° and return to the dorsum of the index and middle fingers combined by passing the radial string between the thumb and index fingers and the ulnar string between the middle and ring fingers. Tighten the strings by pulling the long loop.

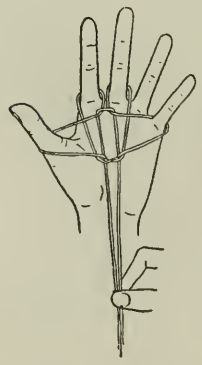

Fig. 1. The Parrot.

There will be two strings between the index and middle fingers. Reaching in from the distal side between the other strings, pull the radial string of the middle finger loop out and place it on the little finger. Likewise, place the ulnar string of the index finger loop on the thumb. Pull the loop running back of both the index and the middle fingers over these fingers and release it on the palmar side. Now, pull the long loop and alternately close in and separate the thumb and little fingers and the parrot will fly (Fig. 1). A fairly short hold should be taken on the long loop to make a "kawack" or green parrot, for it has a short tail. This is an interesting figure on account of the movements used when it is finished.

Toad.

Position 1 on the left hand. Pull the palmar string into a long loop, making the former long loop a palmar string proximal to it. From the

distal side pull out the new palmar string into a long loop. Reaching into this long loop from the distal side pull out the strings passing outside of the thumb and little finger respectively into two long loops.

a. Pass from front to back the radial string of the radial loop between the thumb and index fingers, the ulnar string of the ulnar loop between the middle and ring fingers, and the two remaining strings between the index and middle fingers, allowing the loops to hang loose behind.

There will be a loose palmar string and one close to the hand. Reaching proximal of this loose one, pull into long loops the strings which pass between the index and middle fingers. This will make an apparently hopeless tangle. Repeat *a*.

b. Pull the loops that were on the index and middle fingers before *a* was repeated through the new loops and as far out as they will go, leaving the new ones on. This is best done by using the dorsum of the index and middle fingers of the right hand.

Now release the loops on the index and middle fingers of the left. Separate the hands and a rectangular figure will result, which may need a little adjustment at its left corner. Repeat *a*.

Reaching under the string which runs from between the thumb and index fingers to between the ring and little fingers, pull the strings which pass between the index and middle fingers, being sure to take hold of them just after they have curled around a cross string and started diagonally down the palm. Repeat *a* and *b*. With a little care in separating the hands the figure will result (Fig. 2).

The native name for this figure is "crapo."

Bush.

Position 1. Twist the palmar strings so that the one from between the thumb and index finger crosses distally the one from between the ring and little fingers. Pass the distal string across the palmar side of the little finger then around it, between it and the ring finger, across the palm between the index finger and the thumb, making a loop around the latter. There will be one string passing directly across the palm and the proximal of it will be a pair of crossed strings. Put the index and middle finger of the right hand between the crossed strings of the left hand from the proximal side so that the crossing is between the fingers and separates the hands. Do the same with the left hand and the strings on the right, taking care that the two strings from between the index and middle fingers of the right hand are between the index and middle fingers of the left before they take up the crossed strings. There will be two loops on each little finger and each thumb. Of these two loops, one of them has a string running to the middle of the mesh. Pull this in each case from the dorsal side, proximally of the other, then pass it over the finger or thumb and release, leaving the other string on. Separate the hands.

Slip the index and middle fingers of the right hand into the loops of the corresponding fingers of the left on the dorsal side and remove these loops to the right hand. Slip the index and middle fingers of the left hand into the loops originally on the corresponding fingers of the right on the dorsal side and remove these loops to the left hand, bringing over (dorsally) the loops which were originally on the left. Separate the hands quickly with the fingers spread so that the strings "catch" (Fig. 3).

The loops on the one hand represent the roots and those of the other the

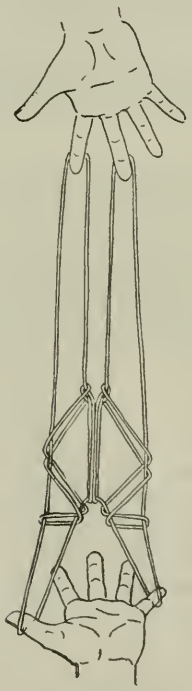

Fig. 2.

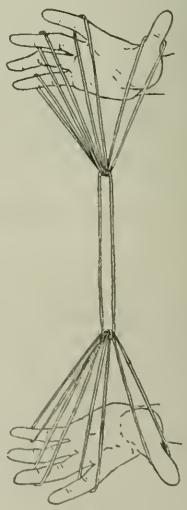

Fig. 3.

Fig. 2. The Tool.
Fig. 3. The Bush.

branches of a "bush" which is the general name among the Indians who have come in contact with white men for any sort of a tree. I used an extra long string in learning the figure and Crickety laughingly pointed to a liana.

Mountain.

Opening A. Release the thumbs. Take the loops from each little finger and place them on the distal end of the corresponding index finger upside down, the turn being anti-clockwise on the left hand as you look at the palm and clockwise on the right hand. "Basket work" the thumbs, i.e., place each distal of the proximal string between the thumb and index finger, proximal of the proximal string between the index and middle fingers, distal of the distal string between the thumb and index finger and proximal of the distal string between the index and middle finger. Return to position.

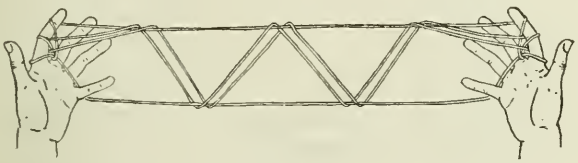

Fig. 4. The Mountain.

Basket-work the little fingers by placing each distal of the string running from the index directly to the centre of the mesh and proximal to the one running directly between the index fingers. Return to position.

Putting each index finger distal of the palmar strings twist on their ends the string running on the palmar side of the little finger by putting the index finger between this string and the little finger from the distal side and taking the string up on the back of the finger. Return to position. Release the thumbs and pull taut, turning the palms from you (Fig. 4). The end result is much like "Little Fishes" from Murray Island, but achieved in a different manner and much more appropriately named.

Baboon's Mouth.

Place both hands in the string so that it passes back of each wrist. Grasping the strings near the middle with the right hand passed, from front to back, the radial string between the thumb and index finger of the left hand and the ulnar one between the middle and ring finger of the same hand. Return them to the front by passing them between the index and middle

1 Miss Haddon, "Cat's Cradles from many Lands," 12.

fingers. Pass the index finger one of the pair between the thumb and index, making a half loop on the thumb. Pass the middle finger, one of the pair between the ring and little finger, making a half loop on it.

Take up on the dorsum of the index and middle fingers of the right hand the strings passing in front of the same fingers of the left. Separate the hands. Slip the left wrist loop over the hand and release. Transfer the index and middle finger loops of the right hand to the same fingers of the left. Pull the loops originally on the left index and middle fingers over these and the ends of the fingers and release them. Transfer the loops back to their original position on the right hand. Separate the hands (Fig. 5).

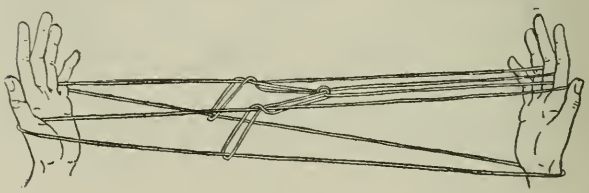

Fig. 5. The Baboon's Mouth.

"Baboon" is the name given in British Guiana to the howling monkey. The figure resembles much more an alligator's mouth and as "cayamans" are fairly common, I am surprised at the name.

Monatà.

The same operation as "Baboon's Mouth," except that one starts with only the left hand in the loop. I am not certain as to the translation of monatà, but think it means a door (Fig. 6).

Bird Snare.

The same operation as "Monatà" except that a second loop is put on the left wrist by passing the ulnar string around the wrist once. A little care is necessary to get a good loop in the snare (Fig. 7). This is a fair representation of the snare Crickety made for actual use, the details of which are shown in the accompanying diagrams, Fig. 8.

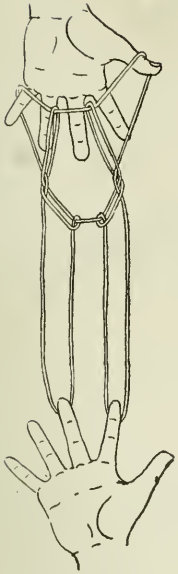

Fig. 6.

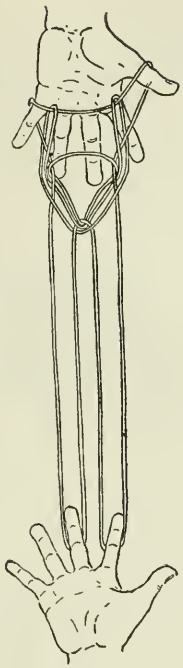

Fig. 7.

Fig. 6. Monat.
Fig. 7. The Bird Snare.

Fig. 8. Sketch of a Snare used for taking birds. *a* A stout twig with both ends driven well into the ground; *b* a pliable stick or sapling; *c* a slip noose; *d* a smooth stout stick; *e* a pebble. The bait is either fastened to *d* near *e* or scattered about inside the loop. In the latter case, they depend on the movements of the animal to knock *d* off of the pebbles and thus spring the trap.

Fish Trap.

Put the left hand in the string so that there is a loop back of the wrist. Put on a second (complete) one by passing the ulnar string around the wrist. Pass the strings of the long loop from front to back between the index and middle fingers and then from back to front between the middle and ring fingers. Reaching under (from the radial side) the strings, which run from the wrist to the fingers, pull the long loop through. Pass the radial string of the long loop between the index finger and the thumb, making a half loop

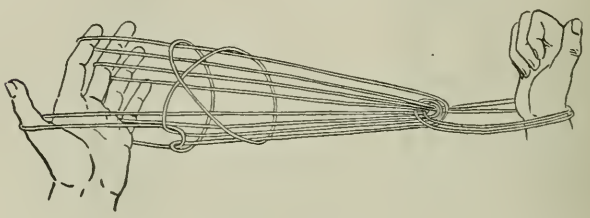

Fig. 9. The Fish Trap.

on the thumb; and the ulnar string of the long loop between the ring and little fingers, making a half loop on the latter. Take up on the dorsum of the index and middle fingers of the right the last mentioned strings respectively and separate the hands. Run the whole right hand into the loop about the left middle finger, doing so on the dorsum of the finger and from the distal side of the loop. In this way remove the loop to the right wrist. Separate the hands. Put the loops of the index and middle fingers of the right hand on the same fingers of the left. Slip the wrist loops of the left over the left hand and release them. Separate the hands (Fig. 9).

The native term for this figure is "mashowo" or fish trap.

River.

Put each hand in the string, having it run back of the wrists. Bring the left ulnar string to the radial side and proximal of the radial string, then distal of it and place it on the little finger without twisting it. The strings to the right hand will, however, be twisted near the middle. Run the right little finger from the radial side under the upright string, which runs between the left ring and little finger, taking this string up on the dorsum of

the finger and separate the hands. Place each wrist loop on the corresponding index finger without twisting (Fig. 10).

Passing each thumb on the distal side of the index loops, take up on its dorsum from the proximal side, the strings between the ring and little fingers. Return the thumbs to position and place on their distal ends that part of the index loop which is between the index fingers and the thumb.

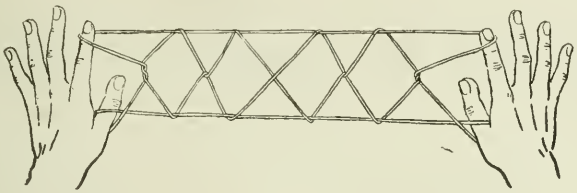

Fig. 10. The River.

Release the first loop put on the thumbs by pulling it over the second and the end of the thumb. There will be a triangle formed between each thumb and index finger. Place each index finger in its triangle from the distal side and continue the twisting of the hands (toward the body, then down, then out) at the same time releasing the little fingers. If the thumbs and index fingers are not kept well apart the figure will be narrow. I suggested to the Indians that this was the dry season. They laughingly agreed, but I do not think they had thought of it before as they immediately made wet and dry season rivers for each other. This figure is exactly like "Osage diamonds" of Mrs. Jayne, but it is arrived at in a very different way and the interpretation is different. Crickety called it Pis, or river.

Star.

Position 1. The next step is a variation of opening A in that the index fingers take up the palmar strings from the distal side instead of from the

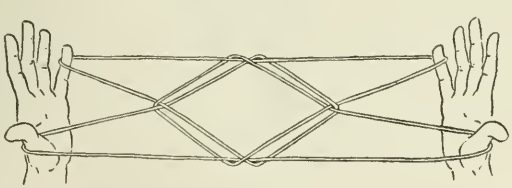

Fig. 11. A Star.

1 String Figures, 24.

proximal. Reaching between the strings of the index loops from the distal side, pull the thumb loops off the thumbs, between the strings of the index loops and replace them on the thumbs. Treat the index loops the same way by reaching between the strings of the thumb loops; also the little finger loops by reaching between the strings of the index loops. Release the index loops and separate the hands (Fig. 11).

Fly.

Have one loop over each thumb, the strings running directly between the thumbs. Twist the left hand so that the two strings run along the dorsal surface and pass to the right from the ulnar side. With the right little

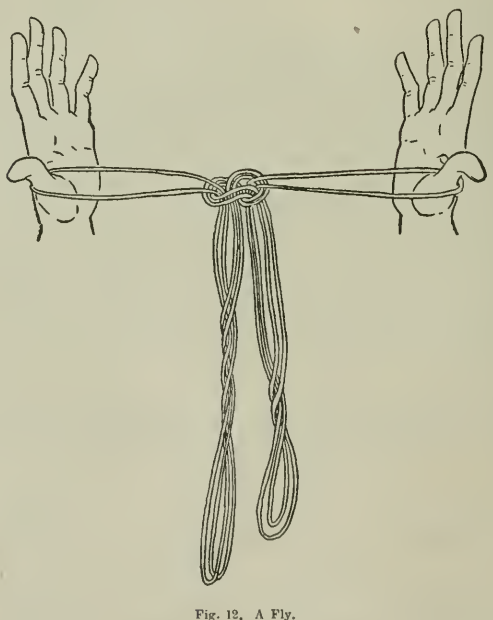

Fig. 12. A Fly.

finger reach behind the left hand on the radial side and take up both strings on the back of the finger. Return to position. With the little finger of the left hand reach over (distal of) the strings running to the right little

finger and take up the strings running to the right thumb on the dorsum of the finger. Return to position.

Raise the left wrist loop free of the hand and separating the hands, slowly draw it into a knot about midway between the hands. This is the fly (Toolik). The wings are now dropped by releasing the little fingers (Fig. 12). Try to catch the fly by slapping the hands together, but when you separate them (quickly and as far as possible), the fly is gone.

This may be called a "trick" rather than a string figure. Crickety also knew the "hanging" trick, although he used his feet instead of his head as is usually done. However, the trick he seemed to enjoy most was "warum" or "snake." It is the widely distributed "mouse." His explanation was that the fingers of the hand (held upright) are trees and the released string is a snake crawling in and out among them. While I was there, an Indian who had been down to the settlements taught Crickety the well-known trick of putting a stick into the loop of an open string, winding the string on the stick, and then after blowing on the whole business the string is unwound with the stick free from the loop. I think he undoubtedly got it from the negroes

ON THE NATIVE DRINKS OF THE GUIANESE INDIAN.

By Walter E. Roth,
Commissioner of the Pomeroon District, British Guiana.

(I.)—Water.

In times of scarcity, water may be obtained from the sap of various creepers, etc., from the sheath-bases of the leaves of certain plants, and from the soil in close proximity to one or two kinds of palm. B. Brown at Camuti Mt., Essequibo R., thus speaks of procuring water from a vine called the Water withe, a species of *Vitis* (*? Entada polystachya*) : "My men sought for and found a number of these vines which had wound themselves round the stems of large trees. Cutting them off as high as they could reach, they severed them quickly lower down, obtaining portions of stem some five feet in length and from three to six inches in diameter. Holding these vertically, the sap, which appeared to be nothing but pure clear cool water, ran quickly out, and was caught in a cup and drunk. From one length of the largest size we obtained at least a pint of water" (BB. 323). Gumilla had previously recorded this method of obtaining water from cut vines on the Orinoco (G.ii. 266), and Barrere had done the same in Cayenne (PBA. 178). In the latter area of the Guianas, when the Indians traverse the mountains they drink the sap of *Lonchocarpus rufescens* —the *salisal* of the Roucouyennes [Caribs] who use the creeper for poisoning fish : though this water is fresher than that of a clear stream, one must only drink of its first flow, because that which subsequently comes away is a white milky juice possessing toxic properties (Cr. 278). In periods of drought the old-time Arawaks of the Pomeroon would obtain water from the young troolie (*Manicaria saccifera*) fruits after breaking : there is nothing strange about the taste of this water with which I have more than once refreshed myself. The wild pine (*Tillandsia spp.*) provides the thirsty traveller with miniature water-tanks in the sheath-bases of its leaves (BW. 236). So also Schomburgk, when on Mt. Warima, expresses himself :—"Several others of the families related to that genus cover the rocks with their foliage ; each like a natural cistern, yielded us upwards of a pint of water—that which was on the top, clear and pure, the remainder filled with residue and a slimy matter peculiar to the plant ; the water is however well tasted, and our Indians drank copiously of it" (ScF. 232). Since the Ite (*Mauritia flexuosa*) palms grow only in moist soil or swamps, the same traveller relates how, when he failed to procure water by digging at the foot of their trunks, he knew that his search would prove hopeless anywhere else in the neighbourhood (ScT. 25). He furthermore speaks of the Wapisianas of the Takutu digging holes on the edges of certain swamps to collect water (SR. ii. 47). Manicole palms (*Euterpe edulis*) are also said to be a sure sign of the vicinity of water. Dance is responsible for the statement that in the tropics, the Indian finds his way to the rivers by barking a tree, well knowing that in a line with the thickest part is the path to the river. (Da. 252)

Wild honey may be mixed with water and drunk, but there is no record of its ever being left to ferment. "Even in its natural state, this honey differs from that of European bees in that it is not viscid, but almost as fluid as water and has a sub-acid highly fragrant taste" (IT. 268).

(II.)—Fermented Liquors.

The Guiana Indians are well versed in the manufacture of fermented liquors. Gumilla speaks of their obtaining *chicha* "from whatever seeds they sow, roots they cultivate, or fruits they collect (G. ii. 243). This term for native beer is, of course, of Spanish origin, and seems to have spread over wide areas: Stedman talks of the native maize-drink in Surinam as *chiacoar*. Cassava without doubt furnishes them with the largest number of alcoholic liquors: Paiwarri, Kassiri, Beltini, Ovicou, Berria, Kumani, etc.

Paiwarri, the Paiwa of the Akawais, the Bai-yauro of the Warraus, the Riito-atahu (*lit.* black drink) of the Arawaks, the Tapana of the Surinam Caribs, etc., is manufactured as follows: A cassava cake made about 1½ in. thick is burnt on the usual flat circular iron plate where it is turned over and over until such time as it becomes black through and through, when it is put aside. In the meantime, the cassava-juice that has already been squeezed through the meshes of the "matapi" is poured into a pot, and boiled until all the bitterness has been extracted, but not waiting for the stuff to reach too thick a consistence, when water is added to it. The burnt cassava, after being broken up, is next thrown into the pot which is now taken off the fire, its contents turned out into a wooden trough, and boiling water poured over the mixture. To this is now added a calabashful of Kereli (the Arawak name) which, the Indians explain, prevents the drink becoming slimy and useless. Next day it is strained in the conical-shaped basket, the Kamaiyo, a practically obsolete article which is nowadays replaced by the ordinary cassava-squeezer or matapi. Twenty-four hours later the drink is ready for the palate, and if not then used, becomes gradually sour until at the end of, say, three days, it is no good whatever, unless and except fresh burnt cassava is added and the remaining process of manufacture repeated. The Kereli above referred to is the chewed fresh cassava-bread, previously soaked in sugar-cane juice, which has been thoroughly saturated with saliva and spat out again by the different women and children, sometimes men assisting (Se G. 258): in certain areas, this chewing process is said to be essentially woman's work. At Taiepong Village, on the upper Potaro, the Indians apparently supplemented the ingredients of their paiwarri, by mixing with the burnt cassava cake, the ashes of the Huya, *Mourera fluviatilis* (BB. 201). It is interesting to note that in the early days of the eighteenth century, over-sea passengers landing at Berbice, after undergoing the necessary legal formalities, were subsequently regaled in the Governor's house with a pipe and a bowl of paiwarri. (Ti. ii. '83, p. 334)

Kassiri is so-called from the red "potato" or "yam," the Kashiri of the Arawaks, which gives the drink its distinctive colour, this being always of a pinkish red. After being peeled and grated, the cassava is squeezed dry be-

tween the hands, any balance of the wet stuff left being squeezed in the matapi and used up for ordinary "house-bread." The dried portion is put with water into a pot, where it is boiled and stirred until all the bitterness is gone, by which time it has become fairly thick, the bitterness being gauged by the taste. It is now taken off the fire and mixed in the wooden trough with some of the red liquid previously obtained by boiling the red potatoes in water. (Another method is to boil the scrapings of the potato with, and in the same pot as, the hand-squeezed cassava, and then to place the mixture in the trough.) Kereli is next added, and the whole strained during the course of the following morning when it is put into jugs (un-corked) and is fit for drinking three days later. Amongst the Warraus on the Barima, Schomburgk speaks of Kassiri drink manufactured from maize, potatoes and cane-juice (SR. i. 201).

Beltiri is a name derived from the Arawak word Beletto, signifying anything soft or jelly-like. Whereas Paiwarri and Kassiri are used chiefly for purposes of feasting and sport, beltiri is essentially a drink for home consumption. I would instruct anyone in its manufacture as follows :—Prepare your Kereli, and place it with warm (*not* boiling) water in a calabash. Having, in the course of making household cassava-cake, expressed the fluid from the squeezed cassava by means of the matapi, pour this into a pot and boil until all bitterness has disappeared by which time it will have become fairly thick. As soon as it gets cold, add a little of the red liquor, previously obtained by boiling red "potato," together with Kereli in sufficient proportion to form a soft mush. This will keep good for certainly a week : a portion, as may be required, is put into a cup of water when it will more or less melt, and can then be drunk straight away.

Ovaku, Ouicou, etc., had an established reputation in its day, and was known equally well in Cayenne as it was out on the Islands. I am indebted to Fathers Grillet and Bechamel, who were travelling in French Guiana during the latter part of the seventeenth century, for the following description both of its nature and manufacture. What is ordinarily used is as white as milk and of the same consistence. It is very refreshing and nourishing and is composed of cassava baked after their ordinary manner, and Potatoes boiled with it, till they are of the consistence of Paste. This they put into baskets lined with the leaves of Bonano [? Banana] trees, in which it keeps good for a month, and then begins to grow sour, but not quite so soon if it be kept in a cool place. When they use it, they steep as much as they have present occasion for in a sufficient quantity of water and if they are at leisure they strain it. But they often only steep it and drink it without straining, and if sugar or sugar-canes bruised be mixed with it, it comes very near the taste, and colour, and consistence of Orgeate the use of which the French have taken from the Italians some years since. This drink is called Ovaku upon the Continent, and Oviku in the Islands. It is believed that the reason why the Europeans can never attain to make it so good as the Indians do, is because they chew the Potatoes and Cassava before they boil them together, and understand better what degree of boiling they require, to give this liquor its greatest perfection. But the seeing this way of its Preparation turns one's stomach more than the reading of it ; and the wine

that washes the dirty feet of the grape-gatherers as they tread the grapes is no less nauseous, but the fermentation both of the one and the other corrects all this uncleanness (GB. 51). The Carib Islanders apparently had two sorts of ouicou made with, and without, " potatoes " respectively. In the latter case, it was manufactured as follows : After taking the cassava off the grid, they put it somewhere in the house, and cover it with manioc leaves and some heavy stones to " heat " it : which it does in three or four days : they next cut it into several pieces which they lay on banana leaves, sprinkle lightly over with water, and let them remain uncovered : after one night, this becomes quite red when it is ready to make ouicou with : it is next boiled, without potatoes (ROP. 501). Ovicou was also the name given to certain drinking feasts by these Antilleans (ROP. 515).

Couria is a drink mentioned by Crevaux as met with on the Guaviar River and made from sweet potatoes and cassava, diluted and fermented (Cr. 508): unfortunately, no further particulars of its manufacture are forthcoming.

Berria is another cassava product noted by Gumilla. On the Orinoco and other parts, especially on the Ayrico, the Indians heap up hot cassava-cakes, cover them with plantain leaves, and after fermenting through the action of the heat, they dissolve them in warm water, and placing the resulting broth in earthen jars (*tinajas*), it effervesces like must, and produces a beer which is called Berria, because it comes from the berri, *i.e.*, the cassava (G. ii. 243). I am informed that the present-day Demerara River Indians manufacture a cassava drink on practically identical lines, *i.e.*, without the use of any Kereli.

Palino appears to have been a Cayenne drink identical with the Berria (GB. 51).

Kumani, of the Demerara River, is a composition of cassava bread, cassava sticks or twigs, and soft wood, all burnt and pounded together, and placed in jars with water for weeks to ferment : portions of the fermented matter are then wrapped in leaves : it is sweet and honey-like, and when mixed with water, used as a beverage (DA. 214).

Sakura, invariably taken on a sea-journey by the Surinam Caribs, was a kind of pap, made of chewed cassava, cooked yams and such-like : a handful of it mixed with a calabashful of water formed a sort of soup (AK. 181). This was perhaps akin to the procedure mentioned by Schomburgk who thus describes how the Macusis were wont to ensure a supply of cassava drink when travelling :—A few days before starting on a journey, the housewife bakes some fresh cassava bread, of which one is chewed, while the others are kneaded into a paste, together with the chewed mass and the thickened juice of the manihot.....fermentation commences after four or five days. If the Indian wants to quench his lively thirst, he just takes a small quantity of the stuff, puts it into a drinking cup, pours water on it, and stirs the contents until they are dissolved (SR. ii. 4).

Maby [? fermented] was manufactured by the Carib Islanders from potatoes boiled with water (ROP. 501), apparently without any admixture of cassava, but unfortunately no further description has been handed down to us.

Maize drink runs the various products of cassava very closely in the way of a favourite alcoholic liquor and its methods of production afford interesting illustration of the different ways by which fermentation may be secured. Starting with the Orinoco, Gumilla tells us how from maize, ground with the vigour of a woman's arms, the Indians make their loaves which, enclosed in leaves, they cook not in an oven but in boiling water, having some very large earthen vessels (*ollas*) for the purpose. They call this bread *cayzu*: they usually crumble it when it is fresh, and knead it up a second time in a large quantity of hot water: having crushed to powder four of these old loaves full of mould, which they call *subibizu*, they mix the said powder into that liquid dough which, placed in large earthen jars (*tinajas*), effervesces on the third day, there resulting a chicha or healthy beer, if taken in moderation (G. ii. 242). The same method of preparation was apparently practised in Surinam for Stedman speaks of a beverage (*chiacoar*) composed from the maize or Indian corn, which is first ground and baked into bread, after which it is crumbled and macerated with water till it ferments (ST. i. 392). Crevaux's description differs from the above in the addition of sugar:—With banana leaves, the Indians make up parcels containing 2 to 3 kilograms of maize-meal: they boil these for 10 hours in a saucepan containing water, and then hang them up in their huts or leave them out in the air for from 15 to 20 days: these become covered with a mould which is yellow on the elevated plains but green on the warm lands: it is now time for them to take the parcels down, and dissolve their contents in water containing a small quantity of Panela (*i.e.*, non-refined sugar made up into cakes of the shape of a brick): this is then strained through a rough sifter, and the fluid collected in a wooden vessel where it undergoes alcoholic fermentation, and according as the temperature is cold or hot, from 4 days to 24 hours is required for this (Cr. 405-6). In British Guiana, certainly on the Pomeroon, the maize after being pounded (if dry), or grated (if fresh) is thrown into warm water and boiled: chewed Kereli is then added, and the liquor strained next day: within three days it is ready for consumption.

Pine-Apple Juice, an intoxicating liquor, is prepared by peeling the fruit and grating it on a sieve, allowing the juice to take its own time to ferment. The Arawaks have no special word for it, just calling it nanna-ura, *lit.*, pine-juice.

The *Wild Cashew* (*Anacardium rhinocarpus*) similarly yields a very pleasant alcoholic drink: Arawaks call it obudi-ura, *lit.*, cashew-juice.

Cane-juice similarly requires no special preparation. While the sugar-cane is being squeezed in the "mill," the juice trickles down the artificial gutter whence it is collected. It takes some three weeks to fully ferment, and is highly intoxicating. The doubtfully Indian name, on the Pomeroon at least, is warrap.

Cupana. The Indians of Yavita [on the Atabapo R., a branch of the upper Orinoco] scrape the seeds [of a species of Paullinia], mix them with flour of cassava, envelope the mass in plantain leaves, and set it to ferment in water, till it acquires a saffron yellow colour. This yellow paste, dried in the sun,

and diluted in water, is taken in the morning as a kind of tea. The beverage is bitter and stomachic, but it appeared to me [says Humboldt] to have a very disagreeable taste (AVH. ii. 365).

Plantain drink, is recorded by Gumilla from the Orinoco. Before getting too much sun-dried, the Indians knead plantains with warm water, and the dough which takes on acidity, strained subsequently with warm water into jars ferments like must, which results in a very strong drink that even in small quantities produces drunkenness (G. ii. 239).

Couscou was a banana-drink [? fermented] made by the Carib Islanders (ROP. 501).

Yahe, says Crevaux, is an intoxicating liquor made from a certain bark, but no further particulars given, macerated in water: he met with it among the Coreguajes of the upper Yapura R., one of the northern branches of the Amazon (Cr. 362).

(III.) Non-Fermented Liquors.

Of the many non-fermented liquors known to the Indians, perhaps the most important on the coast-lands is that obtained from the Ite-palm (*Mauritia flexuosa*) either from the trunk or from the fruits. In the former case, the tree has to be felled: when fallen, a concavity is made in the upper surface about the middle of the trunk, the excavation is covered with leaves, and in about half-an-hour's time, the sap will be found collecting there: it is drunk without any further preparation. This beverage is the Warrau ohi(ju)-hobi, *lit.*, ite drink, and the *pulke* of the Orinoco Indians (G. i. 147). Among the Macusis, to accelerate the collection of the sap, the upper end of the trunk is raised on a scaffolding of about a foot to 18 in. high, and a fire lighted under its whole length (SR. ii. 203). When the drink is made from the fruits the tree need not necessarily be sacrified. The large bunches of fruits when more or less mature are stacked in a close heap and covered with a thick layer of the leaves for some four days, at the end of which time the fruits will all be found to have dropped from their stalks. The Indian now digs a pit in the swampy ground, about three feet wide by two feet deep, into which the water wells up from below, and into this he throws basketful after basketful of the fruits. A thick covering composed of many layers of ite leaves, is again placed over the whole which is left as it is for about eight days. By this time, the seed coverings will have become soft, and hence can now be easily scraped off, a procedure in which the Indian will be probably assisted by his family who either come and work at it on the spot, or else carry the mush home with them. At any rate, when once removed, this soft stuff is mixed, as required, with water and a little honey, and thus drunk. It tastes nice and is said to be very fattening.

The *Turu* (*Oenocarpus Bacaba*) and *Manicole* (*Euterpe edulis*) drink, being prepared on identical lines may be described together. When the fruits are ripe (*i.e.*, black) the palm is felled, if the Indian is too lazy or unable to climb. They are packed in baskets, carried home, where they are placed in the wooden trough and warm water poured over them. (Boiling water would render them hard.) Here they are left for twenty minutes or so when they will be found soft. They are then removed from the trough and pounded in a mortar, the seeds being either picked out by hand or allowed to

remain. The mush is drunk with a little honey, and mixed with more or less water according to taste, some Indians preferring it thick and others thin. In Surinam the Oenocarpus drink was known as Kumu (ST. i. 391, AK. 78-9).

The fruit of the *Awarra-palm* (*Astrocaryum tucumoides*) also furnishes a common beverage. The soft seed covering is cut off in thin slices, a quantity of which is pounded up in a mortar so as to form a sort of thick paste. This will "keep good" for, say, three days and during this period, portions of it may be mixed with honey or sugar-water according to taste. In Surinam, the drink was prepared somewhat differently according to the account left us by Kappler. The ripe fruit was here buried in the ground for a day or two, while the seed coverings became soft, which were then, by pounding, easily separated. The mush was next overlaid with Heliconia leaves and pressed into a plaited basket and the whole dipped into the cold water of a creek where it was kept some few days, whereby the oily substance in the thready flesh became more fluid, the outside leaves preventing the water from getting inside. A handful of this soft stuff squeezed into a calabash of water colours it red, and gives it an agreeable acid sweet taste; when mixed with sugar it is a delightful drink (AK. 144-5).

The *Paripi* palm (*Bactris minor*) is utilised by the Caribs for obtaining a sweet drink from the fruit (SR. ii. 418).

From the *Arikodako* and *Hitjia* berries, the Arawak names of two plants that I have not hitherto succeeded in identifying, are obtained drinks by pounding, picking out the seeds, mixing the remainder with water, and straining. Both used in the Pomeroon district: the former also on the Berbice where it is spoken of by Dance as "very delicious." This author also mentions a drink made from the *Hiawaraballi* berries, the Tabarahuih of the Akawais but no further particulars are furnished (Da. 55).

[Since writing the above, Mr. Stockdale has kindly identified the *Hitjia* berries as *Byrsonima spicata*.]

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THE AMERICANS OF THE INTERIOR OF BRITISH GUIANA.

By Rev. James Williams.

The stranger who arrives in Georgetown and desires information concerning the native Indian, the true "American," will soon discover that generally speaking, the population of the capital and indeed of the whole sugar producing area of the colony knows nothing about him and perhaps cares even less. The term "Indian" on the coast is used almost always of people who belong to a distant quarter of the world. If anyone should happen to refer to the native Indian, as likely as not it will be under the disparaging term of the "poor buck." And the height of absurdity was reached a few years ago when persons whose ancestors only came to the colony 100 or 200 years ago were so entirely unmindful of the original ownership of the land that they called themselves "sons of the soil" a title which only the native Indian can rightly claim. Thus the true American has completely vanished for all practical purposes from the life and thought of the inhabitants of the Coast. The same is true to a great extent even of the Government. A Government Official is styled Protecto of Indians but no money is supplied with which he may carry out the duties of the office, and not long ago the Combined Court grudged the expenditure of a few dollars which would have provided a shelter where the few Indian visitors to town during their short stays might have hung their hammocks.

All this serves to point out one characteristic of the native Indian, his retiring nature and lack of self-assertion. The Spaniard used him as a labourer and used him up; he occupied his land and the survivors retired. The Britisher comes with his native "push" and Philistine energy to develop the land and if it may be, make his fortune and one day suddenly wonders what has become of the original occupier, the native Indian. And even the ordinary black man separates himself in mental attitude from the denizen of our forests and plains in that the latter in his native haunts makes light of clothing while the former has chosen out this particular item from among the characteristics of the governing race and has decided that *this* is civilization. The retiring disposition of the Indian; his resolve not to intrude where he thinks himself unwelcome; his disinclination to grumble at another, but, instead of this, to leave him so that each may go his own way; this, in at least one aspect, is surely a practical exhibition of the temper of mind enjoined upon all of us in the Sermon on the Mount. It is certainly not due to any lack of intelligence as ethnologists tell us that the American race is high up in the general intelligence of the world. Thus the Indian retires before self-asserting peoples whose outlook is for the most part of the earth, earthy.

During a residence of several years at Bartica Grove the writer became acquainted with the native Indian brought into contact with the civilization which consists in mercantile stores, gold-digging expeditions and rumshops with their frequenters. The Indians in this neighbourhood were not numerous from time to time their numbers received accessions by new arrivals from the

interior. But death was always claiming them. The wearing of clothes even when wet would bring on pneumonia and similar troubles; vicious men debased some of the Indian women; unwholesome and, to them, unnatural food militated against health and the rumshops undermined their constitution. There the Indian seemed indeed to belong to a dying race.

Then the scene of work was changed. Now it lay chiefly among the Macusis and Patamonas inhabiting respectively the Savanna and the forest country, bounded for ordinary purposes, by the Rupununi, the Essequebo, the Upper Potaro and the Ireng rivers. The people living over this vast extent of country live more nearly their own primitive native life as they have had but little contact with the inhabitants of the Coast.

Here a noticeable characteristic of the Indian is his independence which shows itself in more ways than one. It is doubtless one reason why he lives in a single house or at least in a very small community far from others because he has no use for his neighbour in the daily concerns of life. He builds his house, cuts and plants his field by himself, the members of his own family each contributing such aid as each severally wills; he carries a log and although the weight oppresses and a neighbour is standing by neither the one asks nor the other offers any assistance. The principle seems to be to leave undone anything you cannot do by your own unaided exertion. Then too, the Indian is not amenable to force. Of course, he has, like everybody else, to submit to the inevitable but he will seize the earliest opportunity to withdraw from what must seem to him a form of oppression. Self-will is encouraged in the Indian boy from his tenderest years; it seems to be looked upon as a necessary feature of perfect manhood and it is probably on account of this veneration for self-will that the Indian respects, or ought one to say fears, the self-will of others and so retires before self-assertion. To bend the Indian to your will is therefore a matter of example and persuasion as force will not do it. Let him feel assured that you are working for his good; lay down the law in the form of suggestion, show him that it is for you as well as for him and he will probably learn to do as he is told. But put yourself on a pedestal, look down upon him as a menial, blurt out your command as to an inferior and even if the necessity of the moment may produce compliance be sure he will learn to hate you and your influence over him will be nil.

The Indian is often accused of being lazy. It is quite true he has not all the incentives to labour which prompt so many to work; he has no desire for material prosperity; to desire more than the supply of his immediate needs would strike him as being greedy; nor has he yet acquired any idea of the sanctity and duty of labour inculcated by religion. But the world-wide inducement to work, namely, the struggle for existence compels him to a maximum of labour for a minimum of result. The Macusi woman and the Patamona man have to collect daily the fuel needed for the cooking and warming required by the household. Several times a day all the females from the old "gogo" to the little child carry the gourds to the water-side and bring loads of water varying from 5 or even more gallons to half a pint. Every day or every few days the men and boys have to go out to find fish or game for their families;

they ave to leave whatever occupation they may be engaged in for the time and perhaps return after an absence of 3 or 4 days with food enough for one meal for a hungry man. To most people this would be most disappointing; they accept it without a murmur as part of the inevitable. When a new house is to be built, and this happens every few years, it will probably be necessary to cut and then carry or haul the timbers from the forest a few miles away; it is not unusual to walk an hour or more to obtain palm leaves for the roof and, of course, they have to be carried all the way in the burning sun. The cutting, clearing and burning of the forest tract and the subsequent planting of cassava and other provisions all mean great labour. A man may have to take a day's journey to obtain some cassava cuttings to plant in his new field. It is not at all surprising that from time to time the Indian feels the need of relaxation and this takes the form of a drunken feast.

No doubt, the Indian can treasure up a grievance and he has the reputation of returning an injury although he may have to wait long for an opportunity, yet on the whole he lives very much in the present. It is the circumstance of, the moment that chiefly affects him. If you wish him to go a long journey to-morrow after a day's work to-day let him have a good night's rest before you speak to him about it. If you want a job done, wait until your man has had a good meal, as labour is not pleasant to hungry people. An Indian gets hold of some idea, perhaps he resolves to journey to-morrow to see his friend; divert his attention, which, I believe, is the nursery method, and by to-morrow the friend will probably have been forgotten and the man is at your service for what you may require.

Reference has already been made to the scattered communities in which the Indians live: the chief reason for these is the difficulty of food supply. It is obvious that the more inhabitants a tract of country has the more they will eat up the natural resources of the place and fish and game will tend to become extinct. This is already the case in some instances where in the present day the huntsman has to go out two or more days' journey from home before he is likely to get a shot. Then as it is the custom to share your food with all comers, it seems a wise precaution to live at a respectable distance so as indirectly and to some extent regulate the number of your visitors.

The subject of food leads on to the remark that the Indian in his native place and state seems as a rule a strong and healthy member of the community. On the other hand, the Indian soon becomes more or less incapacitated after labour and this seems to prove that the ordinary food he is able to get is not nourishing enough to give him a strong constitution. If he could learn to produce better food and could learn something of medicine and hygiene the healthy native Indian might acquire a stronger constitution. It is not unusual to find among these Indans in the interior families of five or more children; in one case at least, the two widows of one man brought 10 children to be baptized

Of course, the Indian lives eat, drink and to follow the impulses of nature; yet the unseen world is very real to him; he is no materialist. Give him the inducement to live and work supplied by religion and he ought to become a valuable neighbour and colonist instead of being a forgotten "buck."

HORSES RAISED AT THE RUPUNUNI.

TYPICAL YARD VIEW ON THE RUPUNUNI SAVANNAH.

A FEW REMARKS ABOUT THE MACUSIS.

By Rev. W. F. Gough, S.J.

The writer of the following remarks does not claim to have any expert knowledge of the aboriginal inhabitants of this colony, but proposes merely to give to the readers of *Timehri* some little idea of one of the numerous tribes of these interesting people, such as he has acquired from a residence of a few months in their midst.

The Macusis dwell on the banks of the Upper Essequibo and its tributary, the Rupununi, and on both sides of the Ireng and the Takutu Rivers. It will thus be seen that this tribe is not confined to this colony, as many of its members are to be found on the Brazilian side of the Ireng and the Takutu, which rivers form the western boundary of this colony, separating us from the great Republic of Brazil.

Having been brought but little into touch with civilization it is but natural that the Macusis should be less civilized than their sister tribes dwelling nearer the coast; nevertheless they are a quiet, peaceable people possessing many natural virtues in no small degree. Anyone whose idea of an Indian is of a man who goes about armed with a tomahawk, or some other murderous weapon, ready to split the skull of any stranger whom he may chance to meet, would, needless to say, be agreeably surprised by a visit to the Macusis. On approaching one of their houses he might at first be frightened by a number of dogs running to meet him and barking more or less furiously; but though these dogs bark, they very seldom bite, and if the stranger were to stoop down as if to pick up a stone the dogs would soon disappear. The next thing he would notice would be all the people, men, women and children, coming out of the house to have a look at him, examining him as attentively as we might examine some strange animal in a zoological garden.

Having gone through this little ordeal perhaps our friend may be encouraged to enter the house, which will be found to be built with poles, the sides being filled in with mud, or, if the owner is less industrious, they will be covered with palm leaves; the roof will be made of palm leaves. Having entered, he will put down his bag on the floor and will sit down on a low stool which the lady of the house will offer him. If he is thirsty—which he probably will be, if he has had a long walk or ride under a hot sun—one of the women will bring him a calabash filled with casiri, the native beer, a beverage made from the cassava; it contains only a small percentage of alcohol, but when the Indians have a casiri feast they drink it in such large quantities that they become hopelessly drunk; such feasts, however, occur very seldom. Perhaps our friend will at first find casiri not very palatable, but, of course, he can always have water if he prefers it. He will perhaps be startled to find the people opening his bag—unless he has taken the precaution beforehand of locking it—and turning everything out; but it is all right, they are not going to steal

anything, it is merely their curiosity to see what he has got and after they have seen everything they will put it all back again, unless he prefers doing this part of the business himself. This inquisitiveness is a very noticeable trait in their character, causing them at times to become somewhat of a nuisance ; they will come into your house and turn over everything to examine it. When two of them meet together they will sit down and each will tell the other absolutely everything which has come to his knowledge since they last met, not even the smallest details being omitted.

To return to our friend, having quenched his thirst and rested a little, he will, no doubt, begin to feel hungry, but before long the lady of the house will be bringing him some stewed fish and cassava bread, or perhaps some venison which her husband has killed.

If he wishes to stay for the night he will be shown a place where he can hang his hammock—if in a village he will be conducted to a house in the middle of the village which has been specially built for the convenience of visitors. On his departure all the people will come to see him off, following him with their eyes until he is out of sight. If he wishes to ingratiate himself among the people or to pay them for their hospitality—they will not ask for anything and will not be disappointed if they get nothing—he may give the master of the house some such trifle as a small mirror, or a cheap knife, or perhaps a string of beads ; if he gives them a piece of money they will probably make a hole in it and hang it round the baby's neck. Should he give a boy a biscuit or a few sweets he will immediately share it with his companions—a pleasing trait in their character which is not often found among more civilized people.

The Macusi is singularly devoid of all signs of emotion ; two friends—it may be a mother and her son—may meet after a long absence from each other without giving any external sign of recognition ; they may, perhaps, feel some joy at meeting one another, but as far as one can see they might be absolute strangers.

It is interesting to see an Indian fishing. He stands by the river, perhaps in a boat, holding a bow and arrow and looking intently at the water. Presently he lets fly the arrow into a fish ; the fish struggles and swims away carrying the arrow with it ; perhaps the arrow disappears under the water, but it reappears before long and the Indian hurries after it and takes it out of the water with the fish at the end of it. You probably did not see the fish in the water but the Indians are remarkably keen sighted and will see many things which, to the average European, would be absolutely invisible.

Another remarkable trait about the Indian is his power of finding the way. If you show him the general direction of the place you want to go to you may safely leave the rest to him ; these may be paths crossing and recrossing in all directions or branching out to the right and to the left. No matter, he will go on without hesitating and bring you to the place you wanted, even though he has never been near the place before.

His powers of observation, again, are remarkable, and, at times, might excite the admiration if not the envy of Sherlock Holmes. Sometimes, for example,

he will tell you "So and so has passed along here." You will ask "Why, how do you know?" He will point to some marks of a horse's hoofs on the ground and say "Don't you see those marks of his horse?" "Well," you may object, "there are plenty of horses about here, might not those marks belong to somebody else's horse?" But he will insist that those are the marks of that horse and no other, and if you take the trouble to make enquiries you will find that he was right.

My last remark will deal with the way the Macusi treats his dead. When anyone dies there is no wake or any ceremony whatever over the corpse. The moment the breath is out of the body the corpse is wrapped in a hammock and carried out to be buried. This rite being finished all the goods and chattels are removed from the house and the house itself is burned down, or if this cannot be done without endangering other houses, the house is, indeed, allowed to remain standing but it will be treated as a haunted house and no one will ever live in it again.

To sum up, we may say that the Macusi is a quiet hospitable man, possessing an abnormal amount of inquisitiveness, and wonderful powers of observation, but singularly devoid of all emotion.

THE FIRST BARBADIANS.

By Rev. Father C. Cooksey, S. J.

It is generally agreed that when the English made their first settlements in Barbados, they found the island absolutely devoid of human inhabitants, but on the other hand recognised traces of former settlers, moreover that Plantation Three Houses takes its names from three uninhabited dwellings which were found there.

That the first English settlers had to get instruction in tropical farming from Arawak Indians, obtained from the Dutch of Essequebo, is a sufficient proof that the Barbadian Indians had either died out or been carried off as slaves by the previous Portuguese expeditions, which made Barbados a place of call on the way to Brazil. Or the first inhabitants may have consisted of members of hostile tribes and their well-known ferocity may have led to mutual extermination.

But the fact that a considerable colony or colonies of Indians simultaneously or successively inhabited the Western or "Loo'ard" coast is established by the numerous implements and less frequent pottery found between Oistins Bay and Six Men's Bay and especially in the beds of the little torrents which form at their mouths suitable landing places along this coast for boats and canoes. These finds may be divided into three classes: Stone Implements, Shell Implements and Pottery with a few personal ornaments of insufficient quantity to generalize upon. It is to be regretted that the largest collection (and one consisting mostly of pottery) made on the island has been sold to a museum in the United States, but by the courtesy of Mr. Sinckler, of Speightstown, and Dr. John Hutson, of Harmony Hall, I was able from a short study of their collections to institute a few comparisons with those from the other West Indian Islands and British Guiana in our museum—for we have a fine collection stowed away in drawers and comparatively unknown. Hence I am able to formulate a theory with regard to the first Barbadians, which if it fails to prove anything will at all events form a basis for discussion from which truth may finally appear.

The stone implements are very rare, very small, and consist of less than half-a-dozen miniature axes or celts, none exceeding three inches in length; Mr. Sinckler's green stone axe, hard and highly polished, now more resembles a trinket than a weapon, but hafted as it undoubtedly used to be in one of the short square letterwood clubs, still made by the Guiana Indians, it could be used with deadly effect on the stoutest cranium. The stone is not of Barbadian origin.

The shell implements are peculiar to Barbados and one or two of the lesser West Indian Islands and are in two forms, a gouge or scraper form made from

the spiral central column of the giant Conch, and a knife form made from the thickened lip of the orifice of the same shell. These seem to be found principally at places where boats could be hauled up, which indicates that they were used for the preparation of fish and probably for removing the charred wood from the interior of dug-out canoes in the tedious process by which they were manufactured before metal was introduced. These shell tools are undoubtedly of Barbadian origin, as the material is at hand and plentiful and indeed many of those offered for sale to tourists are forgeries which have deceived even the elect. These forgeries have a fresh waxy look, which an old dead shell loses entirely, and they are made by people who do not know the use of them and when held in the hand in the manner in which they should be used betray themselves by having cutting or chaffing edges on the palm; moreover the marks of a file can often be detected, though the finder of a genuine one will sometimes improve it by putting a new edge on it with a file. The genuine implement is often perforated in many places by teredos, has a dead chalky appearance, in fact has become more allied to a mineral substance than to organic matter, but it is not fossilised, as a comparison of a genuine implement with a piece of fossil conch will immediately show by the great specific gravity of the latter.

The Pottery is of two classes, the two-handled drinking cup and the caldron. The remains of handles and booses I saw are inspired by the same ideals of artistic ugliness as our Aruka specimens, but in both workmanship and material are greatly inferior to ours. The caldrons are found almost exclusively in the submerged village in Oistins Bay, which I regret I had not time or opportunity to visit. This village has either been submerged by erosion or was built on piles in the sea like the village founded in the Gulf of Maricaybo, by the first explorers, which gave Venezuela (little Venice) its name. The caldrons are sometimes washed up by the sea in an almost perfect condition, but it is said that on exposure to the dry air they break into many fragments as their porous, soft, thick material has been water-logged for centuries and much of their constituent fabric dissolved. They are very large indeed and their spherical diameter must have been about two feet or more, their use was undoubtedly for cooking and their capacity suggests the scene described on the seashore in Robinson Crusoe. For though Alexander Selkirk was the prototype of the hero, our Indians from the islands and Spanish Main are the prototypes of Man Friday and his captors and they are drawn too from well-informed authorities. Shell implements and other things are found at Oistins Bay, some specimens of which, given me by Dr. Hutson, I have left in the Museum. They are much marked by teredos and therefore genuine.

The conclusions which these remains point to are: that the first Barbadians were Indians, few in number, wanting in many of the implements and arts of their continental brethren, and unable to defend themselves from the guile or force of the small ship's companies which visited the island at long intervals during the hundred of years which preceded the English settlement. This is a summary of the facts as far as my information and observation go. And

in default of any hope of more extensive discoveries it is necessary to make this paucity of evidence a factor in my theory, which is as follows :—

That the few inhabitants of Barbados consisted of waifs who drifted into the Atlantic from elsewhere, and more fortunate than many subsequent Barbadians managed a land-fall in a pleasant place, well supplied them as now with an abundant supply of fresh water and fish. These people adapting themselves to their circumstances made pots of local clay and finding no suitable stone made implements of the conch, the hardest and largest material at hand. Of course it is to be presumed that they used the hardest native wood also for some purposes and built boats and made paddles, but it is to be doubted if they ever ventured to seek the land whence they came.

Whence did they come ?

The constant eastern trade wind which has kept the boisterous and beautiful eastern coast but sparsely inhabited to this day, the north-western trend of the north equatorial current would seem to exclude all the West Indian Islands except perhaps Tobago from our conjectures, but it is quite possible that the large dug-out canoes which Raleigh saw on the Orinoco, or some ancient and decayed ones still to be seen in British Guiana, were formerly taken far out from our coasts to fish in blue water and being caught in a storm and bearings lost, would drift North-west until the mighty rush of the Orinoco in flood drove them further into the Atlantic until they were well eastward of both Trinidad and Tobago. Then caught once more by wind and current they were fortunate enough to strike Barbados. By a careful comparison of their pottery with specimens I had with me from the Aruka Hills, I came to the conclusion that the Barbadian fragments were the work of a man who was familiar with ours but who was a potter from necessity. In other words that the Guianese or Tobagan potter was not in any of the drifting canoes, or if he was he never reached Barbados, neither did the Barbadian know which clay to select nor had he any very clear notions of mixing, for as any visitor to a "Windward" potter's shed knows, that excellent clay is to be found in the Island and many useful and ornamental objects in red and yellow terra-cotta are now produced there. Indeed whilst on such a visit I tried to illustrate in his clay our local finds to the members of the party I was with, and found myself making for lack of practical experience similar things to those in the Magistrate's and Doctor's collections, and I am now told that my crude imitations are being used as models by the potter and that history is repeating itself.

NOTES ON A TRIP TO SURINAM.

By Rev. James Aiken, m.a.

When I yielded to the persuasions of our tyrannical President and put together some notes on a little trip I recently made to our neighbour colony, a consideration which had some weight in bringing me to submission, was that to a considerable number of members of this Society Suriname is little more than a name, while, in view of the many similarities of its situation and conditions and the identities of its problems, any little contribution to a more familiar acquaintance between the two Guianas would have a value altogether out of proportion to the intrinsic worth of my remarks.

The ease of access of Nickerie and Paramaribo makes it a little surprising that more intercourse has not been established to the mutual social and business profit of the colonies. To illustrate this point I may mention that, on my return journey, leaving Paramaribo at 4 p.m., steamer and motor brought me to my home at Auchlyne at 3.15 p.m. next day, that is in exactly 23 hours, 15 minutes, from the stelling at Paramaribo to St. Saviour's Manse. There is then no distance barrier. Of course there is the language barrier, but that does not count for much. Every Dutchman, both in Paramaribo and Nickerie, speaks English—of course.

An exploration of Dutch Guiana would not be complete without a visit to Nickerie. I visited it in spite of its reputation for a particularly frequent and baleful brand of mosquito. Perhaps that was an added attraction rather than otherwise. I had the pleasure of meeting some old acquaintances of the mosquito family, the familiar *Albipes* and sometimes too familiar *taeniorhynchus*, but I must submit that their attentions were not unduly insistent. This comparative neglect of a stranger was, I am told, due to the fact that it was my good fortune to happen in on their holiday season. Another familiar of the insect tribe was the Brassolis moth, so destructive to coconuts which I met immediately on landing. Nickerie, a few miles up the creek of that name, is a kind of miniature New Amsterdam. It has three or four churches, a well-staffed Post Office with a staff of urbane and very obliging officials, an imposing Government building, a Gaol, a Hospital and two lively business streets.

The Hospital is a clean well-conducted place housed in buildings set round a square, somewhat ancient in appearance but in good repair. There is every mark of a brisk and flourishing commerce in the business part of the town. Everywhere the Berbician is in evidence; about one-half of the population seem to belong to the British side of the Corentyne.

Of course, the balata business is responsible for the presence of most of our colonists. I had the pleasure of speaking to a gentleman engaged in the trade, and of glancing over a report he had prepared on the latex-yielding trees of Surinam, and was struck with the evidence of a desire to gather

accurate knowledge of the economics of the business displayed in the carefully compiled document he showed me.

Intercolonial Trade.

It is worth noting at this point that the extent of the trade between our colony and our neighbour astonished me. From Springlands a crowd of passengers passed over to Nickerie and a large number went on to Paramaribo. We had a full ship in the matter of cargo, which included 30 or 40 cattle, some of them, by the way, looking more ready for a nursing home than an abattoir, several score of pigs of all sizes, mostly of the greyhound colonial type—it occurred to me that possibly the sporting Dutchmen use them for coursing labba—and at Nickerie we shipped 150 bales of balata for transhipment at Paramaribo. A suspected item of our cargo was a contraband balata man, who, it was supposed by the Nickerie authorities, had secreted himself and his debt of a few hundred guilders in the recesses of the hold. About this I can only say that they did not find him.

I met with the greatest courtesy at Nickerie from Messrs. Sprostons' agent in particular, and from the officials I came into contact with, and carry with me pleasant memories of the visit.

Paramaribo—an Unfortunate Contretemps.

My arrival at Paramaribo on Sunday morning was signalised by a somewhat awkward happening, causing me some discomfort and inconvenience. The stage from steamer to stelling, which, in that splendidly trustful way we have in the tropics of leaving minor details to Providence, had not been secured, slipped from the ship as a porter carrying my town kit stepped on it. The boy landed on his back on the stage fortunately, but the box took a little voyage in the Surinam river to the detriment of my best blacks and sundry linen contents. It gave me occasion to test the efficiency of the Paramaribo laundryman and nothing could have been more obliging and prompt than the management of Smith's Hotel and the washer they patronise in repairing, as far as possible, the damage done.

The sail up the river to Paramaribo was not without interest, the bar and channel are well marked with lights, beacons and buoys, comparing in this respect very favourably with the other Guiana rivers with which I am acquainted, including the Demerara river. A new lightship has recently been imported and was at the time lying in the harbour shortly to take up moorings on the bar. The view of Paramaribo on opening up the reach beyond the fort was distinctly attractive.

Comparison: Paramaribo and Georgetown.

Somewhere, I remember comparing Georgetown to an oyster; it presents quite an uninviting shell to the inspection of those who approach it, but Paramaribo differs in showing some of its charms from the river. Some quite impressive buildings show their façades above the sheds which line the river front.

The Town.

On entering the town, fine squares with noble Mahogany, Saman, and other trees of large growth give vistas of shade and sunlight quite pleasing to the eye. The first-named timber shows much more vigorous growth than it does with us here on the coast-land. That is doubtless due to the greater suitability of soil and conditions at the distance Paramaribo lies from the sea. On the other hand the absence of a breeze to cool the air does not improve the conditions for human comfort.

A breathless heat in the months of September and October renders life between 2 p.m. and 4.30 a limp thing of sudorific gasping. Very wisely the Surinamer abandons active life for two or three hours. The streets present to the observer a shimmering stillness in which all life seems reduced to its lowest terms, even the vegetation hangs listless and goes to sleep, until the reviving coolness of evening again brings a stir and movement amongst animate things.

For the most part business is done between 6 a.m. and 2 p.m. when the *middag maal* is universally eaten. Supper about 8 p.m. supplies energy to keep one going till eleven, when the chief interval of rest supervenes.

General Aspect.

In some respects the Dutch town is not very different from our own. The sunlight reveals the same brilliant colouring, vivid greens of every shade, scarlet orange and browns, black shadows and high lights, a kaleidoscopic feast in which the eye delights till it tires with the banquet. The details, however, are distinctive in many ways.

The Buildings.

There is, for example, that quaint curve of the roof everywhere in evidence and pleasing to the artistic sense, dormer windows emerging to break the monotony of line, provide architectural features and give character to the smaller buildings. Occasionally, a Mansart roof varies the type and suggests some Gallic influence at work in its construction. Quite often one notes with a certain vague wonder that the uprights of house and fence are perpendicular. Even gates, it gives one a gentle shock to perceive, swing true and the gate posts do not nod to one another in the neighbourly way they have in Demerara, but stand erect surprisingly often. It might be worth while sending a commission to inquire into the secret of this! I got what may be an explanation of the verticality of house uprights in the statement that the foundations are usually a broad, concrete of brick and cement, but this does not account for the gate posts.

Red-tiled roofs occur and lend a note of their own and the whole survey of the town is a demonstration of the possibility of getting architectural features even in ordinary wooden buildings. Perhaps the success of our Dutch neighbours in these matters is due to their Netherland traditions and, without doubt, there is a certain flavour of old Holland about the outlines and arrangement of the buildings and a kind of far away reminiscence of Peter de Hooghand Vermeer of Delft. The houses are generally boarded with "*Kopie*," a wood not

unlike our "Itaballi" while "*Picie,*" a wood similar to our "Dalli," is used largely for inside partitions. Cedar, of course, is used in panelling. Pitch pine is not esteemed much and white pine deal is correctly held as unfit for permanent work. The timbers named seem to be more easily obtained than crabwood, which, however, is plentiful in some areas of Surinam.

The Roads.

It may be some small comfort to colonists of the British side to know that road-making is in a condition even more elementary than in Demerara. The streets of Paramaribo are mostly made up of shell of which abundant supplies appear to exist in shell reefs in the neighbourhood. The weather was dry during my stay in the town and the going reminded me of a tramp along the shore inside the Skerries near Port Rush. In the wet season I am told the condition of the streets is not always pleasant. There is one thing about shell, however, that recommends it. There is no dust.

Sanitary.

From a sanitary point of view, I should imagine it to be an ideal street-making substance, but I don't suppose the motorist or cyclist would approve of it. Speaking of sanitary matters, the glimpses I got of the drainage channels of the town did not invite to further investigation. I rather fancy there is not much in the way of sanitation to investigate. On the other hand. I am bound to say that nothing was ever borne to me in the way of olfactory evidence that defects existed. In plain language the town smells sweet enough. Perhaps the abundant shell has something to do with that. I was compelled to contrast the condition of Georgetown on a recent visit I made. There is a subject for a Sanitary Commission apparently in enquiring into this contrast of primitive but aromatic Paramaribo with up-to-date but malodorous Georgetown. A visit to the Military Hospital with the Rev. W. L. Kissack was full of interest. Admirably arranged and cleanly kept, it is a model institution with airy, cheerful wards and a splendidly equipped operating room, in which every appliance for aseptic treatment of suffering humanity almost invites one to come and be carved. This, with the high reputation of the military Surgeon Superintendent, renders it not surprising to hear that numbers of patients have resorted thither even from Demerara.. Except for soldiers and a limited accommodation in the basement for Javanese labourers, free treatment is not given. This does not seem to militate against the popularity of the hospital which was quite well filled at the time of my visit. Grades of accommodation, from private wards to those in which treatment is charged for at about 25 cent. (Dutch) per day, meet the needs of rich and poor.

The Leper Asylum is a private institution and is situated in a populous part of the town. Without prejudice we may consider our arrangements for this kind of patient, superior.

Commerce—The Streets.

Commercial Surinam spreads itself half a mile along the river side where Fogarty's invites the loyal Demerarian to patronise home industries—turns up Kaiser Street and along Die Winkel and fills various narrower thoroughfares

behind the Strand and one or two short streets linking up that street with the square of which the Moravian Church forms a centre piece, while other business avenues extend along to the Plaat in which the Public Buildings and Government House stand. The large area included indicates that a volume of business, by no means inconsiderable, must be done. Some of the retail stores are quite up to date in the attractive exteriors with which they allure their patrons.

Jews in Trade.

A fair proportion of the business is in the hands of the large Jewish element, German and Portuguese, of whom there are about 7,000 in Surinam. In this connection a curious development occurred some years ago. Most of the retail stores were in the hands of the Hebrews, and their ideas of a fair margin of profit on goods sold were liberal to themselves in a degree which seemed to the clergy of the Moravian Church, oppressive for purchasers.

Moravian Competition.

With a view to liberate their own people from exactions, the Moravian brotherhood embarked in trade, soon had a large and flourishing store which still runs and monopolises a good share of the retail business of the colony. Only the other day an organ of public opinion "Die West" took the brethren sharply to task for using the pulpit instead of the Press for the purpose of advertising the arrival of a shipment of fresh and attractive goods. It is, however, whispered that on occasion, quotations for butter, lard and salt-fish have been heard within the sacred precincts of the synagogue.

A Petition v. Aliens.

It was doubtless the feeling that the competition of the clergy was a quite sufficient invasion of their Hebrew claim to the spoil of the Gentiles that led to a petition from the Jews of Surinam praying the Government to restrain from trading within the colony all persons other than citizens of the State of Holland or natives of the colony, until such alien persons had resided at least two years in Dutch Guiana. The petition failed, it is true, but indicates at least a lively sense of their large importance in the body politic on the part of the petitioners.

Synagogues.

Two synagogues, one German, the other Portuguese, survive to mark the distinction which once existed between the sections of that great race, driven out to the far West Indies under the common stress of oppression in the countries of their adoption. In matters social and commercial they have now coalesced, it appears, and form one community, a little tinged here and there perhaps with infusions of blood not strictly Semitic. The only sign of the old division is the existence of the two synagogues. Their commercial rivals of the Moravian Church are a much larger community, which divides with the Lutheran about half the population, while another 15,000 or so belong to the Dutch Reformed, a similar number to the Roman Church and these, with 25,000 East Indians, 18,000 Javanese, a few Chinese, and probably 2,000 or 3,000 labourers from this colony always present, make up the population which is considerably less than half that of our colony.

AGRICULTURE.

Agricultural labour is largely supplied on the cocoa, coffee and sugar plantations by East Indians. The Chnese are mostly, as with us, city-dwellers, shopkeepers and so forth. Most interesting to a visitor to Surinam is the Javanese labourerer with whom I first met in Nickerie, where I heard him estimated as a good labourer but of thievish inclination. A prison squad at work cleaning the parapets certainly contained a fair proportion of that race. In Paramaribo the general opinion seems to be that with the shovel he is scarcely so efficient as the British East Indian, but in work about a cocoa, coffee or rubber estate he is immensely cleverer. I had the pleasure of accompanying Dr. Cramer, Director of Agriculture— to whom I carried introductions from some Demerara friends—on a visit to Wederzorg and Slootwyk Estates. On the first named place the Javanese were at work cutting back cocoa for witchbroom disease and no one, seeing them at work, could help being struck with the amazing agility and deftness of this people in the wholesale pruning which had proved so successful in combating disease in cocoa wherever it has been carried out. This trip on which Dr. Cramer was accompanied by the Administrator (Commissarie) of the Saramacca, several officials of the Department of Agriculture and about 30 planters and settlers was a most interesting one. Twenty of the company had been brought down on the Commissarie's launch from Saramacca the previous day. The Customs launch was put at our disposal and about 6.30 a.m we started for Wederzorg. Here we were met by Mr. Gerling, the manager, a gentleman of high reputation as a planter, who cultivates a scholarly taste in the classics of his own and several other languages. Skiffs and corials were in readiness to carry us aback after a short walk through the factory and fields near the yard. In these fields the cocoa, cut back for witchbroom three years ago, showed vigorous recovery and beautifully healthy fruit without a trace of disease. Further aback we passed fields in various stages of recovery and it is notable that at one year from cutting back some of the trees were already fruiting, while at five weeks signs of leafage were appearing on recently cut shrubs.

The treatment is very drastic. In the cutting back only three or four primary branches are left, every leaf and twig being removed and burnt. A spraying with copper sulphate disposes of thrips and fungus after which the fields are kept thoroughly clean till the new growth has been established. The cost is about six dollars per acre.

The extent of the damage done by disease in Surinam was enormous. According to figures quoted in the British Guiana Board of Agriculture Journal the crop decreased from 87,500 cwts. in 1895 to 16,700 cwts. in 1904. The success of the method of treatment is however equally remarkable. A typical case is that of an estate on which in 1905 there was no crop. In 1906 a year after cutting back 77 lbs. per acre was reaped and, in 1908, 515 lbs.—a full crop. The manager of Wederzorg spoke highly of the cleverness of the Javanese in this class of work, and there is every sign of renewed confidence in the cocoa industry.

This is reflected in the prices of estates. Three estates were bought five years ago for eight thousand dollars by one gentleman I met. To-day they are worth at least eighty thousand. On Wederzorg I saw some rubber ten years old grown under "The Natural Conditions Theory," that is, treated, as far as is possible on a plantation, as wild growths and left to themselves without special attention to shade or drainage. They presented a sharp contrast to the splendid growth of trees several years younger which were flourishing in the Gardens at Paramaribo and elsewhere. A sample of rubber shown me, however, seemed of excellent quality, and doubtless if, like nature, capital was content to work slowly, the natural conditions method of rubber growing would be quite satisfactory. Capital will, however, always be in a hurry for dividends and methods must compromise with nature in view of that fact.

From Wederzorg two hours in the launch up the Commewyne River brought us to Slootwyk, the Government Experimental Estate. Here a large area is under rubber with bananas for shade plants. The rubber here runs about twelve feet high at one year old. One field without shade but with a cover crop of Mucunas sp. is much less forward in growth than neighbouring areas under shade, still the trees look strong and healthy. Dr. Cramer does not recommend terminal pruning, instead of nipping back he strips the terminal shoot of leaves. His experience for several years has proved this method superior. I understand that our Board of Agriculture now recommends this method.

A visit to the Botanic Gardens with Dr. Crämer was full of interest. Special attention has been paid to bananas and cassava, cover crops for rubber and rubber itself. Over forty named varieties of each of the first two mentioned were shown me. In another section fine specimens of eight-year old *Hevea brasiliensis* were examined. Castilloa and Ficus spp. and Funtumia (Kechyia) are represented and Hevea Confusa. It was very interesting and suggestive to hear from Dr. Crämer that experiments in tapping Castilloa had proved the absence of wound response. As Castilloa is a well-established commercial rubber producer in the countries surrounding the Caribbean Sea this fact is very suggestive in view of the similar fact in experiments with Sapium spp. here. In the gardens, Javanese labour is largely employed. "They are born gardeners," says the Director. Each has a plot of land given him and after hours he may be seen labouring on it till nightfall. On the other hand he has the true Oriental aptitude for gambling which hinders him from acquiring property of his own. Attempts at a land settlement scheme are afoot, but probably the man of Java will do better with land drained and rented to him with an allowance for maintenance while he is bringing it into cultivation. They are said to care for their children with great solicitude and their domestic life seems exemplary in its peace and mutual good-will. In physiognomy they remind one somewhat of our Buck in the high cheek bones and upward slant of the eyes, but in their vivacity of expression. they are more like the Japanese. In physique they are less muscular than the Guiana Indians but in many cases the bony-framework seems fitted to carry a heavier development of flesh than they possess. It will be interesting as in the case of our British East Indians to mark the

effect of changed conditions of life on the physique of this people. In any case they promise to take an important part in the development of Surinam. And Surinam is developing. The population is at present meagre it is true, and the black race diminishing in numbers and decreasing in industrial efficiency but efforts have been made to attract capital and have been fairly successful. In forest industries especially a marked expansion has taken place within the past few years. The output of balata for example greatly exceeds that of British Guiana and in the cultivation of rubber they are some years ahead of us. With a view to opening out areas for timber, rubber and gold a railway from Paramaribo into the interior has been in progress for seven years and has now reached a place called Dam, about 89 miles to the South-East. Finally it is intended to reach the upper waters of the Marowyne above the falls, whence a clear waterway will be open to the borders of Brazil. A colossal international dredging proposition on that river is being negotiated by a powerful Syndicate of Dutch and French financiers, which, if successful, should give a great fillip to development of the interior. The pessimistic views taken of this railway by some who have spoken about it in the colony seem a good deal subjectively coloured. It has only recently been equipped for anything like regular traffic and the appropriation for construction and maintenance has been only a million guilders (£80,000) yearly. Information therefore that it has not paid is quite superfluous and mournful prognostications, based on its past history, quite irrelevant to the future. Even as it is, a string of mining prospects line the railway in one section and rubber plantations, settlements and timber locations extend to its present terminus, so that recently it has, I am told, covered expenses. So much is this the case that it was able at a recent Easter festival to shut down for three days while every employee all along the line from General Manager to greaser resorted to Paramaribo on holiday.

Another sign of the awakening of our Hollander cousins is to be found on the sugar estates, in the extended application of labour and time-saving machinery. Marienburg, for example, brings its canes to the mill on a metre gauge railway. I regretted that time did not allow me to visit this estate, the management of which is, I understand, alive on the points of mechanical tillage and other power appliances in farm and factory.

A method common to several estates of distributing man labour was explained to me. The estate is divided into sections on each of which is located a negro yard and overseers' house, so that the labour is close to the fields on which it is to be employed. The Dutchman has in this matter tumbled to the fact that the foot poundage put into walking the dams morning and night means sugar lost. Some of our estates with fields seven or eight miles from the negro yard might find it profitable to take a hint from over the river. The spirit of competition between the sections is a not unimportant factor in the efficiency gained. Sugar is not of so much importance in Dutch Guiana as coffee, cocoa, and bananas. Some 8,231 acres are planted in the latter crop and in 1909 650,000 bunches were shipped. Disease has appeared in this cultivation also and in recent years the output has been seriously affected. There is a possibility that this fact may lead to the withdrawal of the fruit steamers, and I

hear, on high authority, that provision has been made in view of this contingency for the disposal in another way of the produce of the banana plantations.

On the whole the impression gathered on a fleeting visit to Surinam is that while at the moment our neighbours are to some extent marking time, they are doing so with a meditative cheerfulness and a certain amount of steadfast and not unjustifiable optimism as to the future. Their climate like ours is rather against ferocious enterprise, but the stream of new blood, of the flow of which into Surinam there is already evidence, should serve to exhilarate the pace. A consciousness of the interest of the northern business world in tropical products is active and the Surinammer is, I fancy, minded to have his bateau ready for the tide which is setting Guianawards. In conclusion I have only to express my appreciation of the great kindness I experienced during my short stay in Paramaribo and my cordial thanks to all who made my visit a richly instructive and very pleasant memory.

REMINISCENCES OF THE STRAITS SETTLEMENTS.

BY JUDGE HEWICK.

The "Ultima Thule" of a Planter's Hopes.

When I was asked by the energetic President of the Royal Agricultural and Commercial Society to read a Paper on the Straits Settlements and the Malay States as I knew them, I experienced a doubt as to whether such a subject would appeal to the members. I also doubted my ability, even if the subject was of interest, to place sufficient material before you to constitute a paper. Looking back to the happy years I spent in what is known as the Far East, recollections crowded themselves in my memory, and though many years have passed, the life of that period was so ineffaceably impressed that no length of time will ever dim the interest I then took and still take in the land of the Malay.

To you my only apology for venturing on such a subject is because of recent years the word "Penang" has become very familiar in this colony. It means, as it appears to me, almost the *ultima thule* of a planter's hopes. When a man who is absent is inquired for, more often than not, one is told "Oh he has got a grand appointment in Penang." The words as uttered might mean "Lucky fellow, he has gone to a place where there is a prospect for the future as well as reward in the present." Be that as it may the Malay Peninsula has become a household world and a *terra incognita* is unknown no more.

Penang is taken to represent the whole of the Malay States, erroneously of course, for Prince of Wales Island, as it is otherwise called, is only one of the Straits Settlements and not the principal one which is Singapore. But owing to its northerly position and its proximity to Perak from whence all roads diverge, it has increased in importance now that rubber-growing has assumed such large proportions.

Similarities.

When I first arrived in the colony of British Guiana 28 years ago, it struck me that the three counties of Demerara, Berbice and Essequebo were very like the three Settlements of Singapore, Malacca and Penang in many ways, more especially in their histories with reference to their past and present prosperity.

As in the Straits Malacca was the first, so here was Berbice. Each in its turn was supplanted by a newer and more vigorous competitor, due in a great measure to position. As Demerara wrested from Berbice its place as the seat of Government so Singapore supplanted Malacca and Penang. Malacca has only its past glories to its credit including the work of St. Francis Xavier. Penang is steadily gaining much of the ground it has lost at the present day and Berbice, although it remains very much *in statuo quo*, is also progressing again. The resemblance at the time I speak of was very striking. Naturally this appealed to me and caused me to dive into old records, to listen to old-time stories and to

study old landmarks whenever possible to compare them with similar studies I had made in the Straits. In researches on these lines whatever spare time was available was instructingly occupied, and an opportunity afforded of relaxing one's brain and of turning one's thoughts from the not too elevating atmosphere of the Magistrate's Court in which my days were then spent.

The Pigtail Fraternity.

It is not my intention to contrast the life in British Guiana with the life in the Far East but the similarity in the countries seem to me to warrant a passing reference especially as the selection of men from here is a tribute to the training received of which the planter here may well be proud. The Singapore of my day in so far as the place itself is concerned was not very different to what it is now. The town teemed with Chinese who formed the bulk of the population. In street after street their signboards were everywhere. Many of the most influential merchants were Chinese while as for the labour it was almost entirely in hands of the pigtail fraternity. Klings as the natives of Madras are called were to be seen as drivers of hackney carriages and some few stalwart natives of Northern India enjoyed an enforced residence on the island (having been deported there when the Straits were under Indian rule). As for the Malays they carried on the fishing trade, joined the police force or took up a seafaring life for which they were admirably fitted. The police force was composed of all nationalities but in the ranks were very few Chinese as they were more useful in the Detective Department. The Madrassis and Malays predominated and those Inspectors who were of these races proved admirable and effective officers. There was an Inspector General, Superintendents, Assistant Superintendents and Inspectors, the headquarters being in Singapore. The work of the police was by no means a sinecure. It is true that they were not constantly drilled as a whole, and no doubt were not as smart on parade as some other police forces I have had experience of, but they were able to devote most of their time to the more serious work of their department.

The Secret Societies.

In the towns such as Singapore and Penang, the Chinese Secret Societies, and the holders of the opium and spirit licences afforded ample work. There were three secret Societies whose power for good or evil was immense. The members practically meant the whole Chinese population with not a few Malays who were attracted by the support given them when they succeeded, as they often did, in coming within the clutches of the law. The history of the formation of the Secret Societies and their original objects is too wide a subject to be dealt with in a paper such as this. Suffice it to say that the three I have referred to were rivals to each other but confederates when the Government was opposed. So perfect was their organisation that if an edict went forth to "boycott," as it would be now called, every shop in the place closed its doors within a few hours of the issue of the order. No business was done, food could not be bought and the town was soon reduced to a state of almost starvation. If two members of rival factions seriously quarrelled and the dispute arose in the quarter occupied by the members of the Society to which one of the disputants belonged, the other fared badly. If he managed to escape he went to his own

quarters and returned with his friends, mostly fighting men, of whom each Society had a large number. The fighting men of the other faction were probably ready and a fight on a large scale ensued and it did not take long for war to be declared. Things then became highly interesting especially if word was sent to the outlying districts. Houses were raided and burned and assaults committed on every side. Trade was paralysed and for a time pandemonium reigned. If matters became really serious the military were called out and peace restored so far as appearances went. The wounded were attended to, inquests held on the bodies of those killed and

The Whole Machinery of the Police Force

set in motion to find out the why and the wherefore of the disturbance. As is well known Chinese have to be dealt with through their headmen and it was the headmen whom it was sought to connect with the affair. But—and a large but too—what evidence could be obtained ? Not a scrap as a rule for who amongst the members of any Society would dare to give away the man or men whose vengeance could not be stayed ?

So far as those who took an active part were concerned there was not much difficulty. The Chinese detectives knew most of the "fighting men" and as the detectives were always in and about the various quarters, if any "brave" was concerned and escaped arrest on the spot he was soon followed and captured. Flogging was inflicted in case of riot and it was no uncommon thing to see a couple of dozen Celestials subjected to corporal punishment by means of a rattan in the police courtyard. The rattan I may remark if wielded by an expert, as it generally was wielded, bites rather deeply and the recipients of its attentions were very uncomfortable for days after. As, however, the parent Society paid them well, it was solace for their hurts. If imprisonment had to be undergone the families were supported during the period of incarceration and things made easy for the prisoner on his release. Things came to such a pitch that measures were instituted before I left for the suppression of secret societies. Now, such scenes as I have related, are, if not quite impossible, almost so. There are mounted police now as well as Sikhs, in the ranks of the ordinary force. These men, whose introduction I advocated, are largely employed in the States and form the Straits Guides so well known and so justly eulogised. The latter are military pure and simple.

Their Effect.

Strange as it may seem, the doings of the harmful secret societies have resulted in the position that is now held by the British Empire in the Malay Peninsula. Larut, a part of Perak, had long been known for its tin mines. The Chinese were attracted to it and the Tunku Muntri or Chief granted concessions at a high figure to the leading men of the two most powerful societies. With Eastern duplicity the same concessions after a time were granted to each. This as may be imagined led to a pretty state of things until at last the Government of the Straits had to take a hand, and at first, by diplomacy put a check to the warfare that ensued. This, however, could not last and eventually a Resident became the order of the day. There were also two rival Sultans of Perak, the

acknowledgment of one and subsequent ideals led to the murder of Mr. Birch—the Perak War—the settlement of that country by degrees as also of Singei Ujong Selanger and so on, until by the recent arrangement with Siam, Kedah and Kelantan have been added to the Federated Malay States and the whole of the Peninsula barring one State is in the Federation. The Maharajah of Johore who was later made a Sultan gave loyal support to our Government.

The Opium Farm.

So much for secret societies in the form of disturbances of the peace. The next thing to which I will refer is the Opium Farm. The revenue of the Straits was derived from the Opium and Spirit Farms which were let by competition for a period of years. Whoever succeeded in obtaining the Farm had the monopoly of the trade. Al the Government had to do was to receive the revenue and support the farmer when he required the assistance of the law in the way of search warrants and so on. Detectives and Revenue Runners were employed by the farmer himself who issued licences and fixed the prices of opium and spirits. The former was only sold when prepared for smoking. As the price paid for the Farm increased so did the cost of the commodity to the consumer. Smuggling by the rivals in the competition assumed large proportions and the ingenuity of the Celestial had great scope. One case I remember when I was in Province Wellesley is a good instance. I was applied to one day for a search warrant to search the house of a wealthy Chinese. The house was near the frontier of the British territory and Kedah. The information was brought by a Revenue Runner who persisted that the facts he was ready to swear to were *bona fide*. I granted the search warrant and the police were directed to execute it. On reaching the house the warrant was exhibited and the reason of the presence of the police made known. The spot was an isolated one and the numbers of the police and revenue runners with their retainers not large. So it was not without surprise that the Officer in charge found himself surrounded by

A Yelling Mob of Chinese

brandishing all sorts of weapons from tridents to pointed sticks. There was every appearance that desperate resistance was to be offered but fortunately a relative of the owner of the house, who happened to be paying a week-end visit to the country residence, appeared and calmed the excitement. The police proceeded upstairs into the house and searched. Nothing was found. As they were about to leave the revenue runner pointed out that one room, that of the females of the establishment had not been searched. Another scene ensued to be duly calmed. On searching the bed there were found in the canopy two or three of the horn boxes used for keeping prepared opium from the lids of which the stuff was exuding. The revenue runner was triumphant. The police left with the boxes duly sealed in public with all the necessary formalities. In the ordinary course the case was called after the usual preliminary proceedings. Its fate was to break down completely, for on analysis the opium turned out to be molasses which bears a resemblance to prepared opium. The necessary smell was given outside by a very slight smearing of real opium. Facts which subsequently came to be known established most clearly that the

whole affair was made up. The revenue runner was given reliable information and while the police were searching the house a very large quantity of opium was smuggled across the frontier and carried to its destination.

Gambling Rampant

Gambling was, of course, rampant notwithstanding the greatest vigilance and the police had their work cut out to check it. Dens existed all over the place, bribery was in full swing and as all classes joined in hoodwinking the authorities the task of suppression was a difficult one. The larger gambling dens were veritable fortresses. The games were usually carried on in an upper-storey access to which was through a heavy trap-door carefully guarded which was let down on the heads of the police as they scrambled up the ladder leading to the room, the gamblers escaping over the roofs. Many an exciting chase resulted. Broken heads and limbs were not at all infrequent but the merry game went on. Wah Way as it was called—the Cheefa of this colony—was popular with the masses. The proprietors of this lottery had their agents in all districts. These men daily sold tickets and on the declaration of the winning object, turtle, tiger or whatever it was, went through their districts and exhibited the palm of one hand on which was painted a representation of the winning object. Tickets were redeemed at fixed places. The paint or colour used was a harmless dye, very soluble and if a policeman approached the agent that individual by the simple process of licking his palm eliminated all traces and there was no proof.

Che-Poh.

The larger gambling houses indulged in Che-poh. In this a brass cube was used which enclosed another in the apex of which was a die. A cloth was spread on a table. This cloth had various signs on it marked off in divisions by which wins were calculated. The croupier put in the die after the money was staked on the cloth, then fitted the outer cube over the inner one, gave the thing a turn or two, placed it in a bag which was laid on the cloth ; another turn was given, the bag taken off and then the outer cube was lifted up revealing the die—the position of which decided the winners. All this appeared fair and absolutely above board. In many, perhaps in most cases, it was so but even here things were often arranged. When this was so, the inner cube had a shifting bottom under the die. This shifting bottom was acted on by a small delicate spiral spring worked by a minute needle point at the side of the cube. The croupier when he put in the die noticed the stakes and if the position of the die, which by constant practice he knew, would result in a heavy loss, the needle was touched when the upper cube was being removed, the die turned and the Bank won.

A Simple Method of Gambling.

Fan-tan, of course, also had a show. But the simplest method of gambling I ever came across was in Province Wellesley. For some time it was known the gambling was carried on in a certain village. Where or how could at first not be discovered. There were no gambling houses, of that we were sure.

Eventually the secret was known. A Chinese pork butcher had a shop in which were exposed joints of pork for sale. A customer went up and asked for half a pound paying not the market price, but twice or three times as much. A knife was handed to him and he was asked to cut off any part he liked—to please himself in his selection. The customer took the knife and carefully cut off what he considered was half a pound of meat. This was weighed if it was exactly the weight he got the arranged stakes; if it was not accurate he had paid the enhanced price for his meat. You will recognise the simplicity of the proceedings and the difficulty of detection.

Characteristics of Penang.

Penang although much smaller than Singapore had the same characteristics. The hill as now, no doubt, was its great feature and many a weary and heat-oppressed individual took a week-end near the summit in the Bungalow to recuperate, On the main and opposite Penang is Province Wellesley, a strip of territory obtained from the Rajah of Kedah. The principal products of the Province were sugar and tapioca which as here necessitated the importation of East Indian labour. In the case of the Straits the labour was from Southern India. Of course Chinese were also employed on the estates but as they laboured under their own headmen, the authorities dealt directly with those. Nevertheless troubles were by no means infrequent for the Chinese Coolie requires to be well fed and any shortcoming in this respect was forcibly resented. Gang robberies which were very prevalent all through the Straits were a source of great anxiety to the police in the outlying districts. As there were no telegraph or telephone facilities intimation of special occurrences such as murders, riots or gang robberies was made by means of the cannon with which every police station was provided. One, two or three signals indicated what had taken place and was repeated by each station—thus reaching headquarters. The sound was followed up so to speak, all forces concentrating at the station from which the sound originated and at which such steps as were possible had already been taken. As gang robberies were of course carefully planned, news seldom reached the police until the perpetrators had decamped with their booty.

If the scene was near the frontier little could be done at the time except attend to the wounded or arrange for inquests if any person had been killed, and gathering such information as would be useful in the future in aid of detecting, arresting and punishing the perpetrators who had ere the arrival of the police, "gone over the border."

Gang Robberies.

As each village "Pungulhu" or headman collected Malays to accompany him to the trysting-place there were plenty to follow up any traces and a general idea was soon obtained of the number of men engaged, their nationality, the direction from which they came and the direction in which they had gone. In some places boundaries were not very clearly defined and occasionally the robbers were pounced on when they thought they were safe from pursuit. Houses of wealthy Chinese were naturally the most frequent objects of the robber fra-

ternity. These houses as a rule were supplied with strong doors and the owner kept his servants fairly well armed. The doors had to be battered in if entrance could not be effected by a ruse and for this purpose Chinese gravestones came in handy. These often gave a clue on which to begin the work of detection and many a conviction resulted from the evidence they afforded of the spot where the final preparations were made, which led to successful proof later on. Where the robbery was the work of a professional gang there were sure to be some Malays or Siamese mixed up in it and one found in the tracks leading from the house small pieces of sharpened bamboo, called ranjows, so tied together that when thrown on the ground some of the sharpened points stuck up. This prevented any person with bare feet from following. If the robbery was the result of revenge or done at the instigation of a secret society, the perpetrators were generally Chinese and as elaborate plans were made for effacing all traces, detection was by no means easy.

The Fame of Jeremiah.

In the police of Province Wellesley, however, there was an Inspector to whom such investigations were a joy and who was *facile princeps* in unravelling the most mysterious cases from apparently worthless clues. Jeremiah, for that was his name, was of mixed blood—what exactly one never knew. Malay and Siamese were certainly present, possibly also European and Chinese. Be that as it may, old Jeremiah was a terror to evil-doers. Possessed of great strength he was equal to any rough and tumble if it was necessary. But it was in his faculty of reasoning *à la* Sherlock Holmes and his ability to transform himself into a Malay, a Siamese or a Chinese that his power lay. A polyglot, he was at home in whatever disguise he assumed and as he wandered far and near and never let the smallest detail escape him he invariably managed to spot the criminals. If they were across the frontier they were *induced* to come on the British territory and of course were *accidentally* captured along with Jeremiah by a Patrol. More often than not some of the stolen property was on them and the unearthing of a good deal more at some spot within our territory enabled the police to rope in the greater part of the gang. Jeremiah occasionally wore the uniform of an Inspector and as such took part in the tedious ceremonials so far as he was concerned of standing at the end of a line of armed and uniformed police when they were inspected by the Governor at the head station.

Of drill he knew little. At shooting he was an expert either with revolver or snider while in stick play he was a master. Many and many were the expeditions he and I made together by day as well as by night and the tight places into which he led me gave me some very unpleasant hours. Like all Asiatics, Malays are superstitious, and the fame of Jeremiah as what would be called here an "obeah man" was widespread. The fact that he was engaged in a case caused many an offender to so behave that he gave himself away and I have seen a desperately armed Malay stand spell-bound on the appearance on the scene of old Jeremiah. Peace to his ashes. I only hope he has been followed by men of his calibre for although perhaps with modern means detection is more easy than it was in my day, the ability to detect crime is still all-important in a police force. What is said of a poet is equally true of a

detective, he is born not made. Malays call police "mata mata;" mata means eye, a detective is a mata, mata glap or hidden eye. No detective gave evidence in Court except in full uniform which in itself was a complete disguise.

Excitability of the Malay.

The excitability of the Malay results in his running amok for apparently slight causes, and, as I have shown in an article to be published in *Timehri*, when he is in that state he is a particularly dangerous individual. Owing to this peculiarity the Government prohibited the wearing of weapons, but each Malay was the proud possessor of one or more krisses and when taking his walks abroad out of the district did not forget to go armed. The action of the authorities was not deemed to be logical by the Malays. I was often told that the possession of a kriss was really a preventative to quarrels for if any individual was desirous of creating a disturbance however anxious he might be he thought twice before action if he knew his opponent was armed. Of krisses there were numerous kinds. Straight, waved, short ones and long ones, each most effective when in the hands of an expert. The waved kriss inflicts ghastly wounds for after being driven home it is twisted in the wound before being drawn out, the result being a very nasty hole to say the least of it. Poison was also used on the weapons so that an attack by a man armed with a kriss was to be avoided if possible. When a man ran amok the police used a peculiar instrument for his capture. It was a long staff with a semi-circle of steel at the end like the horns of a cow. Armed with this a policeman waited the onslaught of the demented Malay pointing the horns at the neck. When contact ensued the man was pushed against the nearest tree or house and held there till he was seized and bound. In some cases the madman was more summarily dealt with. The long kriss was used in executions in the native States, the prisoner knelt down, the kriss point wrapped in cotton wool was put by the side of the left collar-bone and driven through the heart, then drawn out through the cotton-wool which was used to plug the wound. Theft in the Malay States was punished in some cases by chopping off the right hand with an axe, after which the stump was plunged into boilng oil. I have seen men on whom this operation was performed. The absence of a scientifically arranged pad of flesh over the end of the bone did not conduce to comfort.

The other weapon of the Malay was a *parang* like a Burmese "*Dah.*" Used as a sword it was also very effective. Changes must have taken place, for about two years ago I wrote asking for a "parang." The name even was not known. After a long search my correspondent sent me a roughly made instrument, a goloh, used for chopping wood.

A Peculiar Disease.

A peculiar disease from which the Malay occasionally suffered—I presume it was constitutional—was what was known as "Latta." If a man or woman was so afflicted all you had to do was to give him or her a sudden shock after which whatever you did was imitated faithfully. As may be supposed not infrequently this condition was used as a means for entertaining strangers by the unsympathetic.

The Malay States are renowned for the fruit which is grown there. Most people have heard of the famous mangosteen, and the Durian has a reputation of its own. The latter to a newcomer is absolutely obnoxious from the really terrible smell which it exudes from the skin. The fruit is large, something like a soursop in appearance, with spikes all over it. Inside each segment has two or three seeds covered with a custard-like substance. When once one's courage can be screwed up to taste this the smell of the skin is forgotten and during the season the fruit is eagerly sought after. With the Malays as well as with the Chinese the Durian is a great favourite. One of the first cases I ever had to deal with was one in which a youth severely assaulted and robbed his grand mother to get money to buy a Durian. There is one tree I hear on Mr. Junor's estate up the Demerara River, so some day you may be able to try it. Do not give up at the first attempt.

In my day piracy was rife not so much by Malays as by Chinese, who in their long snake boats hovered along the coast and looted passing junks in sampans. The pirates lived in the mangrove swamps where their houses were carefully concealed. Steam launches could not approach because of the shallow water and whenever a raid was made it had to be accomplished on foot. At sea their snake boats were so fast that they could not be overtaken by any craft at our disposal unless they were disabled. After a time, from constant hunting, piracy was practically suppressed and the opening up of the country made it more difficult to secure hiding places, without which piracy with open boats could not be successful.

A Sportsman's Paradise.

Going from scenes of turmoil to those of peaceful recreation, the Malay States were a paradise for the sportsman. Snipe abounded as did also innumerable other kinds of game. Jungle fowl, Argus pheasants, pea-fowl and so on, were by no means difficult to get. While rhinoceros, tiger, buffalo, and deer roamed through the jungles.

In the interior were to be found the aboriginal tribes, Semangs and Sakeis or Jakoons as they were called in Malacca, a most interesting people who built no houses, used blow pipes and darts tipped with ippo poison and who shunned communication with strangers. I was fortunate enough to gain their confidence and spent some time amongst them learning much wood craft and being led unerringly about the jungle from place to place by short routes which I unaided would never have discovered. Where I walked barefooted there are now, I hear, railways, telegraph poles and all the details of modern civilisation—that grand solitude is gone which is the charm of life in the primeval forest and which soothes after the stress of the strenuous existence. Such must, however, disappear as European civilisation advances. Is it always to the benefit of the so-called uncivilised people? Let us hope so.

The Malays' Loyalty.

Speaking of the Malays it is impossible not to pay a tribute to their loyalty when once you have gained their confidence. They are proud but not rude, manly, but not aggressive, keen to resent an injury yet just in their estimate of

actions. Of faults they have many—what nation has not? They are lazy according to European estimate and vindictive if convinced of a real wrong; they are given to piracy, if sea Malays, and an opportunity offers, but taking them as a whole they are amongst nature's gentry and always earned my respect.

No better instance of their appreciation of the British can be given than the distinctive name of which they designated our race. Of all nationalities we were the "Orang Putch" or white man. The Dutch are called "Blanda," a corruption of "Hollander." French, "Faransay." and so on. They also recognised with a quiet humour the way in which we deal with them when we take into our heads that a bit of their territory ought to be ours. I was once sent to hoist the British flag in a new place. When I arrived at the spot, after a weary walk over miles of swampy land and across interminable paddy fields I found the headman waiting with a crowd of followers. I had about half a dozen men with me. After a short talk I invested the headman with a badge of authority, raised a pole, hoisted the flag and fired a *feu de joie*. The whole thing at the last was over in a few minutes and the "Pungulhu" said to me: "'Tuam,' you are funny people, you Orang Putch. You come here and talk to us and we join you and you put our land under your flag. How is it the 'Blanda cannot do it? They were 17 years conquering the 'Rawahs.' How long they will be in subduing the Achinese, who can tell." This was in 1874. The Achinese war had been going on for two or three years and the conquest of the country is not yet accomplished! What a mistake it was for us to give up Achin. But then the Malay Peninsula and the adjoining islands were unknown to and uncared for by our statesmen although our history contains records of the conquest of Java (which we restored to the Dutch), and plenty of references to the Archipelago. So far as managing Asiatics is concerned throughout the Far East we might take a few lessons from the Dutch and it has therefore always been a surprise to me to note the feeling of the Malays in the Peninsula towards them. The shade of Sir Stamford Raffles must rejoice at our preponderance in Malay. He recognised its value to us and at last so have those at the head of the nations' affairs.

To men like Sir Andrew Clarke and Sir William Jervoise (Governors under whom I served); Sir Cecil Clementi Smith, who as Governor put the finishing touches to the policy of his predecessors; Sir Hugh Low, Sir Frederick Weld, (first Resident in Perak), Sir Frank Swettenham, Sir William Maxwell (contemporaries of mine) and their successors, Sir Edward Birch (the murder of whose father was the cause of the Perak War), Sir Hugh Clifford and the rest of the energetic and efficient Residents who have kept up the traditions of the "Orang Putch," our success in the Far East is due. I only hope the "Magnificent Province" which has lain dormant for so many years will wake up at last and open up also like the Malay States its vast resources and prove itself to be in reality what it has been in fable a veritable Eldorado. (Applause.)

A Vote of Thanks.

Dean Sloman, in proposing a vote of thanks to His Honour, said to most of them, the Far East was a subject of great fascination. It contained the nations

of such varying and at the same time interesting characteristics that everyone who enjoyed the study of human nature must enjoy any lecture which dealt with such a subject, and he was sure that afternoon they had had it portrayed before them in such a life-like way—such a thoroughly entertaining and interesting manner—that it had brought those nations before them as they lived there; nations whose characteristics were not then washed away by civilisation—that was to say they had been portrayed as they really existed. When a country had been civilised for a long time the different nations began to give up their national dress and customs and after a time to a great extent they began to give up their

NATIONAL CHARACTERISTICS.

and he thought it was a very great pity that they did so. The longer each nation retained its own dress, customs and characteristics the better for them, it seemed. He thought they would all agree that they had had an interesting account dealing as it did with such a very unknown locality,—probably no other person in the room besides the Judge had resided in that neighbourhood, although now many of them had links with it, as the Judge had said, so many Demerara planters having gone to Penang—and it was especially suitable to have a lecture on that district because it made known to them a country where many had friends living. He thought they owed a great debt of gratitude and thanks to the Judge for having given them such an entertaining lecture. (Applause.)

Mr. Pope, in seconding the motion, said they were always glad to hear the genial Judge on any subject and they were particularly glad to hear about a country such as the Straits Settlements. There were a great many people in the colony who had travelled about and the Society would be glad as they were that afternoon to listen to their experiences in the countries they had visited. He had never been to Malay. The nearest he had been to the place was Seychelles where he had spent three or four days. One thing he had always been curious about in regard to the Malay was the origin of the name given to the Malacca cane; he had heard it called the Penang lawyer.

His Honour: It is a mistake.

The motion was adopted.

THE PENANG LAWYER.

In reply His Honour said he was sorry to interrupt Mr. Pope when he made the statement about the Malacca cane. He had got hold not only of the wrong end but of the wrong stick altogether. The thing that went by the name of Penang lawyer was a small tree which grew very straight with a great nob at the end from which the roots sprang and were cut off leaving a head. It was called the Penang lawyer because before the days of civilisation when people had disputes which were now amicably settled in the Law Courts they were amicably settled in those days by a knock on the head with the stick. It was not a cane but a "lawyer" who was very much used in the old days.

The President's Remarks.

The President said they were all very much obliged to His Honour for giving his experiences of a country which in many respects resembled their own. The climate seemed to be very much the same and the rainfall, but the possibilities for development were much better realised there than here, but nevertheless very much the same. When His Honour was there, there was not a single mile of railway. The population was about the same as here at present. The population of the Straits Settlements had nearly doubled since—was 600,000—and the mileage of railway in the whole country was over 700. The British territory did not seem to form a large portion of the country, judging by the map, and there possibly not more than 100 miles of railway had been actually built. The whole peninsula was only one-third the size of British Guiana. But in close connection with the British territory were the Federated States, each of which had a British Resident. At Johore the railway was 150 miles long and was being

Pushed into the Heart of the Country.

towards Penang. The mileage altogether was 700 and there were branches in various directions. As to roads they had about 2,500 miles. He had heard a good deal about the railways from Mr. George Pauling. The railways had been built, not for a dense population such as existed in Java, but by a population not widely different from their own. The British possessions had only 500,000 to 600,000 and in the whole territory outside there was probably not a larger number.

Rubber in the Straits Settlements.

The Straits Settlements were now associated with rubber in such a way that it was clear that the fortunes of those territories would be connected with rubber as long as it was grown for the purposes of commerce. They had enormous opportunities and had taken every advantage of the semi-independent position of the administrators. They had larger revenues than this colony to dispose of, which were very little interfered with from home. He hoped one day this country would share in the progress those countries had made and would have a succession of administrators such as had ruled them for the past twenty-five or thirty years, who would succeed in bringing the *hinterland* into prosperity similar to that which those countries enjoyed. He was very glad to convey the vote of thanks.

His Honour personally thanked Mr. Bowhill, who was present, for the map with which the lecture was illustrated. It was an excellent example of what the Department could do.

A RECOLLECTION OF THE FALKLAND ISLANDS.

By J. D. Lawrence Second Assistant Inspector of Schools.

Introductory.

Before beginning a description of the Falkland Islands, as I remember them, I wish to say that I am indebted for some statistical and other information to an article in this journal ("United Empire"). The article in question is by W. L. Allardyce, C.M.G., the present Governor of the Islands, and was originally a lecture delivered at a meeting of the Royal Colonial Institute in March last. The lecture was, I understand, illustrated by lantern slides. I am sorry that I have no slides, or pictures of any kind to show you—not even a picture post card! Such cards were not so common twelve or fifteen years ago, and I am not sure if any may be obtained of the Falklands even now. However, we will do our best to get on without the illustrations.

Discovery.

2. The Falkland Islands were first discovered in 1592 by Davis, an English navigator, and so would appear to be British by right of discovery, though there is reason to believe they were seen before this by some unknown navigator. Anyway, they changed hands several times between the French, the Spaniards, and the British, before they were finally settled by Britain, and it is said that the Argentines claim them even to this day. They have also had different names applied to them at different times—Mr. Allardyce gives no less than ten, which I need not trouble you with here. The islands were ultimately settled as a Crown Colony in 1843 under the name they now bear.

Position.

3. The Falklands lie in the South Atlantic, about 500 miles north-east of Cape Horn, the southern extremity of this continent. Their latitude is about 50° South, and their longitude about 60° West, that is to say, they lie nearly 3,500 miles due south from Georgetown. This question of distance "as the crow flies" may interest us more when flying machines become more common. At present no one here, I presume, contemplates a visit to the Falklands by sliding down the 60th meridian in a monoplane.

Extent.

4. The group consists of the East Falkland and the West Falkland, and very many smaller islands. The two main islands are nearly equal in extent, and each of them is much larger than Trinidad, the total area of the group being given as 6,500 square miles. The "West" is separated from the "East" by the Sound, which is not more than 3 miles wide at its narrowest part, if so much. I speak here from recollection of the distance across the Sound, and of the judgment I formed of it, when, in travelling over the mountains of the "West," I now and then had a view of the "East." And I may add that it is the western island, and one or two of the smaller ones adjoining it, that I am best acquaint-

ed with, and do not in fact know the eastern island at all outside of Port Stanley.

Climate.

5. The climate is, of course, temperate, with a decided leaning towards the cold side. There is very little sunshine, not enough to ripen grain, though the ordinary English vegetables can be grown. There are very high winds too, especially in spring and summer. The southerly wind is the cold wind, and even at mid-summer a strong wind from this direction makes it bitterly cold. Still the hardy plants in the garden seem to grow somehow, and the no less hardy children seem to thrive. Nor need that seem strange to those of us who have not spent all our days in the tropics, for a vigorous climate is a good thing in more ways than one—"Where snow falls there is freedom."

General Appearance.

6. The general appearance of the islands is bleak; huge ridges of bare rock meet the eye everywhere, while the lower ground is mainly rolling plain covered with long wiry grass, yellow rather than green, and without a single tree, or anything higher than a gooseberry bush, anywhere. There are extensive peat bogs, too, and, indeed, without them the islands would not be habitable, as peat is the only fuel to be had. Still the existence of these bogs does not, I imagine, brighten up the face of the country. Two other peculiar features of the country are the "stone runs," and the "balsam bogs." These stone runs are rivers of grey stone that have been laid bare on the hill sides by some process of Nature in past ages; and at a distance they present rather a striking appearance, as of foaming rivers rushing down the sides of the hills. They are quite impassable on horse-back except where they narrow down, and you can get a firm footing between the stones, when you have to trust to your horse to "dodge" them, and hope he won't stumble and break his neck—and yours. The balsam bogs I have mentioned are round spongy growths to be found, scattered all over the ground, the larger ones perhaps stand about eighteen inches high and might be twice this in diameter. I may best describe their general appearance when I say that a native of this colony seeing them for the first time might imagine he saw before him abnormal specimens of bread fruit springing out of the ground, but wanting the stalk. These bogs, even more than the stone runs, are troublesome to the rider at times, especially in the dark, and it is surprising the way the horses keep clear of them. There are no rivers of any size, they are only mountain streams, passable on horseback, except when in flood. But the coast-line is very much indented. Bays and creeks find their way far into the land, many of them forming excellent natural harbours.

Animal Life.

7. There are no wild animals to speak of, but those who are fond of shooting may find what is called "good sport" among the geese and other wild fowl. The geese especially are very numerous, and eat up the best and finest of the grass, which is wanted for the sheep, and so they have to be kept in check. The farmers, consequently, pay 10s. a hundred for geese beaks, which is, I have heard, sufficient to pay for the cartridges used, to say nothing of the fact that the birds are good to eat. Then there are various kinds of sea birds, and among

them, the penguin, a curious creature as much like a seal as a bird. They have flippers instead of wings, and, certain kinds of them at least, burrow in holes near the beach. Seals also are fairly numerous around the outlying islands, but sealing is not, I think, much of a business now, whatever it may have been in other days.

People.

8. There are no natives of the Falklands in the sense in which we speak of natives of this colony. The settlers are all Europeans, and very many of them are Scotch, or of Scotch descent. But in the early days Spaniards from the La Plata were employed there in killing off the wild cattle—"gauchos" they were called, and traces of them still remain in some Spanish names, and some habits of dress. The islanders have Spanish names for the various kinds of horses, and also for the riding gear; and the Spanish riding cloak, or "poncho," is still worn.

The population is about 2,300 at the present time, and is not increasing much. Twelve or fourteen years ago it was said to be about 2,000, and we see it is but little more now. There is an outlet for the young men in Patagonia, where there are extensive sheep farms now, I believe, and it may be some of them find their way there, but the Falkland Islander, born and bred, is not of a roving disposition. He prefers his wind-swept island to anything outside of it, nor would I, who have seen life there and elsewhere, blame him for it.

Occupation.

9. The chief occupation of the people of these islands, as you, perhaps, have already gathered, is sheep-farming. The whole country is divided up into stations, as they are called, each with its settlement, where the shearing is done, the wool shipped, stores kept, and so on. Here also the manager of the station lives, as well as the men usually employed about the place, while posted all, over the "camp," or district outside of the settlement itself, are the shepherds houses. Each shepherd has a large piece of ground to go over, and does all his work on horseback. He has seven or eight horses for his use, and does not usually work the same animal more than one day at a time. Their only food is the natural grass. They are allowed to roam about the "camp" and feed, and when wanted they are all driven into a corall, and then caught. They are all unshod, of course, and are never put in a stable, summer or winter. The Islanders are all good riders, the children learn to ride as soon as they learn to walk—and they have need, for one's own legs are not of much use where there are no roads, and where what they call the "track" is known only to the native—and to the horse. One of my first guides was a little fellow of about eight years. He had been sent a distance of nearly ten miles for me with a led horse and gear. His own gear was scanty enough—a bridle, and a sheepskin for a saddle. He couldn't find his way through the alphabet, but he could guide the schoolmaster from one end of the station to the other!

Industrial Prosperity.

10. Referring to the industrial prosperity of the Islands Mr. Allardyce says, "Since 1885 the colony has been entirely self-supporting, has paid back all advances made by the Imperial Government, and been able to establish a reserve fund of over £60,000." And in another place we are told that "the deposits in the Government Savings Bank amount to nearly £27 per head of the population." Speaking from my own experience, I know that on the "West," and the smaller islands adjoining, there are no poor people; there is employment for each family, and each seems to live in comfort, at least, if not in luxury. There is no poor house there, nor a prison,—there are no occupants for them! I speak here of the "West" only. There is a prison in Port Stanley on the East, and also some poverty no doubt The two seem to go hand-in-hand, though the exact relation between them in any particular case might be rather difficult to establish. Before leaving this part of my subject, however, I would point out that the fairly prosperous condition of these remote, and thinly peopled islands does not seem to accord with the view that a teeming population is a necessary condition of material prosperity. Even where there are vast natural resources, something surely must depend on the *quality* no less than on the *quantity* of your population. Yet, I think, one often hears the question stated in such a way as to lay all the emphasis upon the quantity alone.

Means of Communication with the Outside World, and with Each Other.

11. There is no cable communication with the Falklands, and communication by steamship, though regular, is not frequent—only once a month. The P.S.N. Company, lately bought over by the R.M.S.P. Company, have, or had, the mail contract between the United Kingdom and the Falklands. Then between the islands themselves there is a schooner service. The method of communication between the main islands and the outlying islands is very primitive. The islanders signal to each other by lighting a fire in some convenient spot. A fire lit on the main island is a signal to those on the smaller island that some one wishes to come off, and wants a boat. Nature aids the islanders here, for though there is no wood, yet there is a shrub that grows plentifully on the hill sides, and burns well even in wet weather, and it is this they use for their fire. There was one island, called Pebble Island, I used to visit regularly in this way.

Port Stanley as a Port of Call.

12. Port Stanley, on the East Falkland, is the only town, and "seat of Government," to use a form of expression common in books on Geography. It is, of course, a very small town, but possesses a very fine natural harbour, which is, however, rather dangerous to enter. As an instance of this I might refer to the loss of the "Philadelphia," a large American sailing ship, in June, 1896, while trying to make the harbour at night. She struck a sunken rock near the entrance to the harbour, and sank with every soul on board. Yet from the position of the islands, Port Stanley is a convenient harbour of refuge for ships disabled off Cape Horn. The autumn of 1899 (spring in the southern hemisphere,) seems to have been an exceptionally bad one for ships

trying to round that redoubtable Cape, for within a few weeks nearly a score of large sailing ships put into Stanley for repairs of some sort. But you will perhaps be rather disappointed to learn that the work of repairing is so costly, and so slow, that many ships prefer to make for Monte Video. Mr. Allardyce refers to this in his paper, and I have often heard the complaint myself during my stay there.

Education.

13. Ample provision is made for the elementary instruction of the children, and the people make the most of it. There is a Government school in Port Stanley, as well as a Roman Catholic school, and another at Port Darwin, which is supported by the Falkland Islands Company, for the benefit of the children of their employees. Then besides these schools, which are all on the "East," there are two travelling schoolmasters for the "West." These schoolmasters are employed by the Government, and their duties are to travel from house to house and instruct the children of the shepherds in the remote districts. This system first came into operation in 1896, and was the outcome of representations made to the Government by the shepherds themselves. They undertook to provide the teacher with free board and lodging, and to pass him on from place to place, with horse and guide, if the Government would undertake to provide the salary. An understanding was come to between them and the Government, and two young men were sent out from Scotland in the autumn of 1896 on a five years' agreement. The scheme worked fairly well from the beginning, and has been continued and extended; both the Government and the shepherds kept their pledge, and keep it still.

Home Life.

14. And just here I might try to give you a nearer glimpse of the home life of the people, as I know it. The houses are all built of wood, and are rather cold in winter, especially those that have only one fireplace. As stated above the only fuel is peat. This requires a large fireplace if it is to burn well, and given this, the Falkland Island peat does indeed burn well. In selecting a site for a dwelling the sheep-farmer has to consider, not only the advantage of having a shepherd in that particular spot, but also whether there is a good supply of peat and water at hand, otherwise he may find after a while that he can no longer carry the peat to the house, and must, therefore, carry the house to the peat. The people are very hospitable, not only to strangers, but to each other. The houses are so far apart that each is regarded as a sort of rest-house by those who happen to pass along the track. When a rider is seen coming along some refreshment is got ready to offer him, and it would, I think, be taken as a sign of unfriendliness in a rider, if he were to pass without calling, if only to say "Good-day." There is not, it is true, much variety in what is set before one to eat, but there is always plenty of good mutton and home-made bread. Vegetables are rather scarce, sometimes, and beef is not so plentiful as mutton. Still there is a fairly large number of cattle on every station, and a shepherd may have as many cows as he cares to tame, so that, in the summer at least, there need be no scarcity of milk and butter. On the whole I think the Falkland Islander is not badly off in the matter of diet, and during my stay in these islands, and since,

I have often thought of that saying of Dr. Johnson's, "He that complains of his fare in the Hebrides has improved his delicacy more than his manhood," and felt that the same might be said of the Falklands. (Dr. Johnson may have been sarcastic here; being ignorant of the context, I have no means of deciding. I can only say I do not employ his words in that sense.) From the nature of the country and the occupation of the people, one would expect to find life rather quiet, and monotonous, and it is so, undoubtedly. Each family is isolated, as it were, and the members are thrown upon their own resources for recreation and amusement, especially in the long winter evenings. The islanders are, however, rather fond of music, and of dancing, and most houses perhaps, can boast of a musical instrument of some sort—even if it is only a melodeon or flutina, as it is called there—and someone who can get music out of it. Given an instrument, and a player, and a few young people, then the problem of how best to spend a winter evening is one that solves itself—in the Falklands. And sometimes, too, towards the back end of the year, after the shearing is done, one of the stations may arrange to have a grand ball, and the people of other stations are invited from far and near, men, women and children. Accommodation is provided for everybody in the settlement, and there a pleasant time is spent by young and old. Having looked forward to the meeting for so long, and made such preparations for it, they are naturally somewhat loth to break up, and so instead of one night's merry-making, they sometimes have two!

The Islands as an Outpost of Empire.

15. The last point I would touch upon is the importance of these islands from a strategic point of view. They command the Straits of Magellan, and the trade routes to the West Coast of South America by way of Brazil and the River Plate, and are consequently of some value from the point of view of naval strategy. It was therefore proposed, somewhere about 1900, to establish a naval base and coaling station near Port Stanley. A site was chosen on the opposite side of the harbour, and the work of excavation was actually in progress in 1902, the place being locally known as "Klondyke." I find, however, no reference to this work in Mr. Allardyce's paper, though he mentions the local volunteer corps, and it may be that, with the concentration of the fleets in home waters, the scheme has been abandoned. If so, there are no doubt good reasons for it, and one of them may be the growing conviction that when next the British fleets try their strength, their base of operations will not lie within six thousand miles of the Falklands.

MOSQUITO PROPHYLAXIS.

By E. P. Minett, m.d., d.p.h., d.t.m. & h.

First I ask your pardon for a digression from the title of this paper to briefly review the mosquito itself and its relation to disease.

Mosquitoes belong to the tribe of Culicidae or gnats, and as you are well aware if you reside for any length of time in Georgetown, they bite, hard and often.

The Cycle of Existence.

Their cycle of existence is briefly as follows: The female lays the eggs in water, usually anything from 20 to 200 in number, in small rafts; these hatch out in about 48 hours, under suitable conditions, into the larvæ stage known as "wrigglers." These *must* live in water, if they are dried they die. They are extremely active and almost uncanny in their intelligence, for example, on approaching a tub of water containing larvæ, as soon as a shadow passes over the surface they all immediately wriggle off to the bottom and lie quite quiet. They never expose themselves against anything white, but keep to the dark background where they are invisible. These "wrigglers" in about a week change into the next stage known as the "pupa" or chrysalis stage; these are rounded bodies, very active, which also live in water. Both larvæ and pupæ come to the surface frequently to breathe, the larvæ by means of a tube in the tail called a "siphon tube," and the pupæ by means of two ear-like projections at the side of the head. It is absolutely necessary for them to come to the surface frequently, or they die—are in fact drowned. Observers have calculated that five mnutes is the longest time a larva can remain under water at a stretch. This is incorrect, however, they can stand several hours total immersion.

The pupa lives for one or two days, then it floats to the surface of the water, the covering is ruptured on its upper surface, and the adult mosquito, the "imago," emerges. But it is not yet able to fly, it uses the old pupa skin as a boat, and floats about in it until it has had time to smooth out its wings and dry them in the sun, then it can fly away to become one of the greatest curses known to mankind carrying sickness and death in its track wherever it goes.

The adult mosquito does not live for one day only, as many people imagine, it may live for months, and has been kept alive in glass tubes experimentally for as long as ten weeks. Some varieties can even hibernate in countries like Italy. The adult females only suck blood feeding on birds and animals as well as on man; the male is comparatively harmless and in most cases lives on fruit only as owing to his long bushy "whiskers" or antennæ, he finds it very difficult to bite animals.

After feeding on a man or animal the female usually sleeps gorged all day on the wall of a room or other quiet place. Every few days she has to fly back to the water where she lived as a larva, or other suitable spot, to lay her eggs and then returns to feed again on blood. Hence mosquitoes that feed on human beings generally breed close to houses, especially if people are too lazy or too ignorant to do away with these breeding-places.

A Sense of Responsibility.

Having briefly sketched the life history of our friend the enemy we next come to the question often put to my colleague, Dr. Duncan, and myself—"Why should I worry about the mosquitoes, they do no harm, and don't bite me." I will not discuss the selfishness of the person whose only reason for not waking up and doing smething to mitigate an evil is because he personally is not apparently inconvenienced. But he *is* affected, ask him if he ever get "fever" or "big leg," and he says "yes" at once. Well! I always say that's all I want you to admit, because if I now prove to you that these diseases are caused by mosquitoes, you will, perhaps, wake up to a sense of your responsibilities, and help the authorities in their efforts to eradicate the pest in Georgetown, because it can be done, and has already been done in other towns less favourably situated than Georgetown. It's no use all of us sitting down quietly and doing nothing, simply saying, "Oh, the Government or the Town Council should see to it"—each individual must do his best to help the authorities to his utmost, and later I hope to point out the means by which this can be done.

The mosquito has been suspected from the very earliest times of carrying disease, and Herodotus, speaking of winged serpents carrying disease, doubtless referred to these insects—and preventive measures were used by the ancient Greeks and Romans, such as mosquito nets and the anointing of the body with pungent fats and oils. In fact the common word canopy is derived from the Greek word for a gnat.

I do not propose to go into detail as to the proofs that mosquitoes carry disease, owing to limited time, but it has been definitely proved up to the very hilt, beyond all possibility of dispute, that certain diseases are carried by mosquitoes.

The Transmission of Malaria.

The mosquito has been definitely proved to be necessary for transmission of malaria from one subject to another. The proofs are incontrovertible, Ross setting the final seal upon them by his work in India, although it was suspected so far back as 1600 that in mosquitoes lay the solution of our difficulties with regardto many tropical diseases. A pupil of Pasteur's, by name Laveran, was the first to demonstrate the presence of the malaria parasite in the blood. We have in British Guiana here evidence that this question was also being thought out. Dr. Beauperthuy, who came to this colony to investigate yellow fever, sacrificed his life to the cause, and lies buried at the Penal Settlement, says in his writings on yellow fever, "the disease develops itself under conditions which favour the development of mosquitoes, the mosquito plunges its proboscis

into the skin and introduces a poison which has properties akin to that of snake venom. The agents of the yellow fever infection are of various species—Zancudo bobo with the striped legs may be regarded as the house-haunting kind."

An Exploded Theory.

With regard to the old-fashioned argumentthat malaria is caused by marshes and not by mosquitoes, often advanced by people who are ignorant of the true facts, there is absolutely no proof whatever in support of this theory. It has been investigated time after time and is now thoroughly exploded, and even so far back as 1871, Beauperthuy states "marshes do not communicate to the atmosphere anything more than humidity, and the small amount of hydrogen they give off does not cause in man the slightest indisposition in equatorial and inter-tropical regions renowned for their unhealthiness, nor is it the putrescence of the water that makes it unhealthy, but the presence of mosquitoes."

So far back as 1852 Surgeon General Daniel Blair writes in reference to yellow fever in British Guiana ; "Its shifting lines and gyratory movements suggest . . . . the attributes of insect life."

I could quote many other references and examples, hundreds in fact, but have selected the two foregoing, as the observations on which they were based were made here in British Guiana. Time will not permit me to go into details as to the proof of the mosquito carrying various infections, but allow me to assure you that this has been definitely and conclusively proved.

The practical results worked out so far are :—anophelene mosquitoes carry malaria, culex mosquitoes carry filariasis, stegomyia mosquitoes carry filariasis and yellow fever.

These are the diseases with which we are concerned here in British Guiana, but it may be as well to add a few facts that have been demonstrated in other parts of the world in relation to blood-sucking insects and disease; for example, culex mosquitoes carry dengue ; the rat flea, culex cheopis, carries plague ; the glossina, a biting fly, sleeping sickness ; ticks, relapsing fever ; sandflies, pellagra ; and midges, Malta (three-day) fever. The bug carries Kala Azar and house-flies have been proved to transmit typhoid fever, infantile diarrhœa, and anthrax.

Every year we are adding to our knowledge on this subject, and it all tends to the same result, which can be summed up briefly as "Any insect that bites is not only a nuisance, but dangerous to life." And personally I am a bit of a sceptic when people say only one species carries one disease, I believe that as our knowledge increases it will be shown that many diseases are interchangeable, for example, the stegomyia mosquito carries yellow fever and filariasis also.

Of all diseases malaria is the most widely spread. It strikes down not only the native population, but the pioneers of civilisation, the trader, the planter, the missionary, and the soldier, and is the greatest ally of ignorance, prejudice,

and misery. Yet when we tackle the mosquito question seriously see how the picture changes ; we have only to look at such places as the West Coast of Africa, where the mortality has been reduced from over 500 per 1,000 to some where about 60, and Colon, formerly a death-trap, now almost a health resort in comparison. Even in the West Indies the mortality amongst troops was 69 per cent. in some cases until mosquito measures were undertaken.

A Plan of Campaign.

Now let us turn to a plan of campaign against the mosquitoes.

Personally I am convinced as the result of extensive and caerful house-to-house investigations, that most of the mosquitoes of Georgetown are bred in the houses and yards of the town itself. It is extremely difficult to find larvæ in trenches and drains that are kept free from floating vegetation and stocked with fish. My colleague and myself have gone into this very thoroughly because we so often hear the trenches and drain accused of breedings these pests. I can assure you that mosquitoes do not breed in trenches where there are fish and tadpoles, unless there is sufficient floating vegetation to give them shelter from their natural enemies, a matter that can be easily remedied. But go into a yard and look for yourself into a wooden barrel or tub of stagnant water, and convince yourselves ; that is better than dozens of lectures.

Now as to measures of prevention, which I will briefly classify as follows :—
Personal Measures :—

Protection by means of nets.
Systematic killing of adult mosquitoes.
Rigid search for breeding-places on the premises
Choice of clothes (white is preferable).
Use of cheap culicides.
Use of natural enemies.
Quinine prophylaxis.
General Measures :—

Systematic inspection of likely breeding-places.
Keeping of waterways free from vegetation and stocked with fish.
Attention to drainage.
Education.
Penalties for harbouring larvæ and potential breeding-places.
May I briefly review these measures.

Nets are almost a necessity because they not only prevent fresh bites but prevent carriage of infection by isolating the human reservoirs. Square nets are best and healthiest, and it is a good plan to keep these so folded during the day that mosquitoes cannot enter. The kind supplied locally and running on rings is excellent. Also it is a good plan to add a kind of vallance for about

1 foot above the level of the bed to obviate being bitten through the net if limbs rest against it.

Systematic killing of adults cannot be too highly commended, the easiest way of doing this is to use a wineglass smeared with oil inside, placing it over the mosquito, which when disturbed immediately flies away from its resting-place at right angles, hits the bottom of the glass, and is quickly entangled in the oil.

A black coat or cloth hung up in a room will attract most of the mosquitoes to it, when they can be easily captured.

Yards and houses can be kept free from breeding-places by an expenditure of a few minutes daily, this is the surest way of keeping down the mosquito pest. Any receptacles of stagnant water should be searched barrels, tubs, tins, puddles, water in tree holes and stumps, and gutter spouts. Do not forget to search *inside* your houses also, look well and carefully in cisterns for bath water, and get them screened. water standing in wash jugs and basins will quickly become a breeding-place if not changed frequently. It is a good rule to insist on all standing water being changed at least twice a week, but the water must be *completely* emptied away, to leave some in the bottom and then refill is useless.

With regard to clothes I will not tire you, but would commend to you the old old saying of Sir Patrick Manson : " In the tropics wear white, insects don't like it." A piece of paper inside the socks or stockings will prevent bites on the ankles, a favourite spot for mosquitoes, it costs nothing. and is well worth the trouble.

Stagnant-Water.

In very exceptional cases where stagnant water must stand and cannot be covered up for some reason or other. you can prevent it becoming a breeding-place by one of the following methods :—

(*a*) Empty out the water twice weekly at least, oftener if possible.

(*b*) Add a small quantity of crude carbolic acid to the water, possible 1 in 20,000 is fatal to larvæ.

(*c*) Pour paraffin on the surface, but the surface must be quite covered, as this is not a poison like carbolic acid.

(*d*) Place a few fish in the water.

The choice of method, of course, depends on the purpose for which the water is to be used.

With regard to quinine prophylaxis, it is now universally admitted amongst the profession that a small dose of quinine, say 5 to 10 grains at intervals of a few days is extremely valuable. If not a preventative it, at any rate, renders people much less susceptible to malaria. This has been amply proved by the good results obtained by our own Surgeon General insisting on prophylactic doses of quinine being given to the coolies on estates, and the sale at cost price of quinine tabloids to all who wish to avail themselves of its benefits.

Preventative Measures.

Preventative measures on a large scale, of course, can be undertaken only by the Government and Municipal authorities, and can be briefly summarised as follows :—

(*a*) Systematic inspection of yards for breeding-places.
(*b*) Vat-screening measures carried out effectively.
(*c*) Keeping of trenches and waterways clear of vegetation and stocked with fish. These latter should be protected by prohibiting the catching of fish in trenches, etc.
(*d*) Attention to drainage, by concreting, keeping all drains in good order and seeing that they are not choked so that puddles remain in places.
(*e*) Education of the young and old as to the vital necessity of helping the authorities in their work of mosquito destruction.
(*f*) Penalties for harbouring larvæ or potential breeding-places on premises.

Public Opinion.

With reference to these measures may I quote to you a short abstract from Sir Rubert Boyce's book, "Mosquito or Man," a book I strongly recommend you to read, as many of his remarks are based on observations made during his stay in British Guiana.

He says :—"As part of any mosquito campaign, the education of public opinion must take a prominent share. In my experience in the tropics, I can state that the public is being educated to appreciate the danger of mosquitoes and other insect pests, and therefore to organise to get rid of them . . . Pupil teachers, police officers, and those who wish to qualify for sanitary inspectorships, are now being trained in mosquito destruction . . . But as is well-known, education is very well in its way, but unless it is occasionally backed up by the strong arm of the law, little progress would, in the long run, be made. It is now, at any rate in the West Indian colonies, becoming the rule to inflict penalties if, after due warning from the sanitary inspectors, the people will not get rid of stagnant water, or water in which larvæ are found. The beneficial effect of this salutary punishment is beginning to tell, and will in time completely change the health conditions . . . It is most satisfactory to record that, in spite of its novelty, the law is not resented, all classes see the wisdom of the measure."

I am often asked : "Why is it that mosquitoes are so bad when rain falls after the dry season ?" The explanation is simple ; during the dry season many ponds and shallow trenches are completely dried up so that the larvæ and pupæ cannot live. This drying up process also kills out the many small fish that are the natural enemies of mosquito larvæ. But it does not kill the eggs which have been laid in the water by the female mosquito, some varieties of these eggs are provided with a thick, highly resistant shell, and can stand dessication for many months uninjured. Now when the first rain falls enough water is supplied to allow these eggs to hatch out into larvæ, but unless these pools are connected with a main trench no fish are present to devour them, therefore the larvæ develop into pupæ and ultimately into

adults undisturbed by their natural enemies. This statement can be verified by anyone who takes the trouble to examine these pools a few days after rain. They can easily be rendered safe if of fairly large size by placing fish in them, or if small by the use of carbolic acid.

Petroleum is useless as a mosquito prophylactic in the colony because the strong breeze always blowing quickly clear it from the surface and breaks the scum which must be continuous to be effective,

Prophylaxis as applied to Georgetown in particular can be summed up in a few words, the laws and machinery for carrying it out are already in existence and merely require setting in motion. Meanwhile each householder can see that the following simple precautions are carried out :

1. That vats and tanks are efficiently screened.
2. That no barrels, tubs, tins or other receptacles for stagnant water are allowed on the premises ; or if necessary for use, then see that each vessel is emptied and inverted at least on alternate days.
3 That roof gutters are kept in proper repair and not allowed to sag and bend so as to hold water ; examine cesspits regularly.
4. Ponds and small pools, ornamental fountains, etc., which cannot be kept empty, should either be kept stocked with fish or treated weekly with crude carbolic acid or chlora-naphtholeum ; One teaspoonful to every ten gallons is sufficient of either substance and is safe if the water is drunk by animals.
5. Thick low bush and shrubs should be severely discouraged, they are a favourite hiding-place for adult mosquitoes. This does not, of course, apply to shade trees, a tree with a trunk free from branches for a height of 10 or 12 feet is usually quite safe.
6. Don't neglect to examine the inside of the house for likely breeding-places, bath cisterns, the water contained in the saucers in which flower-pots are placed, and even water ewers and water bottles are often found to be swarming with mosquito larvæ when examined.
7. Have all doors and windows open night and day, mosquitoes do not like a strong breeze, it damages their wings.

In conclusion may I make an appeal to you, in the cause of the young children, for acute malaria is ten times more fatal to infants than to adults, and to enlist your aid in reducing the high infantile mortality in this colony British Guiana has always been to the fore in medical research and progress, the researches of Dr. Beauperthuy, Dr. Blair, Professor Harrison, the Rev. Sutton Moxly, and Dr. Daniels, are historic. Should we not all do our best to assist the authorities of to-day, who are endeavouring to keep our colony in the front rank. Splendid records of the past impose obligations on us younger generations that it is unfair to shirk. Personally I am convinced that in the mosquito problem we have the key to an enormous reduction of our present death-rate, especially the infantile one. We must not be content to remain *in statu quo* but try to go one better than our predecessors.

MATERIA MEDICA GUIAN. BRITT.

By E. A. V. Abraham.

In writing on the Materia Medica of British Guiana I do so in order that the disciples of Æsculapius who are jealous of any one interfering with their vested rights may experiment on the *cures* here given whether germane or not to their doctrines. *Habet.*

It behoves everyone with a knowledge of things which are practically unknown to the general public to bring to the light of open day his experience, and even crude though it may be, to show to the world the hidden things of the "old people" leaving it to those more experienced in the scientific world to perfect and improve the raw material.

I have to confess to an enquiring turn of mind and whenever I see an old dame gathering weeds or herbs, or a "Weed doctor" selling her wares I ask the why and the wherefore and then make further research therein.

In the olden times when a monarch was crowned the herb or weed women had places of honour in the procession and although at the present time they are not seen on coronation day in their accustomed places yet the glamour of their calling remains and they are looked on with veneration especially by those who come into contact with them and have benefited by their advice and medicines.

For some years I have studied the weeds and herbs around us and I have come to the conclusion that nature places a cure for every disease at the doors of the sufferers of the particular country and particular disease.

Tropical diseases require tropical cures and a great many of the drugs now in use were in the first instance brought to light from the constant use of the weed or shrub or tree and my object is to bring out the different medicinal growths of the colony with the object of further researches on the part of others more qualified, in order to benefit humanity.

As mankind is placed in the world for good or evil so we find animals, birds, reptiles, etc., either for use or as a menace to other created beings.

And so it is with vegetation. The potato would have been unknown as a food but for the bravery of the first eater thereof and several drugs would have been in a silent grave but for some one with an enquiring turn.

I apologise to the Medical fraternity for daring to trespass on holy ground; but I hope that some good may be obtained from my temerity.

The Indian cures were collected together and sent to England for the International Exhibition but the seed which was then sown fell on barren ground.

I can myself vouch for several of the cures here given other than those used by the Indians, but a great many of them have been authenticated by men who have lived amongst the Indians for years such as Doctor X, the Rev. Bernau, the Rev. Dance, the Rev. Veness, by Schomburgk and others

Alum.—For headache from nerves or for nervousness. Take a cotton or linen bag, rib it, put in powdered alum and tie it round the waist care being taken to have the bag just over the small of the back on the spine. Wear it for some months either awake or sleeping. This cure is from the bush negroes of Surinam and I can give authenticated cures. One case: the sufferer had headaches for years and years and is now completely cured. A manager and his family in this Colony have been cured and many others.

Aloe Vulgaris.—A strip placed on a sore is excellent and draws out the inflammation and heals well.

Ai-Wy.—Arrawak cure for fever.

Acu-a-an-Deperi.—Inner bark used by Caribs for cough and cold.

Arriuagh, Auk-Kurema.—Arrawak cure for sores.

Arrara.—Used as an emetic by Arrawak Indians.

Apiol Pills.—Break a pill and rub the nose of a kicking or fractious horse and next day give a pill to the animal and he will be cured of vice if gently treated afterwards.

Acu-u-an-Deperi.—Carib cure for colds and coughs, the inner bark being used as a decoction.

Acai-U, Aiwy, Akar-Ki-E.—For fever baths by the Accowini and Carib Indians.

Arourama.—For baths in smallpox cases (Carib).

Ai-Wy—.Used by the Accowini Indians hot as a decoction for fever.

Awati.—Arrawak cure for measles as a bath.

Are-Lad-Ako.—Used for bites of the bushmaster and other venomous snakes and authenticated by the old travellers and missionaries.

Ants Bush.—Used as a tea for thrush, the leaves pounded and the juice given for the same disease.

Akarkie.—Used by the Accowini Indians for a fever bath.

Arra-Ara, Aratrak-Kra, Apperiana, Atape-Reri.—Used by the Caribs as purgatives.

Arri-Ly, also called Yari-Yari.—Used by the Accowini Indians as an anthelmintic.

An-a-Paima.—A close-grained wood growing in rocky districts. The bark is highly aromatic and is used by the Indians in fevers and dysentery (Schomburgk, p. 36.)

Apperimia.—A Carib cure as a purgative.

Asafœtida.—Used by the creoles for fits and to keep away evil spirits. Children use it in a small black silk bag tied round the neck. A small bit of the drug placed in a pigeon coop will keep the birds home and attract the neighbouring birds which will not leave the coop where it is placed.

Ara-Ara.—The inner bark as a decoction as a purgative by the Caribs.

Arara.—Used as an emetic by the Caribs.

Arecad-Ako.—Used with great effect in "Buck sick"; also as a cure for bites from venomous snakes. Arrawak.

Arumata.—Used with great success in dislodging vermin such as fleas, ticks, etc. Arrawak.

Arourama.—Used by the Caribs for smallpox as a bath.

Aracasouwer.—The bark is used for itch and ground itch.

Arrily.—A wineglass full of a decoction from the bark used by the Accawois for worms in the system.

Aramatta.—A decoction from the bark used for snake bites by the Caribs.

Arratuk-Kra.—Used as a purgative. Carib.

Auk-Kurema.—Used as a severe remedy for sores. Carib.

Atabe-Reri.—Carib cure as a purgative.

Assemeri.—Used as a bath by Caribs for fever.

Arrecocerra (Balsam).—Bancroft gives this as a grand Indian cure for sores.

Batta-Bane.—A poison for bats. (Bancroft.)

Black Sage (*Varronia curassavica*).—A shrubby plant growing wild on uncultivated lands, principally on the sea belt. The berry is eaten as a fruit by children. The dried stalks are the planters' friend for his sea defence. The leaves picked fresh and boiled in a tea used as a cooling medicine for children and adults. Boiled strong and given hot used as a cure for fever and induces heavy sweating. Also used in warm baths with other bush for fever. The stick is used for cleaning the teeth. The shrub is strong smelling.

Brandy.—Bread soaked in brandy for violent vomiting. A loaf of bread soaked in brandy is placed on the stomach and chest in cases of yellow fever and Baptista tea is given at the same time. These were the cures of Mother B., an old Dutch lady, and old Ann Billington who was the recipient of a

large piece of silver ware from the officers of the ships stationed here as a reward for her services. The patient is rubbed down as often as possible with brown stout vinegar and lime-juice.

Bamboo (*Bambusa vulgaris*).—The young leaves boiled as a tea and given hot for fever. The tea excites profuse perspiration when a little spirit of nitre is used. The brown prickles on the sheaves given in rice bring on inflammation of the intestines and were used as a means of revenge in the days of slavery.

Beef.—Fresh beef tied on a cancerous sore and renewed as often as it bleaches white, relieves the patient. The old people believe that a cancer is a species of microbe which feeds on the blood of the patient and if it gets fresh blood the patient is relieved. Case X had a cancer on the breast and used fresh beef for years with effect. She obtained the cure from an old African up the Demerara River.

Bitter Tally.—(*Mikania scandens*). See also White Cleary. Drawn as a tea for cuttings in the bowels. The young leaves are bruised with salt and a few drops of the liquid given to children affected with thrush. When the thrush affects the anus of the sufferer the bruised leaves with the salt is applied thereto. The leaves drawn with hot water used as a bath for women after confinement. The shrub grows by the seashore and on the back dams of sugar estates. It is also found in Georgetown where there is rank vegetation.

Buck Puke (*Guarea trichiliodes*).—Boiled and used as an emetic.

Bush Rope Bowrialli or Boe-Ari (*Aristolochia sp.*).—Scraped and infused with warm water and drank for indigestion. Case X suffered miserably and an old man who worked in the gold bush brought some for her and she used it with effect. It has virtually cured her. X found it so good that her friends were induced to try the remedy and they did with good results. Used as a cigarette, parts being shredded, I have known it used with marvellous effect in a bad case of cough and asthma. Bits of the rope were forwarded by the Exhibition Committee to London as an excellent stomachic and as good for making bitters.

Baraqu-A Arr. (Seroe-a-Balli, Arr.).—A bush rope used with surprising effect for cuts and sores.

Baptista—A rank shrub growing on the roadside and giving a purple flower. The flowers, stems, and root were used for yellow fever (see Brandy). The plant is seldom seen now that the country roads are being kept clean at the sides.

Banana. (*Musa sapientum*).—Sliced and placed on the forehead relieves the heat from headaches. The young leaves with coconut oil spread thereon refreshes a patient suffering with a burn, scald or blister. A couple of ripe bananas eaten in the early morning helps a constipated patient. The leaf tied round the forehead relieves headache.

Bih-a-Ra-Da.—Arrawak cure for fever.

Euruway.—Arrawak dressing for Buck sick.

Baku.—Carib cure for puff of the eyes.

Baraqu-A.—Bush rope used by Caribs for sores.

Baranacashi.—Carib purge for fever.

Bullet Tree Bark.—An emetic and also used for Buck sick.

Barawaugh-Cassi.—A small wineglassful of boiled bark. Accowi. As an emetic.

Carrion Crow Bush.—(*Cassia reticulata.*) A bush of seagreen leaves with yellow flowers infested with red stinging ants and growing wherever there is neglect in weeding. The leaves and flowers are crushed in water and placed in the dew overnight. Persons suffering with skin diseases such as eczema and eruptions use the bath, the crushed leaves being used as a sponge. A good remedy. X. suffered with eczema and I advised him to use the cure, he did and benefited thereby. I know of dozen of cases cured this way.

Calabash.—(*Crescentia Cujete.*) A young calabash is cut at the top and the inner pulp taken out, sugar placed therein and the whole put in a pot of water and the pot placed on a slow fire. Sugar is added as often as possible until a syrup is formed and then allowed to cool and used for cases of consumption. I have known of three cases and I have heard the old people speak of the cure as a good one. No native of the colony would flog a child or for the matter of it anyone with a whip from the plant as it is said to bring on sores which are incurable.

Caruna.—A fatal poison. (Bancroft.)

Carbacalli.—A Carib cure for smallpox.

Carapa.—An Arrawak cure for dysentery used with much success.

Cassawak Bark.—Arrawak bath for fever.

Cedar Bark (white).—An Arrawak cure for urinary affections.

Chiva-Hah.—A bush rope. Pounded and bruised in water and thrown in a creek poisons fish; but the fish so poisoned can be used without after-effects. (Bernau.)

Castor Oil.—(*Ricinus, Palma Christi*).—This is a drug well known but what is not known is that a bit of lint saturated with the warm oil and applied to the anus is excellent for piles. W. suffered for years with the disease and he was given the cure by an old lady who was cured by it. He tried it and found she was right. It is also a specific for colica, pictonuma or dry gripes. (Bancroft.) The leaves give relief in headaches when tied round the head and also in inflammations of the skin.

Cashew.—(*Anacardium occidentale.*) The bruised fruit make an excellent refreshng drink and is used in fevers for cooling the blood. The ripe fruit is used as an astringent. The dried nut is much sought after as a dessert. When the ripe nut is thrown on a coal fire the fowls in the neighbourhood get a species of yaws and die. A couple of leaves crushed and rubbed round the rim of a glass of spirits make a man drunk in a few minutes. The bark boiled with other barks such as the seaside grape, mango, young coconut make a specific in cases of dysentery. The bark alone drawn as a tea is given as an emetic in cases of cold on the chest, the patient bringing up "the cold." A decoction of the bark is used for sores. I can give numerous cases of cures for dysentery from the use of the bark.

Caruna.—A small tree covered with a brown bark used as a slow poison. (Bolingbroke.)

Congo Lana.—(*Elipta erecta.*) A rank weed growing in places where other plants cannot thrive. A half dozen leaves are placed in water and slightly crushed, then placed in a bit of linen and the juice squeezed in the ear of a sufferer from a violent cold. The head is then thrown back and the liquid put down the nostril. The bruised leaves are applied to cuts and sores. A common cure for cold in the head and in one case within my own knowledge the patient was cured in a quarter of an hour.

Cochineal or Prickly Pear.—(*Opuntia vulgaris.*) Wrongly called cochineal or scrutchineal by the people here. A bit of the plant is placed in water and the water given for dropsy. A couple of thin slices slightly warmed are placed in water and the water given for inflammation in the stomach. Slices are placed on affected parts and as often as the slices get dry fresh pieces are put for inflammations in the joint, skin and intestines. The slices draw off heat very quickly. A small bit placed in a wineglass of water is used for dropping the slime therefrom in inflammatory eyes.

Cow Foot.—(*Piper peltata.*) Two leaves cover the whole head and are used for headaches, especially those from colds.

Cow Itch.—(*Mucuna spp. Siliqua Hirsuta.*) A vermifuge whose efficacy is indisputable. (Bancroft.) The hairy stuff is scraped off and mixed with molasses. For a child a teaspoonful is given, double this for an adult is given in the morning fasting and repeated the two following mornings after which a dose of rhubarb is given. Bancroft describes this as generally used by the planters who held morning parades of the slaves for the purpose.

Crab Oil.—(*Caraba.*) An oil extracted from the fruit of the Crabwood tree (*Carapa Guianensis.*) Rubbed on dogs with mange, on fowls with yaws, and on running sores for radical cures. A specific for eczema. For soreness in the stomach, or for a hacking cough a small teaspoonful gives almost instant relief. *Idem* for soreness in the bronchial tubes. *Idem* for lung trouble. The best way to drink the oil is to rub the mouth and tongue with a lime and pour a few drops of lime in the spoon, hold the head back and drop the oil down the palate. The lime prevents repeats.

Once I was on an estate and the manager was ill and suffering from piles and could hardly bear the illness. An old Indian called at the house and when he found what was the cause he prescribed the oil three times a day. The manager took the oil and was completely cured. I can give a dozen radical cures within my own knowledge and can vouch personally for each.

A drop of the oil and a drop of red lavender are given to young children suffering from thrush with effect.

Schomburgk attributes the fine gloss of the Indian's skin and the strength of his hair to the use of the oil.

The oil is used for mange on animals and for ground itch. The Indians anoint the skin to keep off mosquitoes. (Bancroft). They also use it to soften the skin to keep off colds and to prevent excessive perspiration. (Bancroft.)

Coconut.—(*Cocos nucifera.*) See also cashew. The water is used for cleansing the kidney but when drank to excess it affects the knee-joints. The oil is placed on moles of children to prevent colds and when they get colds. Mixed with salt as a massage lubricant and to allay pains. With salt and mustard for rheumatism and gout and the admixture of menthol makes it more beneficial. The pure oil is good internally for colds, coughs and pulminary complaints.

Curete.—Arrawak cure for bellyache.

Curuballi.—An Arrawak emetic.

Cork Wood.—For Buck sick. Accowai.

Conami.—A bark for poisoning water to catch fish.

Dai-i-Rena.—Said by the Arrawak to be effacacious in cases of rheumatism and gout when used as a bath.

Dalli.—A decoction used for sore lips after fever, also as a dressing for sores. Arrawak.

Dacuria.—An Arrawak dressing for sores.

Daisy.—A weedy grass growing on the road parapets and wherever there is want of cleaning. The little daisy-like flowers, yellow, make a good show. The flowers and plant are boiled as a tea and given as an emetic for heavp colds on the chest. Only the other day I saw it used with effect on a child eight years old.

Devil-Doer.—A bush rope which is scraped and placed in spirits for exciting purposes.

Dove Weed.—(*Euphorbia pilulifera.*) Boiled as a tea and used as a cooling draught for infants.

Dacambally.—The seed is mixed with the cassava flour in times of scarcity of cassava bread.

Ducali.—The milk contains caoutchouc and is said to be a specific for yaws.

Ebe-Tag.—For dry bellyaches. Arrawak.

Eta Palm.—(*Mauritia flexuosa.*) The fruit when made in a paste tastes like cheese and is eaten at times to stave off hunger and sometimes for "bad bowels."

Ere-Awaugh.—Accowai dressing for buck sick.

Ek-Ek.—For fever. Accowai. Ena-Œ. *Idem.*

Erewee.—As a bath for fever. Accowai. Ereu-u-Ru. *Idem.* Carib.

Ewong-Eke.—For dry bellyache. Accowai.

Fit Weed.—(*Eryngium fœtidum*). Also call stinking weed. Used as a bath for fits, fevers and in warm baths. A little of the warm liquid is given the patient just before being placed in the bath.

Flat of the Earth.—This weed is in daily use and sold at a penny a bunch for boiling as a tea as a cooling medicine and especially in cases of inflammations

Gabu-Baru.—Carib cure as a bath for smallpox.

Gasperi.— Carib cure for sores.

Guinea Pepper or grains of Paradise.—(*Amomum meligueta.*) A seed chewed for slight pains in the bowels. A tea for extreme pains. Sometimes is kept in brandy so as to be always ready. Especially good for relief of females who suffer from obstinate menstruation.

Gully Rot.—(*Petiveria alliacea.*) For retention of urine. For abortions.

Grass, Bahama.—(*Panicum dactylon*). Given to poultry and dogs when kept in confinement. Also as a tea as an aperient.

Gum-an-Ime.—Chewed by the Indians for pains in the stomach. Also in cases of flatulency. Burnt in a house for the fumes inhaled for rheumatism and headache. (Bancroft).

Ginger.—(*Zingiber officinale.*) As a strong tea for fever and to induce perspiration with spirits of nitre. A bit crushed and kept in the mouth for stomach pains and indigestion. Pounded and used with brown stout vinegar it makes an excellent substitute for mustard plaster as the writer found out when a mustard plaster meant a good deal to him.

Greenheart.—(*Nectandra Rodiæi.*) The seed contains many of the antifebrile qualities of quinine and is used for fever. (Bernau). (Schomburgk) gives the name of Dr. Brodie, of this colony, as an authority). The Indians use it in time of famine for making a bread therefrom.

Also used as a tonic. Sulphate of Bibirine is made from the seed and as late as Bernau's time used as a substitute for quinine.

GIN.—A wineglass taken every morning just as you get out of bed prevents fever. Used by a Magistrate here for forty years with effect. Never had a day's fever.

GULLY ROOT.—For abortions.

HAI-ARRV or HIARREE.—A papilionaceous vine a solid cubic foot of which poisons an acre of water even in the rapids. The fish so poisoned can be eaten. (Bernau, Bancroft.)

HEARREE.—A fatal poison, so bad that even the smoke from a burning tree when inhaled at a distance is fatal. (Bancroft, Bolingbroke.)

HITCHIA.—For painters' colic. Arrawak.

HURUWAY.—Idem. Accowai.

HYAWA.—Idem. Arrawak. As a bath for fever. Carib.

HOBOO.—For sore eyes. Carib.

HYNOA.—Highly spoke of for dysentery. Accowai.

IPECACUANHA.—(*Asclepias curassavica*). Grows wild on the parapets of country roads and in the pastures. A drop of the milk in a decayed tooth gives instant relief but the milk is a poison and must be used with care. Used as a decoction by the Indians for dysentery (Bernau). The roots furnish the very best Ipecacuanha (Schomburgk). The white variety is an emetic but rarely used by the Indians. (Bancroft.)

JUMBY ROOT.—A purgative.

JASMIN.—(*Jasminum officinale*). The climbing jasmin has a sweet smelling flower. A couple of flowers placed in an eye cup in the dew overnight benefits sore eyes. Sometimes the flowers are placed in a large basin and the eyes soaked therein.

KAFA.—A dressing for sores. Arrawak.

KARA-WARI-BETI.—A decoction of the inner bark is used by the Caribs for swollen legs.

KOI-BERI BARK. KURUXI.—Used by the Arrawaks for painters' colic or dry bellyache.

KIRABALLI.—Arrawak cure for Buck sick. Buck sick is also called Carib sick and is known amongst the blacks as thrush in adults and is a virulent disease. Few of the present generation know the disease when seen by them.

KOMARA, KOM-WY, KEARA-PEPO, KOM-WY-EK.—All are used in decoction by the Arrawaks for fever and KORABALLI.—Idem. Arrawak.

KOTIE.—Accawoi dressing for cuts.

KORAHARA.—Arrawak dressing for sores.

Ko-Re-Ko.—The inner bark is scraped and the juice put in the eyes for inflammation. Carib.

Kata-Moi-Ek. Accawoi Kotie. Accowai Koutaballi, Ki-a-Reena.

Kafa, Korabora, Kautaballi.—All separate cure for sores. Arrawak.

Also Kiareema. Arrawak.

Keara-Pepo.—A decoction for fever. Accawoi.

Kerosine Oil.—I have seen a case where a child suffering badly from internal pains crept to a bottle, drank about a teaspoon of the oil, was given a dose of castor oil and was completely cured. Used for snake bites.

Komara, Kom-Wy-Ok, Kom-Wy. Arrawak.—For fever.

Ko-Pea.—As a bath for measles. Carib.

Kome. Accawoi. Karaque, Kram-Bi-Uri. Accowai.—Baths for headaches.

Karaballalli.—An emetic. Carib.

Kiraballi.—As a dressing for Buck sick. Arrawak.

Kobe-Ek.—A decoction for toothache. Arrawak.

Kuruki.—For bellyache. Arr.

Lime.—For a cold just coming on squeeze a yellow lime on some sugar and sip. For a disorder of the bowels just coming on or just on, squeeze a yellow lime on a tablespoon of salt in a wineglass, stir well and take as a schnapp, then dose of castor oil if necessary. For fevers rub the skin with the lime all over either alone or better still with brown stout vinegar. This was the *great thing* in yellow fever.

In the olden days and even now the sports take a yellow lime to bean feasts and they take a sip of the lime every time they take a drink and never get the worse of liquor.

Lemon Grass.—(*Andropogon schœnanthus*). There is no creole garden without its lemon-grass bush. Boiled as a tea with a little spirits or some sweet spirits of nitre; if the patient does not sweat then it is a bad case indeed and requires a warm bath.

Lily.—(Eucharis). The bulbs a violent emetic. The leaves are good for headaches when tied over the forehead.

Laurel.—(*Oreodaphne opifera*). Trees of the laurel type are numerous in the colony and important for their stomachic qualities. The oil is used externally for pains in the joints as a discutient and internally as a diuretic and diaphoretic and it is an admirable solvent of India rubber (Schomburgk).

Locust.—(*Hymenœa Courbaril*). A decoction of the bark for dysentery. Arrawak. Creole.

Mango (*Mangifera Indica*).—See Cashew.

Manni.—For sores. Accowai. Marera.—For cuts. Accowai. Murua-Oo. Arrawak.

Mia Mia or Stinking Weed.—Two or three roots boiled and a wineglassful ever 3 or 4 hours for afterbirth pains. The juice from the roots is added to a few drops of mother's milk with a drop of red lavender for gripes in infants. The seeds ground, parched and drawn as coffee for dropsy. An East Indian was recently cured of dropsy from the use of the Mia Mia. He came from Morawhanna within the past six months. He took nothing else except water in which iron was impregnated.

Manicole.—The frequent use of the cabbage or pith brings on diarrhœa and flatulence. (Bancroft.)

Minnie Root.—(*Ruellia tuberosa*). A tea from the root and leaves for weakness and for retention of the urine.

Malpighia.—A febrifuge. (Schomburgk.)

Mapurugunni.—Dressing for Buck sick. Arrawak. Moraballi.—Idem. Arrawak.

Mare-E.—Bath for headache. Accowai.

Marsaballi.—An emetic. Carib. Moka.—Idem. A wineglass for a dose. Arrawak. Mora.—(Red). An emetic. Carib.

Ma-Tu-A.—Bath for fever. Accowai. Mara-Try.—Idem. Accowai.

Makarapa.—For sick dogs. Accowai.

Mora.—(Black). A purgative in bellyache. Carib. Bark for dysentery and diarrhœa.

Menthol.—Dissolve four or five cones in high wines. Rub the head all over with the liquid for cold and headache, care being taken that the eyes are closed when rubbing and that they are kept shut whilst the patient lies for a rest.

The liquid placed on a flannel on the chest relieves bad attacks of asthma and also rheumatic pains.

Muccomucco.—(*Montrichardia arborescens*). The leaves are a powerful astringent and the Indians tie them over the eyes when sore. The leaves are also applied to vesications to produce a copious discharge. (Bancroft)

Musk, Musk Ochro, Vegetable Musk Plant.—(*Hibiscus Moschatus*). For bringing on itch. The seeds are used with success internally and externally for snake bites. (Bancroft)

Nicker Seed.—(*Guilandina Bonducella*). Parched and pounded for dropsy. I know a druggist who used the seeds for a number of years and had a number of patients cured.

Napi-Biti.—Inner bark for fever. Carib.

Nibbee.—A virulent poison so much so that the Indians are afraid even to cut the tree. (Bancroft.)

Nutmeg.—Accowai. (*Acrodiclidium Camara*). Found in the far inlands and extensively used by the Indians and the old Dutch people for diarrhœas. (Bancroft.)

Ochra.—(*Hibiscus esculentus*). Cut off the fine nipple and place the fruit or vegetable in a wineglass of water. Take the ochra and let the slime go in the eye when it is sore. In the days of slavery the female slaves ate large quantities and then drank gully-root to abort. (Bancroft.)

Oats.—Parch the oats slightly, pound and draw as a tea for retention of urine.. A radical relief and I can gave hundreds of cures.

Otho-Sepee.—Decoction of inner bark for headache. Carib.

Onion.—Raw as with garlic for strengthening the lungs. Boiled with the like effect if not boiled too much. Good for the kidneys also. Boiled with bread and milk and applied to the swelling of a person afflicted with Guinea worm. Then the patient takes internally a decoction of garlic, black pepper, flower of sulphur, and a quart of rum, the dose being a gill three times a day. (Bancroft.)

Para-Ru.—A bath for severe fevers. Accowai. Ponu-Ek.—Idem. Accowai. Pou-e-Sema.—Idem, said to be efficacious. Arrawak.

Piaba.—(*Hyptis spicata*). The male piaba is known from the female by a round ball. Extensively used for Buck or Carib sick which is a species of thrush amongst adults. It is pounded and mixed with salt and numerous cases are vouched for. The female piaba is a fine-leave variety. This is also pounded and given as a tea for "bad bowels." The pounded leaves placed on bad cuts or sores are excellent. Vouched.

Paouri.—Emetic. Carib.

Per-Gi-Pe-Po.—Juice of the inner bark squeezed for sores. Accowai.

Pumpkin.—Boil the blossom with a little salt added after boiling for thrush. Draw a strong tea, add a few cammomile flowers, take for nine mornings, hen a dose of castor oil for jaundice. Numerous cases vouched for.

Papaw.—(*Prunifirous*) (*Carica papaya*).—Place a spring chicken or a tough bit of meat in a leaf for a short time and it becomes tender. Tie game or meat to the tree over night and it will be as high as you require. The ripe fruit is aten as a dessert. In the morning and early in the day it acts as an aperient.

The seeds are eaten by children and they act as a vermifuge. The ripe fruit is good for indigestion. For those who cannot eat sweets without being troubled with indigestion the unripe fruit boiled in sling or syrup or in sugar is excellent and the unripe fruit makes a fine pickle. Bernau vouched in his time as to the meat and game business and he states that the leaves act as an attractive bait for catching fish.

Pero-Pe-Po.—Inner bark as an infusion for cuts. Accowai.

Pop Bush.—(*Physalis pubescens*). The small berries are relished by children. The leaves boiled for retention of the urine. The bush is used with success for dropsy but the Canal people keep it as a secret.

Pine Apple.—(*Ananassa sativa*). The green pine is used for abortion and not even will an old granny allow the missus to eat it ripe or in ice-creams. The partly ripe fruit is eaten for sore throat. The ripe fruit as a dessert and for indigestion. With salt as an aperient.

Pureki.—Decoction. Inner bark for sore eyes. Accowai.

Pyke-Oke.—A wineglass of the decoction a strong purgative. Carib.

Physic Nut.—(*Curcas purgans*). A powerful emetic and purge. (Bancroft.)

Plum Bark, Hog Plum.—(*Spondias lutea*). A dressing for sores.

Portlandia Hexandra.—A febrifuge. (Schomburgk.)

Quassia Amara.—Quashie bitters of the colony. A small bit in gin acts as an appetiser. Steeped in water for fever. Cups from the roots are made in which water is allowed to stand overnight and then drank for fever. Too frequent a use brings on paralysis. (Bernau.) The Indians will not use it (Schomburgk.)

Quanami, Conami.—(*Phyllanthus Conami*). A strong narcotic used by the Indians for killing fish in a few seconds. The leaves of the plant are made in a paste and enclosed in the skin of a grasshopper. (Bernau.)

Rock Balsaam.—A common cure for colds and coughs. A couple of leaves are warmed over a fire and the juice of the warmed leaves given with a little salt or without.

Sarabadi.—For painters' colic. (Carib.)

Sweet Sage.—A tea made for malaria fevers and for sweatings.

Sugar Cane.—A cleanser of the blood and a digester. Prevents caries and gives bodily strength. *Vide* the creoles of the colony and the West Indies who live principally on cane in the grinding season.

Seville Orange.—Slice an orange and put in the dew. Early next morning eat with salt. Excellent for fever.

Sapadillo.—(*Achras Sapota*). The fruit is good for indigestion. The seeds are parched and used for cases of retention of the urine. The gum is one of the chewing gums of the United States.

Stinging Nettle.—(*Fleurya æstuans*). Boiled for cases of retention of the urine.

Salt.—See Lime, Pine-Apple, Piaba, etc.

Sling.—The resultant from muscavado sugar. With lime-juice an excellent lemonade different in taste from all others and welcome to all who could get it. Hard to get in the colony but can be got in Barbados. For cooling the blood and for fever patients. Taken without dilution as an aperient.

Sugar.—A strength-giving food. For a burn or scald immediately place sugar banked up high on the affected parts and the patient is relieved. No after-effects such as changing of the skin from black to white. Personally vouched for. A doctor should be seen *in re* the shock to the system as soon as possible.

Sugar or the juice of the cane is said to be an antidote for the poison from the Accowai arrow. (Bancroft.) Experiments have proved this not to be so.

Soldier's Purslane.—(*Peperomia pellucida*). Known as the Sojer pusly. Grows mushroom-like any and everywhere, especially in damp places. Use as a food for cage-birds. Take the plant and wash it and cut off the flower spikes and the roots and use it as a salad either fresh and alone or with food or bread and butter. It has an aromatic taste and is excellent for cleaning the blood and an excellent food for children. I have eaten it for some years and a doctor here has eaten it for scores of years and prescribes it for one and all. Whilst writing these notes a gentleman called on me and in discussing the cures of the colony he told me that his wife was cured of an inflammation of the womb from the use of it as a tea. Broken the juice is good for sore eyes.

Snake Root.—For fever. (Bancroft.)

Sweet Broom.—(*Scoparia dulcis*). For fever and cleaning sore mouths in infants and children.

Sandbox.—(*Hura crepitans*). A powerful emetic.

Simatoo.—(*Passiflora maliformis*). The fruit is eaten as a dessert. Three leaves boiled as a tea as a vermifuge for children. Used extensively in Canals 1 and 2.

Soursop.—(*Anona squamosa*). The fruit is eaten as picked or it is denuded of the seeds and mixed with liqueur and nutmeg and eaten as a cooling fruit salad. Makes one of the finest water ices. Break the leaves in water, squeeze a couple of limes therein, get a drunken man and rub his head well with the leaves and water and give him a little of the water to drink and he gets as sober as a judge in no time.

Scorpion.—Kill the beast and apply the pulped body to the wound and it is said that a cure will follow. See Snake Bite.

Sera-Da.—Bath for smallpox. Arrawak.

Snake.—The oil from the Camoudie snake (*Boa sp.*) and the fat from the same snake command good prices for rubbing on painful and rheumatic joints.

Snake Bite.—Bancroft writes that a cataplasm from the pulp of lemons or limes with sea salt has been applied with success. A meal of the seeds of the vegetable musk or wild ochra with olive oil with a liberal use of treacle of Andromachus, decoctions of Seneca and Virginia snake-root also good or an emulsion of the seeds of the musk plant or vegetable musk. But, says he, it is of no avail against the bite of the small Labaria.

Bernau writes that when an Indian is bitten on the finger he promptly cuts it off but when bitten on the leg or other parts of the body, he kills the snake, then cuts up the head into small bits till it is like a paste. He binds it on the wound and leaves it there till it becomes perfectly dry. He then goes in search of the booroo-booroo plant and having dug up a certain quantity of the roots makes a decoction, pours some on the wound and drinks some. He gives cases where the patient recovers and lives for years afterwards but suffer in after years from aberration of the mind and trembling of the limbs.

Simaruba.—(*Simaruba officinale*). Grows in the forest and bears a fruit like an English pippin. Has a pleasant bitter taste. A powerful stimulant. An effectual remedy against dysentery. (Bernau, Schomburgk.) The Arrawaks highly recommend it and call it Simarupa.

Silverballi.—(White). For intermittent fever and as a bath for smallpox. Carib.

Sarsaparilla.—(*Duruquaro Smil. sp.*) By the creoles aerial roots of Philodendon are called sarsaparilla or "coction." A diuretic and demulcent and used with great effect by the Indians. (Schomburg.)

Sa-Ru-Ma.—Dressing for Buck sick. Accowai.

Sarsaparilla.—(*Phytolacca decrandra, Helicteris Sacarotha, Waltheria dooradinha*). The roots are used in syphilitic cases. (Schomburgk.)

Se-Re-Na.—For headache. Accowai.

Sepi.—A bath for smallpox.

Tamarind.—(*Tamarindus indicus*). Young leaves and blossom drawn as a tea and sweetened for a drink for children suffering from measles. A cooling drink for adults. Taken in the olden days by sufferers from malaria with effect instead of rain water. The dried fruit boiled in a syrup is refreshing and makes a good aperient.

Tachia Guianensis.—A febrifuge. (Schomburgk.)

Takusi.—The juice from this bush rope for colic. Arrawak.

Tauranero.—Used as a dressing for Buck sick. Arrawak.

Thyme.—(Big thick leaf). Boiled in a syrup and a trifle of sweet oil added for colds and coughs.

Touranero.—For dry bellyache. Arrawak.

Toyou.—(*Dianthera pectoralis*). Makes a handsome hedge. Boiled as a tea for colds and coughs with effect. Boiled thickly as a syrup and a little cocoanut or sweet oil added for bad colds and coughs. Made as a toffee readily eaten by children and is good for colds and coughs. The syrup when boiled must be of the consistency of Kepler's Malt Extract and is almost the same in taste except that the aromatic essence of the weed is discernible.

Tallow or Soft Candle Grease.—Rub the nose, temples and forehead with tallow prepared as follows :—A little high wines is put in a saucer with a little coconut oil. The spirit is lit and then the tallow is placed therein. When the tallow is all melted the warm stuff is rubbed as directed. Then a sheet of brown paper of the size required is laid flat and the warm grease as prepared spread thereon and nutmeg grated over it. The sheet is applied to the body covering the chest from the throat downward. Obstinate colds are ameliorated, great relief is had and lung trouble prevented.

Tam-Pe-Po.—Decoction for dressing cuts. Accowai.

Tobacco.—The leaf tied on the head relieves headache and cold in the head The ash from a pipe placed in the hole of an extracted chigoe prevents soreness and heals the part quickly and kills any germ remaining.

Takusi.—The water is used in cases of colic. Carib.

Ubidi.—Decoction for dysentery. Arrawak.

Urabi.—Decoction for fever. Accowai.

Uvaria Febrifuga.—A febrifuge. (Schomburgk,

Urabi-E-K.—A bath for smallpox. Accowai.

Vandella.—(*Vandellia diffusa*). A small creeping plant used by the Indian with great success. (Schomburgk.)

Vinegar.—(Brown Stout). Mixed with lime to rub down fever patients especially in cases of yellow fever and other malignant types. Brown paper soaked in the vinegar for sprains. For cases of threatened abortion mix with the white of an egg and flour and spread on brown paper and placed in the small of the back. In cases of ague a tablespoon of vinegar, four drops of red lavender with a little lime is given the patient who holds in both hands the brine from a pickle barrel. This I have seen done with success.

Warumea, Wara-Ki-Aru.—Emetics. Accowai.

Wai-Ach.—Inner bark for sore eyes. Accowai.

Wallaba.—Inner bark squeezed in the cavity of a bad tooth to relieve toothache. Carib. The bark boiled as an emetic. (Bancroft.)

Wama-Ike.—Injected for Buck sick. Accowai.

Wara-Karu.—Idem. Arrawak.

Wari.—Used in extreme cases to stop a flow of blood. Accowai.

White Cleary.—(*Heliotropium Indicum*). Boiled with a few leaves of bitter tally for stomach-ache. The juice from the bruised leaves for sore eyes.

Wami.—Idem. Accawoi.

Wangala.—(*Sesamum orientale*). For making soups. As a dessert. A decoction of the leaves for dysentery.

Waracuri.—The juice as a diuretic. Accowai.

Wild Grass and Minnie Root.—As a tea for weakness.

Wild Coffee or Cafie Balli. Carib name Tumuka.—(*Cassia occidentalis* or *Clerodendronaculeatum*). 8 to 10 of the roots are burnt or rather slightly charred and left for a little while to dry in the sun and then drawn as coffee and a small coffee cup of the extract is used in extreme cases of bilious fever when all other means have failed. Carib. The bush makes an excellent fence but seldom seen now-a-days. The boiled bush as a gargle is unequalled in cases of throat trouble.

Warm Bath.—One of the last resorts in cases of fever in consequence of the danger from cold in the event of the administering person not being used to give the bath. Take fit weed, dove weed, bitter tally, mango leaves, cashew leaves, ochra leaves, soursop leaves and others already mentioned and boil them. When as hot as the patient can bear, place the patient in the bath, care being taken that some of the fluid is first rubbed on the head, palms, chest and soles of the feet to prevent shock. See that there is no draught in the room. When the patient is placed in the tub cover him with a blanket and then bathe him with the water using the crushed leaves as a sponge, all being done under the blanket. Then take him out and rub him down with a little lime freshly cut, dry him and give a cup of strong lemon grass tea with spirits—whisky, brandy, or sweet spirits of nitre and put him to bed under blankets, care being taken that there is no draught. This is recommended by Drs. Manget, Scott, Watkins, Herbert, Blair and all the old men and was used by Dr. Fisher. I can give several cases within my own observation and in one case the doctor held no hopes for the patient and I said I would give a warm bath. "Splendid" said the doctor, "but Mr. Abraham do you know how to give it." I assured the doctor that I did and the patient is alive to-day.

Yam.—(*Dioscorea alata*). Grated, mixed with brown stout vinegar and spread on brown paper, then placed on the small of the back in cases of threatened abortion.

Yara-Yara.—Used with much success for colds and coughs. Arrawak.

Yellow Plantain.—Stewed as a dessert as an aperient. Sliced and tied round the head for inflammatory headaches.

Zeb Grass.—(*Commelina cayennensis*). Drawn as a toa for fever and bilious attacks. Pounded, mixed with flour, vinegar and mustard as a poultice for inflammations especially of the bowels.

I am sorry if I have tired my readers but the cause is a good one. Nature spreads diseases in different countries and puts the remedy at the door leaving it to man to develop the same and if some little research is made and good even like unto a grain of mustard seed emanates therefrom, I shall be satisfied that my labour is not in vain.

As I say I give the cures and leave them to scientific men to further develop them and may they not turn out like unto the mosquito theories. We may laugh at them to-day; but to-morrow we may move heaven and earth to get them recognised. At present they are like Endymion and I can only pray that there may be a Diana.

My thanks to Mr. Rodway and Dr. Massiah for the help given. *Homo sum, humani nihil a me alienum puto.*

WAYS AND HABITS OF CATERPILLARS.

By Harold W. B. Moore.

Very varied and interesting, and, in some instances, curious and puzzling, are the habits or actions of caterpillars. What, for example, can be more curious than the habit some have of devouring the egg-shell soon after they have hatched. This habit exists among many caterpillars, both of butterflies and of moths. The caterpillars of our common yellow butterfly *Callidryas eubule*, and of our black and red butterfly *Heliconius melpomene*, act thus, and so do those of the hawk-moth *Ancerya caicus*, and of the grass-moths *Laphygma frugiperda* and *Lycophotia infecta*, to mention but a few instances of this habit that have come under my observation. One would imagine that almost the first thing the caterpillars would do after hatching would be to look for the tenderest part of the food-plant, and there begin feeding, but they begin by tackling their egg-shell. Of course, the shell is not hard and tough, but very brittle, so that they have no difficulty in disposing of it in the manner specified. In explanation of this action where it occurs, it has been suggested that it is done by the caterpillars to remove one of the signs of their presence, and that it is thus protective, serving to throw parasites and other enemies off the scent, so to speak. It has also been suggested that they eat the egg-shell as being the most easily edible matter nearest to hand.

Another equally curious habit possessed by some caterpillars is that of devouring their cast skin at the different stages of their growth. Of this there have come under my notice some good examples, from which I select the two following:—I once had some sociable caterpillars, about two dozen, feeding on the leaves of Smilax, a wild vine. They were those of a moth, which has not been identified, and were not full grown when I got them. They all cast their skin at the same time, the sloughed skins adhering to the leaves. As soon as its new cuticle had hardened somewhat, each caterpillar set to work devouring the cast skins, save the horny shell of the head, nor did each confine itself to its own skin, but fell to upon the first skin encountered, whether its own or that of a companion. The other example refers to the caterpillar of the Passiflora butterfly *Heliconius melpomene*. The cast skin, as is the case with the moth just mentioned, adheres to the leaf of the food-plant, and is devoured by the caterpillar, spines and all, the horny shell of the head being the only part rejected.

With certain caterpillars the cast skin does not adhere to the leaf, but is shed in such a way as to fall, and among such it cannot therefore be eaten. I do not know, however, whether among those that cast the skin in such a manner that it remains adhering to the leaf, it is a more or less general habit to eat the cast skin. At least, all which I have observed to shed the skin in this manner have always eaten it shortly afterwards, and before resuming the attack on the leaves of their food-plant. More extended observation will be necessary to decide the point.

Some caterpillars display cannibalistic propensities, the larger caterpillars devouring the smaller, or the more warlike the more peaceful. One afternoon I left three caterpillars of *Callidryas eubule* in a covered jar containing an ample quantity of food. Next morning there was only one, the two smaller having vanished, and as they could not have escaped from the jar it is evident that they must have been consumed by the larger one. I have also observed the caterpillars of *Euptoiet a hegesias* act similarly, but in this case it may have been chiefly due to the pressure of a hungry stomach, as I had great difficulty in keeping up an adequate supply of their food-plant, a species of Sida. Under natural conditions, however, I have seen the caterpillars of *Laphygma frugiperda*, one of our common grass-moths, devour others of their own kind. It happens therefore that they are enemies unto themselves, which is well, in view of their astonishing fecundity and the damage they can do to pasture lands and corn crops. I have also observed the caterpillar of this moth devour at different times the pupa and the caterpillar of a skipper butterfly.

Among some of the smaller moths it is a common habit of caterpillars to roll leaves or turn over their edges. For example, the moths of the Pyraustinæ, a sub-family of the Pyralidæ, are noted for distorting leaves, and in this respect exhibit great diversity of habit. Some of them roll the leaf from the tip, curling it under along the midrib with two or more curls, much as how we would begin to roll up a sheet of paper, with the rolls, however, beneath, not above, the sheet. Others curl the leaf from the side or edge, the curls being beneath or above the leaf. Sometimes the whole leaf is thus curled up, sometimes only a part. Some again merely turn over the edge of the leaf, above or below, in a single flap, making thus a sort of sack open at both ends. Yet others, using the midrib as a centre stay, simply draw together the two halves of the leaf above, where the resistance is naturally least. In all these various operations the caterpillars use web to keep together the curls or folds. Others again of the Pyraustinæ, in addition to curling the leaf, web together several other adjacent leaves. There are some, too, that neither curl nor fold the leaf in any way. They keep themselves on the upper surface beneath a rather thick web woven across the leaf. The caterpillars of *Pyrausta flavidensalis*, which live on the fiddle-work tree (*Cytharexylon cinereum*) may be cited as affording a good example of this habit. Others web one leaf flatly upon another with a little space between the surfaces. In this space they live, feeding on the green matter of the leaves, or sometimes only on that of the lower one. The best example of this is afforded by the caterpillars of *Mesocondyla concordalis*, which infest the leaves of the calabash tree.

It is easy to see that the chief aim of all these cunning devices is concealment and protection. Nevertheless, enemies still obtain access to the caterpillars. I have reared parasitic flies and parasitic hymenoptera from some of the most recluse. In addition to leaf-rolling and leaf-webbing, boring habits also occur among the Pyraustinæ. The caterpillars, for instance, of *Pyrausta albiguttalis* bore in the stems of Hydrocleis, an aquatic plant abundant in many of our trenches and canals while those of *Glyphodes nitidalis* bore in our cucumbers. Infested cucumbers may appear quite sound on a casual glance

but close inspection will show they have one or more small holes across which is stretched web spun by the caterpillars within.

In another sub-family of the Pyralidæ, viz., the Crambinæ, we have very excellent examples of the boring habit in the caterpillars of species of Diatræa. They are known as the small moth-borer of the sugar-cane, though they live also in the stems of the razor-grass and other grasses. They are the greatest pest with which the sugar planter has to deal. They do not eat their egg-shell but, immediately on hatching, wander off, secrete themselves in the crown of the cane or in the axils of the leaves, and begin their ravages, the total results of which mean an annual loss of several thousand tons of sugar.

Other good examples of the boring habit are met with in caterpillars of moths of the families Castniidæ, Cossidæ, and Sesiidæ. *Castnia licus*, the large moth-borer of the sugar-cane, belongs to the first-named family. Its caterpillars are very destructive, and tunnel in the cane-stools, and up into one or more canes for one or more joints. I have seen an instance where one bored upwards as many as nine ordinary joints, and another instance in which one bored up several joints and into two side shoots. Among the Cossidæ there is a species of Langsdorfia, the caterpillar of which gnaws and bores the main roots of the pigeon pea (*Cajanus indicus*) as well as the extreme base of the stem. Among the Sesiidæ there is the caterpillar of *Melittia satyriniformis*, which is very destructive to our pumpkin, squash, and water-melon vines by boring their stems.

The caterpillars of some moths belonging to the Tineidæ, Noctuidæ, Arctüdæ and Pyralidæ, feed on the contents of pods. The small flat pods of a species of Desmanthus, a common weed, are tenanted by the caterpillar of a minute Tineid, while the seed-cases of another weed, the many-roots (*Ruellia tuberosa*), suffer severely from the ravages of the caterpillar of *Cobubatha quadrifera*, a Noctuid. The rattle-bush (*Crotalaria* sp.) with its bright yellow flowers, is conspicuous among our roadside weeds, and children are fond of playing with the dried pods, as the loose seeds within make a distinct rattle when the pods are shaken. The flowers and the contents of the green pods are eaten by the caterpillar of the beautiful Arctüd *Utetheisa ornatrix*, which even under the noonday sun may occasionally be noticed hovering about the plants. The caterpillars feed chiefly at dusk and at night, and during the heat of the day may often be found ensconced within pods the contents of which they have partially consumed. Sometimes nearly every full-grown pod on a rattle-bush has been bored and hollowed.

One of the best known pod-feeders is the pigeon pea green "worm" which now and then through an oversight of the cook even gets boiled in our soup. This so-called worm is in reality the caterpillar of the Pyralid *Ancylostomia stercorea*. Another Pyralid pod-feeding caterpillar which country children may frequently have seen is that which devours the contents of the pods of the money-bush. Children eat the contents of the ripe pods, on opening which they often find the inside, in whole or in part, webby and wormy. The caterpillars bore their way into the pods before the latter are fully ripe. They

feed on the pods of other Cassias besides the money-bush, and pretty frequently also live in the tender stems of these plants. The adult moth has been identified as *Nephopteryx paurosema. Acacia farnesiana,* the brier or pimpler-bush, as it is popularly called, a'so has a pod-borer in the caterpillar of *Ozamia lucidalis.* The pod-borers in all these examples belong to the sub-family Phycitinæ.

The caterpillars of this sub-family are probably very varied in their feeding habits, for not only are some pod-feeders, but there are others which are eaters of scale insects. Not many months ago I bred a moth from caterpillars I discovered feeding on a dark brown scale insect, a species of Lecanium, which infests Sapium rubber trees, ochro, cassava, and others. The caterpillars lived beneath webs placed over the scale on which they fed.

Curling or folding leaves is not common among the caterpillars of butterflies, most of them feeding in the open or simply bidden on the under surface of leaves. The caterpillar of *Helicopis,* a beautiful butterfly with silver-spotted hind wings, feeds on the leaves of the mucu-mucu (*Montrichardia arborescens*), and is always found concealed in curled leaves, the curls being held together by web. It seems, however, that the caterpillar merely takes advantage of the natural curling of the young leaves. The caterpillars of skipper butterflies (Hesperiidæ) fold leaves, web one leaf upon another, or cut out from a leaf a somewhat semi-circular piece, which they turn over as a flap, thus forming a sheltered retreat. The caterpillars of skippers feed chiefly at night, and some of them then ramble a good distance from their retreat, but find their way back again, as is the case, for example, with that of the guava fire-tail, *Pyrrhopyga amyclas.* When they grow too large for their retreat, they seek a fresh leaf, and there form another and a more commodious dwelling.

Social habits are not wanting among caterpillars both of butterflies and of moths. Among our butterflies the caterpillars of certain Papilios are sociable, those, for example of *Papilio anchisiades,* a great pest of the lime and the orange. Twice within a year I have had the opportunity of studying the habits of these caterpillars. They feed only at night, remaining all day motionless on stem or twig, and huddled so closely together that a pin could not be stuck between them. On the first occasion they were at rest, to the number of five or six dozen, on the stem just a few inches above the ground. About 6.30 p.m. a wave of restlessness began surging through the crowd, and almost immediately afterwards the caterpillars started ascending the stem one by one, in single file, head to tail, as nicely as a well-ordered flock of sheep proceeding to pasture. Soon a column two deep started ascending, and by the time the first caterpillar of the single file column was approaching the top of the tree those at the bottom were marching up three deep. It was intensely interesting to watch them going up for a night's work of defoliation. Next morning I went to the tree shortly after sunrise and found them calmly at rest as before at the base. About five months after this there was brought to me one morning a large cluster of the caterpillars on a lime twig. I replaced the twig on the lime tree, letting it rest upon two other twigs in such a manner that it could not fall. It being November, 6 p.m. was dark enough for them

to start marching, which they did one at a time with long intervals between. The first one was greatly puzzled on finding the twig broken on which it had been reposing. After feeling around for some time it managed at last to find one of the twigs on which the broken one rested. Along this it walked passing the junction of three other twigs, ascended the stem about a foot, and then turned off on to a side twig. Another caterpillar now began to be restless. It was evident it was seeking for the trail of the first, which it soon found. He traversed exactly the same path, nor did the broken twig puzzle him as long. Eleven others followed, each in going feeling about for the trail of its predecessors. By this time it was too dark for me to see the others march. How each caterpillar found its way along the exact path of its predecessor can be explained, it seems, only by assuming some subtle and acute sense akin to that of smell. It was not effected by contact or sight, as they did not march up in line close to one another but were separated by several inches to over a yard.

Among moths the social habit is exhibited by the green slug-like caterpillars of the Limacodid *Sibine trimacula,* which are common on castor oil, guava, hog-plum, coconut, and many other plants, by the "hairy worm" caterpillar—white with long dark brown hair—of the Megalopygid *Megalopye lanata,* which frequent guava, mango, etc., by the large greenish red and black-banded caterpillars of our common silk moth the Saturniid *Attacus hesperus* which live on Duranta, eourida, and a few other plants. In each of these instances the caterpilars of the moths merely congregate on their food-plant, but those of the Megaloppgid *Tolype rivulosa* live together in a thick tough web, from which they issue at nights to feed, to which they return after feeding, and in which they pupate. The caterpillars of a Pyralid, a species of Lineodes, infest the burra-burra (*Solanum sp.*), living under a common web. Other Pyralid caterpillars which often exhibit sociability are those of *Sylepta penumbralis,* which live on the leaves of the trumpet-tree (*Cecropia*) and those of a species of Desmia, which live on the leaves of *Palicourea crocea.*

Many caterpillars, those of the Psychidæ, for example, construct cases as dwellings and protective coverings. These cases are composed of foreign materials such as pieces of leaves, bark, twigs, fungi, etc., interwoven with silky web. They are more or less cone-shaped, the apex being at the tail-end of the caterpillars. Through the anterior end the caterpillars may be seen to protrude themselves. Very strongly and ingeniously built the structures are, and very difficult to tear. Though rough and rugged on the outside, the inside is smooth, neat and snug. On examining one of these odd dwellings we cannot but marvel when we reflect that its builder had no manufactured tools to work with, but had to utilise its feet, jaws, and web. The caterpillars never quit their cases, but carry them about with them, and one often feels for them bearing such cumbersome things. In spite of such a strong case parasites still manage to attack them, as I have bred hymenopterous parasites from more than one species.

Cases are also constructed by caterpillars of certain Tineids, by those, for instance, of one of our house-moths. In our houses, in nooks and corners,

under ledges, on walls, and on clothing, we may often see the flat brown cases either being dragged along by the caterpillars, or suspended with the empty pupa-skin projecting at the other end, the moth having emerged. When I was a little boy I used to be very much interested in these caterpillars and their cases. The latter are neatly lined inside with web, and taper slightly at either end, so that they are broadest at the middle. They are open also at either end, and if we alarm the caterpillars while they are dragging along their cases, they instantly withdraw, and so quickly show their head protruding at the other end, that, as a boy, I used at first to regard them as curious creatures having a head at either extremity of their body. I never imagined they simply turned round in their cases. I had to tear open several of the cases before I was convinced that I had been labouring under a delusion and that the caterpillars were single-headed like any other.

The habits of Tineid caterpillars are extremely interesting—so very diverse, more so, perhaps, than those of any other division of the Lepidoptera. The caterpillars feed on leaves, pods, stored products, clothes, furs, hair, and underground on roots and stems, while, according to the Cambridge Natural History, there are some which subsist on dried dung, on the hairs of live sloths, on the horns of live antelopes, and even on scale insects. I have myself bred a species, the caterpillars of which I found feeding on a Ceroplastes, a scale pest of limes and guavas. Some, as with the house-moth above mentioned, construct cases which they carry about with them. Others, on the contrary, prefer not to cumber themselves with such things. Some of the leaf-feeders fold leaves very neatly to form a dwelling, others fold them up in a rough crumple, much as when we take a bit of paper and squeeze it together in our hand, whereas others again web two leaves flatly together with a dense tough web or with a slight web, according to the species. Many are leaf-miners, and in their mining operations display great ingenuity and engineering ability. One of the best examples of such skill that has come under my observation is that furnished by a caterpillar which feeds on the leaves of the wild potato vine (*Ipomœa fastigiata*). For feeding purposes as well as for purposes of concealment, it makes tunnels in a leaf. These tunnels open on the upper surface of the leaf, and are on different parts of it. Nevertheless, they are all connected by web under shelter of which the little engineer can pass from one to another. The web is thin and being on tension lies almost flat on the leaf except when the caterpillar is passing along to one of its tunnels. When not in use it is nearly invisible, and so is the caterpillar when it enters a tunnel.

Some caterpillars are very careful to have their homes free of waste matter. There is a Tineid caterpillar, for instance, which feeds on the leaves of the creole coffee. It inhabits the space formed by binding two leaves together with a little web. When an accumulation of droppings occurs it deliberately seizes it pellet by pellet and casts it out of its home. There is another caterpillar which feeds on the old leaves of a species of Paullinia, and which adopts a different method to keep its home clean. On the upper surface of a leaf it spins a whitish web stretched like a sheet, and resembling somewhat that spun by one of the leaping spiders (Attidæ). It makes its home in

the space between the web and the surface of the leaf, and feeds on the green matter of the leaf without gnawing quite through. Near the lower end of its home, however, it gnaws in the leaf a circular hole by means of which it disposes of its droppings.

The cases constructed by Psychids and certain Tineids are for purposes of protection and concealment. The same purposes, however, are attained in a somewhat different way by the caterpillars of certain Geometers, for example, that of the pretty green *Aplodes frondaria*, and that of the rusty mottled brown Eupithœcia. The caterpillars of both are flower feeders, that of the former feeding on the flowers of the weeds Clibadium, Hyptis, Christmas bush, and blacksage, and that of the latter on flowers of Clibadium. They both contrive to escape detection by attaching to their back bits of the flowers they feed on, and, the caterpillars being somewhat rough, the rugosities afford excellent points for the attachment of foreign material. It is not a little difficult to spot the caterpillars beneath their mantle of fresh and decaying vegetable matter. One of the most interesting caterpillar cases is that of the moth *Perophora lucesta*, of the family *Perophoridæ*. The caterpillar feeds on the leaves of the Laguncularia, a tree common along the sea-shore and the river banks where the water is salt. Its case consists of a leaf folded over edge to edge, so as to form a cylindrical tube open at both ends. The leaf is often severed from the plant but is always attached to the stem and surrounding leaves by a few stout threads, which are increased and strengthened when pupating time arrives. It is lined within with silk, and is placed so as to be more or less hidden by the neighbouring leaves. The hind part of the caterpillar is hard, rough, and flattened, forming indeed an oval plate, which exactly fits the opening at the back of the leaf-case. To see the caterpillar thus close one of the openings of its case, reminds one of the manner in which the snail closes with its operculum the aperture of its shell.

I may here mention that in the British Guiana Museum there is in the anthropological section an Indian necklace, one of the most curious and unique of its kind, composed as it is of 25 caterpillar protective cases strung together. The cases are undoubtedly made up of excrement, and it is probable they are those of the hammock-moth *Perophora sanguinolenta*, figured and described in the Cambridge Natural History.

Various modes of locomotion obtain among caterpillars. Those in which feet are not much developed, such as Limacodids, advance with a slow steady slug-like crawl. To compensate for this lack, the under surface of their body has developed great adhesive power, so that they are able to move by merely undulating this part of their anatomy. The green Limacodid caterpillar, already mentioned as being a common feeder on the castor-oil, is a typical example of this method of progression. Then there is the looping method that gives the name to a whole family of moths, viz., the Geometridæ or Geometers, a term which, I need hardly say, means land-measures. The moths are so called because their caterpillars when walking appear to be measuring off the course along which they are travelling. The caterpillars have only one pair of abdominal feet, as compared with four pairs,

which may be regarded as the standard number. The portion of their body anterior to the abdominal feet is very flexible. Fixing themselves to a plant stem or other object by their abdominal feet and anal claspers they reach forward to their utmost limit and lay hold with their anterior or thoracic feet. Letting go with their abdominal feet and claspers, they draw up the posterior part of their body forming thus a regular loop. They then grasp anew the stem with their abdominal feet and claspers and reach forward again in order to make another loop. By this peculiar means of locomotion they can advance pretty rapidly, especially when excited. The looping habit is not confined to the Geometers, as it is possessed also by many Noctuid caterpillars. Noctuid loopers, like the Geometers, lack the full number of abdominal feet. Instead of having four pairs, they have only two pairs, those on the eighth and ninth segments, those on the sixth and seventh segments being either absent, or so undeveloped as to be functionless or virtually so. One of the best examples of a Noctuid looper is the caterpillar of *Remigia repanda*, our commonest grass-moth. The caterpillars, which, during last month (June), after the advent of the midyear rains, appeared all along the coast in millions, feeding upon practically every one of our common grasses, including even rice and the sugar-cane, were principally those of this moth.

Those caterpillars that have four pairs of fully developed abdominal feet progress by a series of more or less rapid undulatory forward movements of the whole body.

It is interesting to note the different ways in which different caterpillars respond to an exciting stimulus. Alarm a Papilio caterpillar, that of *Papilio anchisiades*, say, and it shoots upwards from the segment behind the head a forked process. It is really astonishing, if one does not expect it to see something like a snake's tongue suddenly dart into view. It perhaps does this to alarm its enemies. The action is accompanied by the lavish diffusion of an odour much resembling that of the cockroach, or the fruit popularly known as the stinking toe.

The caterpillar of *Argeus labruscæ*, the sphinx vine-moth, rears itself up, and withdraws its thoracic segments into the following one, which is then expanded to show two dark brown spots, one on each side, as eyes. In this attitude it looks for all the world like a miniature cobra about to deal a deadly thrust.

Pyralid caterpillars when alarmed drop to the earth from their leafy tabernacle or hang suspended by a thread, up which they climb to their abode when all danger is over. So easily alarmed are they that in collecting them one has to be very careful not to excite them to any great extent, or they may drop to the vegetation below, where it is generally a hopeless task looking for them. If allowed to fall on the bare earth or on a table, they thump and wriggle very much like a fish out of water, and then run off at a rapid pace. Pyralid caterpillars are much sought after by many wasps as food for their larvæ, and it is probable that their excitable nature is due to this fact more than to any other. The most excitable are those which are the most hunted,

such as those of species of Syngamia which feed on grass-blades and on young cane blades. I have frequently seen mud-daubing wasps, such as Eumenes and Odynerus searching grass and cane blades for them. It is not to be wondered at, then, that they often jump from their retreat in a most frantic manner the instant the collector's hand or knife touches the blade which holds them.

The caterpillars of many Tineids act, when alarmed, like those of Pyralids. In fact, there is a Tineid caterpillar which feeds on the leaves of the wild potato vine, and which gets into hysterics more readily than any other caterpillar of my acquaintance. The slightest jerk in plucking the leaf, and you lose the caterpillar unless your collecting tin is in readiness below to receive it in its fall.

Certain Noctuid caterpillars, those of *Selenis suero*, for example, that feed on the leaves of the tree locally known as bat-seed (*Andira inermis*) and on *Æschynomine sensitiva*, a weed, are curious in having the anal claspers long and slender, greatly resembling thick antennæ or the horns of a snail. At rest they keep the hind part of their body elevated at a considerable angle with the claspers projecting. When excited they sway this portion of their body vigorously from side to side, and up and down, while the claspers are at the same time waved about, brought together and separated again and again. These movements would seem intended to keep off enemies. The third pair of feet, too, are often rapidly vibrated.

The caterpillars of *Letis hercyna*, a Noctuid, adopt a most curious attitude when alarmed. They feed on the carrion-crow bush (*Cassia alata*), are in general yellowish withered brown, but with deep black, which is quite concealed on the under surface of the thoracic segments. I was much puzzled as to the use of this colour, which was in such striking contrast to the general hue. One morning, however, I saw its use in an unexpected manner. I was taking the caterpillars out of the breeding jar to supply fresh food and measure the length of the biggest. When I took up this one, I prodded it that it might extend itself and get measured. My prodding alarmed it. Instantly, with movement so quick I did not notice when it was done, I saw it in the following position:—body stiff, head and thoracic segments perpendicular to line of length, these segments thrust forwards, thus showing the deep black, feet of first segment held a little in front of mouth, feet of second and third, opened back as though ready to grasp. I involuntarily gave a start, the attitude was assumed as suddenly and unexpectedly. The caterpillar indeed seemed transformed into some formidable creature with gaping mouth and ready for attacking. It seemed to bid defiance and say "Touch me if you dare."

Some caterpillars, notably among those that are hairy, the Megalopygidæ for instance, or spiny, certain Saturniidæ for instance, curl up themselves hedge hog-like, and feign death. In such a posture they present their would-be captors with an array of dense hairs or formidable-looking spines, which not infrequently possess stinging or itching properties. The Limacodids discharge

stinging darts from more or less prominent processes. The green one, already mentioned, can afford a good example of a stinging response to an external stimulus. If the stimulus happen to be our forehead, or the back of our hand coming in contact with it, we shall have itching and scratching perhaps for several hours afterwards.

Among the Geometers death-feigning is often resorted to. They grasp the stem, say, of their food-plant with their abdominal feet and claspers, and allow themselves to project stiffly and motionlessly from it, so that they resemble dry twigs or sticks.

The Tinægeriidæ is said to be one of the least known families of the Lepidoptera. So far I have bred but one species, and this from caterpillars I found feeding on the underside of tender leaves of *Pisonia inermis*, within a dense elongate white web, somewhat like that of some Attids (leaping spiders).

The food-habits and pupating habits of caterpillars must be left over for treatment in a future article.

In bringing this article to a close I have to thank the Curator of the Museum as well as the official in charge of the Herbarium at the Botanic Gardens for the kindness they have always shown in naming for me the food-plants of caterpillars I rear.

THE HYMENOPTERA OF THE GEORGETOWN MUSEUM.

Part III.

By P. Cameron.

THE MARABUNTAS OR WASPS.

(In this section 28 new species of social and 42 solitary wasps are described for the first time. No doubt there are many more to be found for there have been additions to the collection since these were forwarded to Mr. Cameron.

The study of these insects is peculiarly fascinating as may be seen from the works of M. Fabre and Mr. and Mrs. Peckham. Good work has been done at the Para Museum in identifying the nests of the social species, some of which are very curious. At some future time the fine collection of nests in our Museum must be properly labelled, and this publication of new species will greatly assist to that end. Few people here appreciate the wealth of our insect fauna, although we all know that the species are numerous. Some look upon wasps as pests, and in fear of their stings, get out of the way. Some of them, no doubt, sting severely, but only when disturbed. We may stand up quietly and see them at work. A great deal remains to be learnt before we can deal with their life histories Some are very useful for they destroy many of the plant pests. It is interesting to note that, unlike the fruits of temperate climes, ours are generally protected by thick skins or acrid secretions, it follows therefore that wasps are not troublesome as fruit pests ; our houses are free from them, and it is only when they nest under bridges that it becomes necessary to destroy them. The solitary species store up larvæ, flies, grasshoppers, cockroaches, etc., for their young, in immense numbers, and thus preserve the balance of insect life. The paralysing of this food supply is one of the most curious things in nature ; the young have fresh meat when they come out of the egg. A case may be seen in the Museum where the wasps are shown with their prey, and it is notable that the sand-wasps, (Monedula spp.) keep down the cattle flies. This has been seen by the creoles who call them " cow-fly tigers."—J. R.)

DIPLOPTERA.

Vespidæ.

Polybia, Lep.

SYNOPSIS OF SPECIES.

A.—*Post-Scutellum gradually elongated to a fine point.*

Pallid yellow largely marked with fulvous, the mesonotum without lines, the head immaculate, the base of the second abdominal segment with a large semi-circular mark, the apices of the other segments lined with yellow, the stigma testaceous. . . . . *holoxantha* Ducke.

Fulvous, largely marked with black, the mesonotum with two black lines, the vertex and front marked with black; the 2nd abdominal segment with the apex and a large semi-circular mark on the base and the apices of the other segments fulvo-testaceous. . . . *nana*, Cam.

B.—*Post-Scutellum with the apex broadly rounded.*

(*a*). Abdominal basal segment as long as the thorax, tuberculated near the base of apical third. . . . *peduncula'a*, Saus.

(*b*). Abdominal basal segment clearly shorter than the thorax, not tuberculated.

1. (4)—Entirely black.
2. (3) - Wings black to the stigma, milky white at apex; stout, pensely pilose, length 11 m.m. *atra*, Ol.
3. (2)—Wings hyaline, slender, not densely pubescent, length 5.7 m.m. *pygmæa*, F. var.
4. (1)—Not entirely black.
5. (8)—Wings uniformly deep fuscous violaceous.
6. (7)—Rufous, the head and apical abdominal segments black, the legs testaceous, *nigriceps*, Cam.
7. (6)—Black, the apical abdominal segments rufous, legs black. *fulvicauda*, Cam.
8. (5)—Wings hyaline, tinged with fulvous or fuscous.
9. (10)—Ferruginous, without black or yellow markings wings fulvous. *flavicans*, F.
10. (17)—Head and thorax for the greater part black.
11. (16)—Abdomen rufous, thorax black.
12. (13)—Head and thorax immaculate, densely pilose. . . . . *dimidiata*, Ol.
13. (12)—Thorax maculate with yellow narrowly.
14. (15)—Legs black, the hind coxæ with two yellow lines, the post-scutellum and metanotum marked with yellow, the pubescence whitish. *injucunda*, Saus.
15. (14)—Legs testaceous, the post-scutellum and metanotum immaculate, the pubescence dense and golden. . . . . *chrysothorax*, Saus.
16. (22)—Basal 2 abdominal segments rufous, the thorax rufous except on mesonotum. . . *sericea*, Ol.
17. (10)—Head and thorax for the greater part testaceous, yellow or rufous.
18. (21)—Large, 10-12 m.m.; the front and vertex maculate with black, apex of post-petiole broadly rounded.
19. (20)—Not densely pilose, the post-petiole of equal width, not narrowed towards the base, the abdomen largely black, with yellow apical bands, the base of 2nd addominal segment broadly yellow, the black mark on top of head bifurcated. . . *phthisica*, F.
20. (19)—Densely pilose all over, the post-petiole pyriform, narrowed at the base, the abdomen without black, only narrowly yellow-banded; the black mark on top of head transverse. *pallipes*, Ol.
21. (18)—Small, 7 m.m.; the front and vertex blackish, maculate with yellow laterally on the vertex, apex of post-petiole gradually narrowed towards the apex. . . . . *bruneiceps*, Cam.
22. (11)—Abdomen black, narrowly banded with yellow.
23. (24)—Mesonotum immaculate, the petiole slender, the post-petiole not clearly dilated and separated.
24. (23)—Mesonotum with yellow lines.
25. (26)—Large (13-15 m.m.), the lines on mesonotum united at the apex the front and vertex immaculate, legs black. . . *liliacea*, F.
26. (25)—Small (6-7 m.m.), the lines on mesonotum separate, the front and vertex maculate, legs for the greater part pallid yellow.
27. (28)—2 spots on vertex behind the ocelli, a broad yellow band near the middle of the 1st abdominal segment, the ventral segments marked with black on the sides, the scutellum not distinctly furrowed. *spilogaster*.
28. (27)—No spots on vertex nor on ventral segments, no yellow band near the middle of petiole, the scutellum broadly, distinctly furrowed down the middle. . *sulcisentis*.

Polybia nana sp. n.

Fulvous yellow, the occiput except narrowly round the edges and a spot in the centre near the top, a spot covering the ocelli, united to the black on the vertex by a short narrow line, roundly incised to the front ocellus below and continued as a line from the outer edges to join a curved line above the antennæ, the outer edges being curved down to each antenna, 3 broad lines on the mesonotum, the central the broader and roundly dilated at the base, a semi-circular mark on the apex of the post-scutelum, joined to a line which goes round the apex and down the central furrow of the metanotum, the lower half of the mesopleuræ behind the furrow, continued broadly, irregularly and roundly below on the lower third and continued on to the outer part of the mesosternum, a line on the apex above round the apex of the furrow, its suture, a spot on the apex of metapleuræ above, a large irregular, somewhat triangular one on the outer basal half of the metanotum, more on the latter than on the metapleuræ, the 1st abdominal segment to near the apex, the 2nd except for a large semi-circular mark commencing near the base and extending to near the middle and reaching close to the apex of the segment and the basal half of the 3rd; the 2nd ventral segment is reddish brown, with 2 oval yellowish marks on basal half, yellow and a line on the vertex, the last with a blackish line at its base. Antennæ rufous, blackish above to the 8th and 9th jonts. Wings hyaline, the nervures black; the 1st and 2nd abscissæ of the radius united as long as the 3rd; the 2nd about one-third of the length of the 1st. Apex of post-scutellum gradually narrowed to a point, from which a fine keel runs down to the apex of the metanotum. Almost the basal third of the abdominal petiole is narrowed and is of equal width; from it the apex becomes gradually widened to the apex; the 2nd segment is bell-shaped, slightly longer than it is wide at the apex. Female. Length 5mm.

Clypeus slightly longer than wide, its apex narrowed to a broad, rounded point, in its centre are 2 rounded curved lines almost united above. Ocelli in a triangle, the hinder separated from the eyes by about one and a quarter the distance they are from each other. Post-scutellum gradually elongated to a point, the apex of which is smooth and shining. Scutellum with a fine, shallow furrow down the middle. Mesonotum distinctly longer than wide.

Belongs to the group of *P. sedula*. It may be known from that species and *P. acutiscutis*, Cam. by the 2nd abdominal segment having a semi-circular mark, not a broad transverse band, by the different colouration of the head, while *P. acutiscutis* is further distinguished by the scutellum being black with 2 yellow spots at the base.

Polybia holoxantha, Ducke.

A small, pallid species with yellow lines and markings and having the apex of post-scutellum narrowed and prolonged to a point.

B. *Apex of port-scutellum broadly rounded.*

Polybia pedunculata, Sauss.

Vespides i, 205, Pl. XXVI, f. 7; Ducke, Bolet, do Musen Goeldi, i, 341.

This species, judging by the examples examined, varies as regards the yellow markings. There may be a line or a spot on the apex of the clypeus, narrow line on the lower part of the inner orbits, there may be a thin reddish line on the pronotum, the apex of the post-Scutellum is broadly rounded, slightly dilated in the middle ; the spiracles on the petiole are at the base of the apical third, not near the middle as usual: the last point is a characteristic one with the species.

Polybia fulvicauda, sp. n.

Deep black, a line along the inner orbits from the end of the incision to the apex a broader line along the apical half of the clypeus all round and a short narrow line near the top of the outer orbits pale yellow, the apex of the 3rd abdominal segment in the centre and on the sides and the whole of the others bright orange and densely covered with long whitish pubescence ; wings fuscous violaceous, the hinder paler in tint, the nervures and stigma black. Female. Length 12 mm.

The pubescence dense, short, pale. Clypeus smooth, longer than wide, its apex broadly rounded. Front and vertex closely, strongly punctured. Thorax strongly, closely punctured all over, the base rounded, the apex of the pronotum with a distinct keel which goes half way-down the pleuræ. Apex of post-scutellum broadly rounded, the middle smooth, with a row of large, deep punctures behind. Sides of metanotum broadly rounded, the middle depressed. Basal half of 1st abdominal segment narrowed, the apex distinctly roundly dilated, strongly punctured ; the 2nd segment closely, but not quite so strongly punctured, not much longer than wide, roundly narrowed at the base.

Polybia sericea, Ol.

Polybia chysothorax, Saus.

Polybia nigriceps, sp. n.

Rufo-testaceous, the head, antennæ, the centre narrowly and the sides broadly and irregularly of the 3rd abdominal segment,the 4th and 5th entirely, the 6th broadly laterally and the apical 3 ventral segments black ; wings fuscous violaceous, the stigma and nervures black. Female. Length 16mm.

Clypeus as wide as long, its upper half opaque, the lower shining, sparsely punctured, the apex gradually narrowed to a rounded point. A narrow keel runs down from the ocelli to the antennæ, the upper part much less distinct and shallower than the lower. Smooth and shining, covered with a silky white pile, which appears golden on the mesonotum. A fine keel runs down the middle of the scutellum. Apex of post-scutellum bluntly, broadly rounded. Metanotal furrow running from the base to the apex, the centre forming a fine, narrow furrow, clearly defined from the wide, oblique sloping sides, which are slightly narrowed towards the base. There are no furrows on the

mesopleuræ, but the top from the tubercles is raised, this part being roundly narrowed below, but not into a semi-circle. Abdominal petiole not quite so long as the scutellums and metanotum united and shorter than the 2nd and 3rd segments united; the apex becomes gradually narrowed, but not much, from the spiracles, not forming a distinct node. The 2nd segment is longer than the following segments united; it is about one quarter longer than wide.

Has the size, shape and general colouration of *P. chrysothorax*, Saus. and *P. sericea*, Ol., from both of which it may be known by the uniformly fuscous violaceous wings, by the thorax wanting black and by the abdominal petiole not being nodose at the apex. It shows an approach to *Megacanthops*; the tarsal joints at the apex are not equally lobate.

Polybia lilacea F.

Polybia dimidiata, F.

Polybia injucunda, Saus.

Polybia bimarginata, sp. n.

Black, densely covered with a white pile, the dilated apical part of the petiole from the spiracles and the rest of the abdomen rufo-testaceous, a short narrow line on the inner orbits, opposite the antennæ, a line round the pronotum above, a slightly broader line on the base of the post-scutellum, and a conical line of variable size on either side of the apical half of the metanotum, pale yellow; the knees testaceous, the spurs of a whiter testaceous colour; wings hyaline, the costal cellule fulvous, deeper in tint at the apex, the radial cellule and the apical cubital light smoky; the basal nervures testaceous, the apical black. Female. Length 8-9 mm.

Covered all over with a short white pile, the face and clypeus densely covered with moderately long black hair. Clypeus as broad as long, its apex broadly rounded, smooth and shining. Ocelli in an equilateral triangle, the hinder separated from each other by the same distance as they are from the eyes. Base of thorax transverse, margined, angled laterally. Metanotum with a distinct furrow, commencing near the base, continued to the apex and becoming gradually widened. Abdominal petiole a little longer than the post-scutellum and metanotum united, narrow, slender to the spiracles, then becoming dilated, but not much; then becoming widened into a longish oval. The 4 or 5 apical joints of the antennæ are rufous below.

Comes near to *P. injucunda*, Saus.

Polybia phthisica, F..*sec.*, Sauss.

The above species is probably represented by 3 female and 2 male examples. *P. cayennensis*, F., is no doubt the same species, but I am not sure that *P. cæmentaria*, Ducke is also. The learned entomologist of the Para Museum (Bolet, do Museu Goeldi, IV, 355) says of the latter:—"*cayennensis*, Moebius ?—"*fulvofasciata, cayennensis* et *phthisica* auctorum." It may be useful to give a description of our species.

Female. Yellowish-ferruginous, the clypeus, pleuræ, sternum, post scutellum, 2 lines—broad, curved and narrowed above—on the metanotum, the apices of the abdomina segments, the base of the 2nd more broadly and the ventral surface, yellow; the following parts are black: the mandibular teeth, a line round the upper part of the occiput extending on to the vertex joined to the upper part of the eyes by a broader, oblique band, a large mark on the vertex and front, roundly narrowed in the centre behind, this part being a little wider than the 2 lateral; shortly below the ocelli the mark bifurcates into 2 broad branches which become narrowed below and extend to the antennæ; an irregular triangular mark on the upper part of the propleuræ, 3 broad lines on the mesonotum the central widened at the base, for the rest slighly narrower than the lateral, a wide mark, widened towards the apex, in the middle of the scutellum narrowly, a wide line down the centre of the metanotum, narrowed at the extreme base, the rest of the basal half roundly widened, a somewhat triangular mark on the base behind the wings and a narrow line across the apex of the metanotum. Antennæ reddish yellow. Legs coloured like the body, the 4 front coxæ and trochanters yellow; the apex of the hind tibiæ and of the joints of the hind tarsi fuscous. Wings hyaline, the costal cellule in front and at the apex tinged with rufo-fulvous, the radial cellule slightly smoky; the stigma and nervures testaceous, the former more rufous in tint; he basal abscissa of radius as long as the following 2 united, the 2nd about one-third of the length of the 3rd, and as wde as the space bounded by the recurrent nervures. Ocelli small, the hinder separated from each other by a less distance than they are from the anterior and from the eyes by 3 times the distance. Malar space fully longer than the 2nd antennal joint. Apex of pronotum bluntly rounded, the sides bluntly rounded the pleural part straight, oblique. Scutellum with a shallow furrow in the middle. Apex of post-scutellum bluntly rounded; it is obliquely narrowed laterally at the base, and has a straight sharply oblique slope.

The male is similarly coloured, the abdominal petiole is longer and more slender, not with the apical half nodose as in the F; in it the black markings of the Female are paler, on the abdomen the greater part of the segments are fuscous, not rufo-testaceous; the lateral metanotal marks may be absent.

Polybia pallipes, Ol.

Five males I can, in the meantime, only refer to *P. pallipes*, Ol. *sec.* Saus. They want the bifurcated spot on the head found in the type and in var. *centralis*, Cam. The front and the vertex in the middle are fuscous to rufous; the mark on the front may be deeper tinted laterally, giving an indication of a bifurcation. The 1st abdominal segment is as long as the 2nd; it is narrowed at the basal fourth; from there it becomes gradually widened to the apex. The apex of the clypeus becomes gradually obliquely narrowed to a sharp point. Malar space almost obsolete. Ocelli separated from the eyes by about 4 times the distance they are from each other; the hinder from each other by a less distance than they are from the eyes. The 9 or 10 basal joints of the flagellum are for the greater part reddish brown—1st abscissa of radius slightly less than the 2nd and 3rd united; the 2nd is about one-third longer

than the space bounded by the recurrent nervures. The apex of pronotum forms a semi-circle. Apex of post-scutellum gradually narrowed to a bluntly rounded point. Some specimens may be largely infuscated.

Polybia brunneiceps, sp. n.

Chocolate brown, the upper part of the thorax darker in tint; the sides of the thorax from near the top, the apex more narrowly, the inner orbits from the top of the incision where the line is narrowed, a line, three times longer than wide, on the base of the mandibles, a line on the vertex, running from the occiput, obliquely to near the middle of the eyes, the line nearly broken close to the base, the outer orbits, the line extending to the malar space, line round the pronotum narrowed at the apex, 2 lines on the mesonotum reaching near to the base and apex, a line of about the same width on the sides, close to the tegulæ, 2 semi-circular marks on the basal half of the scutellum, a line, somewhat broader than the mesonotal lines, on the base of the post-scutellum, its apex roundly curved inwardly, 2 large marks, rounded bluntly at the top and bottom, on the metanotum, the space between the 2 narrowed above, a line on the base of the propleuræ, gradually widened from the top to the bottom, a large mark on the base of mesopleuræ, longer than wide, slightly narrowed below, where it is transverse, and which does not reach to the end of the furrow, a smaller, vertical mark, almost semi-circular, on the metapleuræ, united above to a smaller spot which goes on to the metanotum at the hind wings, a moderately wide band—about the width of one-sixth of the petiole——and continued narrowly backwards for a slightly greater distance along the lower edge of the sides, slightly narrower lines all round on the 2nd-4th and a narrower, shorter one on the centre of the 5th, above the anterior coxæ and the outer side of the fore tibiæ, bright lemon yellow. Wings hyaline, the radial and the apical cubital cellule smoky, the stigma piceous, the nervures black, the 1st abscissa of the radius as long as the 3rd; the 2nd about one-fourth of their length. Abdominal petiole as long as the 2nd segment and about half the length of the thorax; the basal third narrow, the middle becomes gradually widened, the post-petiole of equal width; the 2nd segment bell-shaped, as long as it is wide at the apex. Antennal scape yellow, brownish above, the flagellum rufous, darker, almost fuscous above. Female. Length 7—8 mm.

Smooth, covered with a satiny white pile. Apex of clypeus gradually, obliquely narrowed from the eyes to the middle, where it ends in a tooth. Malar space almost obsolete. Ocelli in an equilateral triangle, the hinder separated from each other by half the distance they are from each other. Post-scutellum gradually narrowed to a bluntly rounded point at the apex.

The brown or fuscous ground colour shows a tendency to become black.

Polybia spilogastra, sp. n.

Black, the face, clypeus, except for a line, about 3 times longer than wide, irregularly narrowed below, leading down from the antennæ to the top of the clypeus, and the apex of the clypeus narrowly, a crown-shaped spot between

the antennæ, a line leading down to it from the antennæ, its apical half acutely narrowed, an oblique, somewhat oval spot on either side of the hinder ocelli, the inner orbits, narrowly above, broadly below, the mark filling the eye incision and continued narrowly to the antennæ, the inner, upper half of the outer orbits, the line narrowed above, the lower half entirely, malar space, the mandibles except narrowly in front and the apex, the prothorax laterally at the base, above and more broadly below, 2 lines down the mesonotum, not reaching to the base or apex, the base, sides and apex of scutellum, the black central part with the sides rounded, the basal half of the post-scutellum, the apex of the black part almost bilobate, the metanotum, except a black line across the base, its sides roundly triangularly dilated, a line, broader than the narrowed central basal part, and slightly dilated towards the apex, down its centre; the pleuræ and sterna entirely, except for a hook-shaped mark on the upper half of the mesopleuræ the oblique, longer part following the furrow; from the shorter, roundly turned up end a line runs to the apex, which is narrowly bordered with black; on the sides of the mesosternum is a black mark, of the shape of a lawn tennis bat, the narrowed (handle) end at the apex; on the lower part of the metapleuræ is a longish triangular and a short square spot all yellow. Basal third of the abdomen black, the apex of the band narrowed towards the centre, this apical part with a rugged edge, it is followed by a slightly shorter yellow band, the apex of which is rounded towards the apex; following this is a black one twice its length and bordered at the apex by a narrow yellow band; on the base on the 2nd segment is a yellow band, about one fourth of the length of the segment; it is continued narrowly along the sides to the apex where there is a band, slightly narrower than it, the ends of the black central part are rugged, especially the basal, there are narrower ones on the apices of the 3rd, 4th and 5th; the 6th is entirely yellow, the ventral surface yellow wth the following black marks: the base of the 1st segment, the lateral apical keels, a short line on the sides of the base of the 2nd, a large mark, on the centre of the base, wider than long, narrowed to a sharp point at the apex, a narrow line down the sides, ending at the apex in an oblique, longish triangular mark, a large mark, a little wider than long, narrowed in the middle, on the sides of the 3rd and 4th segments and the whole of the 5th; the 6th is for the greater part fuscous. Legs pallid yellow like the body, the base of the 4 posterior coxæ narrowly, a bifid irregular mark on their apex, the greater basal part of the trochanters, broad lines on the basal three-fourths of the femora above black; the hind tibiæ fuscous. Wings hyaline, the stigma and nervures black; the basal abscissa of the radius with the 2nd nearly as long as the 3rd, the 2nd one-fourth of the length of the 1st; the 1st transverse cubital nervure is roundly curved; the recurrent nervures are received quite close to each other, separated by less than half the length of the 2nd abscissa of radius. Female. Length 7 mm.

Clypeus longer than wide, its apex gradually narrowed to a sharp point. Ocelli in a triangle, the hinder separated from each other by half the distance they are from the eyes. Apex of post-scutellum bluntly rounded. Abdominal petiole twice longer than it is wide at the apex; it becomes gradually

widened to the apex from the base. There is an indistinct furrow down the middle of the scutellum.

Its ventral black markings vary in size and shape ; they vary also in colour varying from black to fuscous.

Polybia sulciscutis, sp. n.

Black with a tendency to fuscous, the face except for a small conical spot in the centre, the clypeus except for a small triangular spot in the centre above the inner orbits from opposite the lower ocellus, to the face, narrow above, broad below, the mark filling the eye incision, a line running down from the ocelli to near the antennæ, the end obliquely narrowed to an acute point, a spot between the antennæ, the outer orbits entirely, the malar space, mandibles, except the teeth, which are brown, 2 lines down the mesonotum, the scutellar keels the base and apex of scutellum, the base more widely than the apex, basal half of post-scutellum, the base of the black apical part irregular, the metanotum except the central furrow, the line on which becomes widened towards the apex, the propleuræ except for a mark twice longer than wide, narrowed below, where it is transverse, the meso and metapleuræ except for a fuscous line on the former along the furrow, the sternum, the sides of the 1st abdominal segment narrowly on the basal half, the basal fourth of the 2nd, the base of the black part irregular, narrower lines on the 2nd to 4th on the apex, continued backwards on the sides to the base, a narrower, more obscure line on the 5th, the whole of the 6th and the ventral segments, pallid yellow, almost white. Legs of the same pallid yellow colour as the body, a fuscous line on the apical half of the fore femora behind, a spot on the upper basal part of the middle, almost the basal half of the middle the tibiæ behind, a line on the middle coxæ behind and a short and a longer one on the hinder, fuscous. Antennal scape pale yellow, its apex fuscous, the flagellum reddish brown, its basal 6 joints black above. Wings clear hyaline, the nervures black, the stigma fuscous, the basal abscissa of radius as long as the following 2 united ; the 2nd as long as the space bounded by the recurrent nervures. Scutellum with a wide furrow, with obliquely sloped sides down the centre, the apex of post-scutellum narrowed to a broad, bluntly rounded point. Abdominal petiole longish triangular, becoming gradually widened from the base to the apex, slightly longer than the 2nd segment which is broader than it is wide at the apex. The ventral surface is entirely yellow. Female. Length 6 m.m.

Polybia occidentalis, Oliv.—*pygmæa* F.

A species very variable in colouration and size, varyin gfrom being almost entirely black, to having the body, and especially the thorax, largely marked with yellow, *e.g.* the metanotum may have only 2 small spots, 2 large oval ones, or may be entirely black. *Cf.* Fox, Proc. Acad. Nat. Sc. Phil., 1898, 449; Schulz, Sitz. d. mathem.—phys. Klasse. d. Bayer. Akad. d. Wissen ; XXXIII, 797 ; Hymen. stud. 127 ; Ducke, Boletim do Musen Goeldi, IV, 349. The workers vary considerably in size. The markings run from white to orange yellow.

Megacanthopus, Ducke.

This genus was formed by Ducke for some species formerly included in *Polybia* and a number of new ones. The species I have referred to it are much larger than the average *Polybiæ* and most of them have the abdominal petiole longer. *Polybia basimacula*, Cam. which is considered to be a var. of *M. indeterminabilis*, Saus. (A species not very satisfactorily described by Dubuyssom (Zool. Jahr ; 1910, 238 as is also *M. Alfkeni*, Ducke, l.c.) is certainly a very different looking and much smaller species, being yellow with black markings and almost hyaline wings. The species I have described, as also one from Costa Rica, are all large, uniformly black and, with one exception, have the wings uniformly fuscous violaceous.

1. (2)—Base of thorax transverse, the sides projecting into a distinct, rounded angle, the abdominel petoile not much longer than the post-scutellum and metanotum united ; the apical half widened ; the wings largely yetlowish hyaline. . . . . *ruficornis.*
2. (1)—Base of thorax not angularly projecting laterally, the abdominal petiole longer than the scutellums and metanotum, slender, not widened at the apex, the wings fuscous violaceous.
3. (4)—Base of thorax transverse, the scutellums, metathorax and legs rufotestaceous (abdominal petiole shorter than the thorax) . . . . . *atriceps.*
4. (8)—Abdominal petoile as long or longer than the thorax.
5. (6)—Dark testaceous, the stigma and alar nervures testaceous—(the petiole as long as the thorax. . . . . *rotundicollis.*
6. (5)—Black, the stigma and nervures black.
7. (8)—Abdominal petiole longer then the thorax ; the metanotal furrow rounded, not narrowed to a point at the top, not beginning at the base of metanotum . . *longipetiolatus.*
8. (7) Abdominal petiole as long as the thorax, metanotal furrow narrowed to a point above, beginnng at the base of metanotal . . . . . *violaceipennis.*

Megacanthopus rotundicollis, sp.n.

Dark ferruginous, the lower part of the pleuræ lighter coloured, the abdomen, coxæ, trochanters and femora of a lighter ferruginous colour, the tibiæ and tarsi fuscous, almost black ; wings fuscous violaceous, the costa and stigma ferruginous, the nervures black. Petiole as long as the thorax, and if anything, longer than the rest of the abdomen united, of almost equal width throughout, hardly thicker at the apex than at the base. Antennal flagellum black, the basal 6 or 7 joints of the flagellum black, dull rufous, below the apical points bright rufous. Base of pronotum above broadly rounded, the sides rounded, not angled. Male. Length 23 mm.

Smooth, shining, the head and thorax densely covered with a white pile. Furrow in centre of metanotum commencing at the apex of basal fourth, narrow at the base, becoming gradually wider and deeper towards the apex. Eyes distinctly converging below, reaching close to the base of the mandibles, the malar space hardly the length of the 2nd joint of the antennæ. Clypeus longer than wide—about one-fourth the apex gradually narrowed to a bluntly rounded point and fringed with fulvous hair. The ocellar region and centre of front are blackish. The basal abscissa of radius is shorter than the following 2 united, the 2nd about one half the length of the 3rd ; the 2nd recurrent nervure is broadly roundly curved outwardly from top to bottom.

Megacanthopus atriceps, sp. n.

Dark rufo-testaceous, the head except the malar space, the prothorax except the base all round and a line round the apex of the pronotum, the mesonotum, the mesopleuræ except a triangular spot at the tegulæ and a larger oblique one down the middle and a line on the base of the metapleuræ at the top, black ; the dilated part of the abdomen infuscated, the legs are lighter coloured than the thorax ; wings fuscous violaceous, the stigma testaceous, the nervure black ; the basal abscissa of the radius slightly longer than the following 2 united, the 2nd one quarter of the length of the 3rd ; the 2nd recurrent nervure straight, obliquely sloped in front, below the middle broadly rounded outwardly, the hinder part obliquely bent towards the base. Base of thorax transverse, margined, the sides slightly projecting. Abdominal petiole slightly, but clearly shorter than the thorax, and as long as the following 2 segments united. Female.—Clypeus a little longer than wide, the apex at the sides roundly narrowed, the centre transverse. Malar space slightly longer than the 2nd antennal joint. Antennæ black, rufous below, the 3rd joint entirely so.

Megacanthopus ruficornis, sp. n.

Black, smooth, shining covered with a minute pile, the mandibles and flagellum of antennæ rufous. Wings fulvous hyaline, darker along the costal cellule, the hinder paler than the anterior, the stigma and nervures bright reddish fulvous ; the 1st abscissa of the radius, not much shorter than the 4th and fully one fourth than the 2nd and 3rd united, the 2nd not one fourth of the length of the 3rd and less than the space between the 2 recurrent nervures; the anterior two-thirds of the 2nd recurrent roundly, slightly obliquely bent backwards, the hinder third straight, oblique, forming a rounded angle with the anterior. Base of thorax transverse, raised, the edges distinctly projecting into a rounded angle. The depression on the metanotum forms a longish oval, with a narrow, but distinct furrow in the centre. Petiole stout, the basal third narrowed, not one half the length of the thorax, about as long as the post-scutellum and metanotum united, about one quarter longer than the 2nd segment. Female. Length 17 mm.

Cypeus not much longer than wide, shining, sparsely, distinctly punctured, the apex broadly and roundly projecting. Front and vertex opaque, alutaceous, densely covered with short black pubescence. Thorax moderately shining, densely covered with short, fuscous pubescence, as is also the abdomen, especially towards the apex.

Megacanthopus violaceipennis, sp. n.

Black, densely covered with a white pile, the coxæ and trochanters dark testaceous ; wings dark fuscous violaceous, the violaceous tint, lighter at the apex, the nervures and stigma black, the 1st abscissa of radius as long as the 2nd and 3rd united, the 2nd one-quarter of the length of the 3rd and slightly more than half of the length of the space between the recurrent nervures. Base of thorax bluntly rounded, narrowly, but clearly keeled, the sides rounded. Metanotal keel commencing at the base, where it is narrow ; it then becomes gradually widened to the apex. Clypeus distinctly longer

than wide, the apex transverse. Abdominal petiole as long as the scutellums and metanotum united and longer than the 2nd and 3rd segments united ; it is narrow, with prominent, projecting spiracles near the middle ; the part behind these a little narrower than the apical. Female. Length 20 mm.

The dense pubescence gives the insect a greyish appearance ; that on the face, clypeus and outer orbits is denser and silvery. The 4th and following joints of the antennæ are dark rufous, below, the 9th, 10th and 11th are keeled in the middle and with a shallow, oval dark coloured depression on either side.

Megacanthopus longipetiolatus, sp.n.

Black, the apex of the pronotum narrowly all round and a small and a larger irregular mark on the mesopleuræ dull brown ; the coxæ and femora tinged with rufous, the anterior brighter coloured than the others ; the underside of the the antennæ brownish red, wings fuscous violaceous, highly iridescent, the stigma and nervures black ; the basal abscissa of the radius nearly as long as the 2nd and 3rd united ; the 2nd one third of the length of the 4th and one third less than the space bounded by the recurrent nervures; the 2nd recurrent nervure broadly roundly curved outwardly; the 3rd transverse cubital broadly, roundly, obliquely curved backwards. Head and thorax opaque, densely covered with short black pubescence. Metanotal furrow commencing at the end of the basal fourth ; it is not very deep, its top wider than usual, half the width of the apex, broadly rounded ; there is a fine keel down the centre. Base of thorax bluntly rounded. Petiole as long as the thorax. Female. Length 18 mm.

Costa Rica.

The hair on the clypeus is long and dense, longer and denser below than above. Clypeus about one-fourth longer than wide ; its apex broadly rounded. There is a silvery pile under the pubescence.

Nectarinia, Shuckard.

The name *Nectarinia*, given by W. E. Shuckard to the South American Honey-making wasps was used in 1811 by Illiger for a bird genus. In 1904, on that account, R. von Ihering, Revista Musen Paulista, VI, 1904, renamed it *Caba*. R. du Buysson, in his Monograph of the genus, does not adopt *Caba* on the ground that *Nectarinia* has practically lapsed in Ornithology ; but he spells it *Nectarina*. It is the *Brachygaster* of Pertey, a name pre-occupied.

Nectarinia scutellata, Spinola. du Buysson, Ann. Soc. Ent. Fr. 1905, 547. Potaro May.

The abdominal bands are pale yellow, not orange like the scutellum.

Nectarinia bilineolata, Spin. Du Buysson, *l.c.*, 531.

In one specimen the head markings are greatly reduced and the thoracic lines absent ; in another there are neither head nor thoracic spots and the abdominal lines are not incised and narrower than usual, as in the var. *Mobiana*, Saus.

Chartergus, Lep.

Chartergus chartarius, Oliv.

Saussure, Etudes sur l. Fam. d. Vespides, II, 220, Pl. XXXI. f.4.

Chartergus apicalis, Lep.

This species is a close mimic of *Polybia atra*, Ol. *Tatua morio*, F., is another wasp with the same type of colouration.

Chartergus trichiosomus, sp. n.

Black, densely covered all over with white pubescence, which is longer and less dense on the abdomen than on the thorax ; the face, clypeus the inner orbits from the beginning of the eye-incision, where it is narrowed, the yellow on the lower part of the incision wide, extending to the antennæ, and a line on the lower three-fourths of the outer orbits, narrowed above, below extending to the outer edge and extending to the malar space ; the antennal scape testaceous below, wings hyaline, fuscous violaceous in front, the cloud filling the greater part of the 1st cubital and the radial cellule ; the nervures black. Female. Length 9 mm.

Vertex almost entirely impunctate, the front with shallow points distinctly separated. The front is raised, narrowed and projects between the antennæ, where it is distinctly furrowed. Thorax distinctly but not very closely punctured, the puncturation almost hid by the pubescence. There is a narrow smooth shining line, dilated at the base and apex, down the centre of the apical two thirds of the scutellum. The hind legs except the coxæ, are piceous. Mandibles brownish red.

Charterginus pallidibalteatus, sp.n.

Black, a moderately broad line on the orbits commencing at the eye incision, where it is continued on the sides of the clypeus, on the apex of which the 2 are united by a narrower line, a line, half the width of the inner ones, on the outer orbits, a still narrower line on the apex of the pronotum and line, slightly narrower than those on the front of the head, on the apices of the basal 5 abdominal segments, all round except the 1st which is on the top only, pallid yellow. Wings hyaline, the nervures and stigma black, Female Length 8 mm.

Face, clypeus and temples smooth, the front and vertex moderately closely and strongly punctured. Thorax more strongly and closely punctured than the head, the lower part of propleuræ base and apex of mesopleuræ, base of metapleuræ and the lower narrowed part of the post-scutellum smooth ; the apical part of the metapleuræ is not so strongly punctured. Abdomen smooth, bare, semi opaque.

Obs. Charterginus, Fox, seems to me to be a good genus. It may be known from *chartergus* by the bare eyes by the post-scutellum being narrowed to a point into the metanotum and by the smaller basal abdominal segment.

Charterginus rufo-ornatus, sp.n.

Black, densely covered with a silvery pile, the face, clypeus, mandibles and the greater part of the antennal scape rufo-piceous, a broad line of variable form on the apex of the clypeus, a longish triangular mark at the eyes opposite the antennæ, a line on the apex of the pronotum, above the basal slope and reaching to the end of the upper third of the pleuræ, a narrower line branching off from it, running along the top to the tegulæ, the base of scutellum, to near the middle, the mark roundly incised at the apex, the scutellar keels, a line of equal width on the base of post-scutellum, reaching near to the base of the narrowed apex, a broad curved line, narrowed towards the apex, on either side of the apical two-thirds of the metanotum, a line on the apex of the 1st abdominal segment, a broader one on the 2nd, broadly dilated in the middle and a much shorter projection, half way between that and the sides, a narrower one on the 3rd, a still narrower one on the 4th, a spot, rounded and slightly narrowed at the base, the apex with a shallow incision, on the base of the 2nd, close to the outer edge and the apices of the 2nd to 5th ventral yellow. Legs black, the fore tibiæ and tarsi rufo-piceous. Wings hyaline, the stigma and nervures black the apical nervures paler. The apical antennal joints are reddish brown except above; the apical may be entirely rufous. Female. Length 5-7 mm.

The pubescence on the face and clypeus appears to be golden in certain lights, the front and vertex bear scattered, distinct punctures, the thorax, above and laterally, is more strongly and closely punctured, except on the apex of the post-scutellum and the metanotum which are impunctate, more shining and bare. The scutellum and post-scutellum have a straight oblique slope in one line; the latter is prolonged into a tongue, rounded broadly at the apex, below. Basal abdominal segment small, more as in *Nectarina* than in *Chartergus* proper. The eyes in the examples examined are bare, not pilose as in typical *Chartergus*.

Polistes, Latr.

If not in species this genus is probably the most numerous in individuals of the South American social wasps. All the species are very variable, some of them extremely so in colouration.

Polistes carnifex, F.

Polistes canadensis, L.

The example has the body entirely ferruginous as in Saussure's var. B., but the legs are paler, yellowish on the tibiæ and tarsi, except a black band on the apex of the hind tibiæ. It is certainly very much lighter coloured than the Brazilian specimens I have seen of this species, there is no black on the body; it is 21 mm. long.

Polistes rubiginosus, Lep.

I have a specimen of the above species taken at Demerara by the Rev. Mr. Harper.

Polistes instabilis, Saus.

Polistes pacificus, Fab.

An example is probably a form of the above. The pleuræ are only slightly marked with black; the cloud in the costal cellule is more distinct than it is in the radial.

Polistes guyanensis, sp. n.

Ferruginous the face, front, vertex, upper half of the occiput, the middle of the mesonotum, broadly, the greater part of the scutellum and the apical 4 abdominal segments, black; wings fuscous violaceous, the apex from near the base of the radial cellule paler, the nervures black; the following parts are bright yellow; a broad curved line on the upper half of the sides of the clypeus; a line on the inner orbits, commencing a little above the eye incision, where it is narrowed, a line on the outer orbits, a narrow line round the edge of the basal slope of pronotum, a broader one round the top of the pleuræ, 2 narrow lines down the middle of the mesonotum on the apical half, the basal third of the scutellum, a triangular spot outside this line, one on post-scutellum, narrowed in the middle, two broad curved lines on the metanotum, closer to each other above than below, a longish triangular spot on the mesopleuræ at the tubercles, the sides and apex of the 1st abdominal segment, an irregular spot, of moderate size, on the sides near the apex and narrow lines on the apices of the following 4 segments above, and more obscure lines below, bright lemon-yellow. Legs of a brighter ferruginous colour, the greater part of the 4 anterior coxæ, the hinder with a broad line on the sides above, bright lemon-yellow. Female. Length 15 mm.

Potaro, May.

Clypeus a little longer than wide, its apex gradually narrowed to a bluntly rounded point. Malar space almost twice the length of the antennal pedicle. Ocelli in a triangle with the sides of the same length as the hinder part; the hinder separated from each other by one fourth less than they are from the eyes. On the mesopleuræ a distinct, deep, curved keel runs down from the tubercles to near the middle; on the lower half, near the centre, is a finer curved furrow. On the lower apical edge of the mesopleuræ, before the coxæ, is a short, broad curved, yellow keel.

Odynerus pilosellus, sp.n.

Black, the head, thorax and basal segment of the abdomen densely covered with long pale pubescence, the pubescence on the rest of the abdomen sparser and shorter, a mark near the apex of the clypeus wider than long, slightly roundly narrowed towards the apex, which is roundly incised in the centre, the sides forming rounded lobes, a short longitudinal line between and above the antennæ, a curved line on the apex of the pronotum, the apex of tegulæ and moderately broad lines on the apices of the basal 5th abdominal segments all round, the last ventral almost entirely, bright lemon yellow; wings, light fuscous violaceous, the hinder paler; the anterior tarsi with the apical joint piceous. Female. Length 10 m.m.

Costa Rica.

Clypeus longer than wide, the apex with a distinct, transverse raised margin. The 1st abdomical segment cup-shaped, the top of the basal slope with a not very distinct ridge.

Odynerus reticulatus, sp. n.

Black, densely covered with pale golden pile, the thorax more densely so than the abdomen, a narrow line on the sides of the upper half of clypeus, one on the inner side of the base of mandibles, the base of post-scutellum, broad bands on the apex of abdominal segments 2-5, the sides of the 6th the 2nd to 5th more narrowly below and the whole of the 6th, reddish orange ; the raised angle on the top of the metanotum of a paler yellowish colour, legs entirely black, the tibial spines pale ; wings hyaline the anterior margin tinged with fulvous, the apex slightly violaceous. The raised part of the mesopleuræ reticulated, the sides of the metanotum more strongly reticulated, the reticulations running sparsely on to the top of the metapleuræ. Front and vertex closely but not deeply punctured, the pronotum and mesonotum more strongly so and with the punctures more widely separated ; the scutellum, if anything, more srongly punctured than the mesonotum and wth a smooth line down the centre. Apex of post-scutellum bluntly rounded, almost transverse. The reticulated, lateral part of the metanotum is bounded by a stout irregular keel. Clypeus longer than wide, opaque, finely aciculated, sparsely punctured, the apex rufous, with a broadly rounded shallow incision, the sides bluntly triangular. Basal abdominal segment, large, broadly rounded at the base, as wide as the 2nd segment, which ls a little wider than long ; the abdomen forms a longish oval and is as wide as the thorax. Female. Total length 13 m.m.

The apex of the 2nd and the 3rd abdominal segments closely. somewhat strongly punctured, the others more weakly punctured, the apical smooth, The species is larger and more strongly built than the average examples of *O. nasideus*, which it resembles in colouration and in the pale golden dense pile; the common species has the apex of post-scutellum tranverse, not gradually bluntly rounded, the pleuræ and metanotum are punctured, not closey distinctly reticulated, the 2nd abdominal segment is wider compared with the length, the last segment is entirely fulvous, the wings are much more largely suffused with rufe-fulvous and the nervures and stigma are more distinctly fulvous ; the metanotal keel, too, is more roundly curved.

Odynerus clavilinatus, sp. n.

Black, densely covered with fulvous pubescence ; a small spot on the sides of the clypeus above, the apex with the teeth, anarrow line across the base of pronotum, one of the same width along the sides, the base of post-scutellum, the sides of metanotum, the line roundly dilated outwardly above, tubercles, a narrow line on the apex of 1st abdominal segment, the apices of the others broadly, the whole of the last except for a triangular black mark in the centre of basal half, the apices of the ventral slightly more narrowly, the lines dilated in the middle and the last entirely, orange yellow, the under side of the antennæ dull rufous, the scape more yellowish in tint. The basal

half or more of the 1st and 3rd tibiæ and the whole of the middle yellow on the outerside. Wings rufo-fulvous, deeper tinted in front, the stigma and nervures of a deeper rufo-fulvous tint. Clypeus not much wider than long, the apex with a shallow rounded incision. Thorax longer than wide, the apex of post-scutellum gradually obliquely narrowed to a point. Apex of metanotum almost transverse, the sides on the upper half bounded by a broadly rounded keel; the apical slope from near the top closely roundly striated. 1st abdominal segment broadly rounded at the base, the 2nd wider than long, the apex and the 3rd and 4th strongly punctured. Female. Total length 11mm.

Head and thorax closely punctured, the head more closely and less strongly than the mesonotum, the latter less strongly than the scutellum. Sides of metanotum coarsely reticulated —punctured, as is also the apex of metapleuræ. Mesopleuræ strongly rugosely punctured. The pubescence is more silvery on the sides of the thorax than on the top. The legs incline to piceous in colour.

What seems to be the male has the head, thorax and abdomen more coarsely punctured, the clypeus and labrum are entirley yellow and there is a yellow line on the lowerside of the eye incision, the basal line on the pronotum is interrupted in the middle, there is a small yellow spot on the sides of the scutellum at the base, the yellow line on the sides of the metanotum is less strongly dilated at the base, the line on 1st abdominal segment is wider and rounded at the base, distinctly narrowed laterally and the apex of the 2nd abdominal segment is more strongly punctured and depressed. Clypeus large, a little longer than wide, the apex broad, transverse, the sides from the eyes obliquely narrowed. There is a short line between the antennæ, which are coloured as in the Female.

Odynerus trailii, sp. n.

Black, densely covered with pale golden pubescence, which is more silvery on the pleuræ; the underside of antennal scape, except at base, one opposite it, a line on the sides of the clypeus above reaching to the lower edge of the eyes, dilated inwardly on the top, a short oblique line on the inner side of malar space, a longish triangular spot on the base of mandibles, clypeal teeth, a line on the base of pronotum, a line of equal width on the base of post-scutellum, a curved line on the sides of metanotum above, the upper part straight, transverse, the outer longer, roundly curved downwards, reaching to the middle, a narrow obscure line on the apex of the 1st abdominal segments and broad lines on the 2nd to 5th, the whole of the 6th above and below, a narrower line on the apex of the 2nd ventral, dilated triangularly on the outerside, a broader line, rounded at the base, on the 3rd and the whole of the 4th and 5th orange yellow. Tibiæ broadly yellow on the outer side, the colour on the 4th hinder rufous in tint, perhaps through discolouration. Wings fulvo-hyaline, the apex paler, slightly tinged with violaceous, the nervures rufo-fulvous, the apical darker in tint, the stigma blackish. Clypeus as wide as long, the flat central part distinctly, but not very closely punctured, the apex with a shallow rounded incision, with stout lateral teeth. 1st abdominal segment short,

broad, cup-shaped, the 2nd wider than long ; both are smooth except the apex of the 2nd. Apex of post-scutellum bluntly rounded, the middle almost transverse. Female. Total length 11 mm.

Rio Purus, Amazonia.

(Prof. I. W. H. Trail, F.R.S.)

The flagellum below and the tips of the mandibles are rufous. Tegulæ black, an irregular spot of testaceous piceous colour on the outer basal half. Belongs to the *nasideus* group from the described species of which it may be known by the much more strongly punctured clypeus and by the different form of the metanotal keel, which in the other species does not run in a straight line to near the middle and does not form a sharp angle above the middle.

Zethus mexicanus, L.

—*recurvirostris,* DeGeer, Saussure, vespides, I, 12, 6-Z. *cyanipennis,* Erichson, Fauna et Flora British Guiana, III, 590. Demarara (Rev. W. Harper.)

Zethus cæruleopennis, F.

Saussure, Vespides, I, 10, 2, III, 115 Syn. Amer. Wasps., 16.

I have the var. *brasiliensis,* Saus., *l.c.* I, 10, 2, III, 115, from Trinidad.

Zethus binodis. F.

Saussure, Syn. Am. Wasps, 54, 50.

Zethus didymogaster, Spinola, Ann. Soc. Ent. Fr. X, 133 ; Saussure, *l.c.* 55.

There can be no doubt, as Saussure, suggests, that Spinola has described the Male for the Female. The museum specimens is a male. It has the clypeus wider than long, its apex bluntly rounded in the middle, with a distinct triangular tooth on either side. There is a wide furrow down the apical half of the scutellum ; it is more widely punctured than the mesonotum. Post-scutellum to shortly beyond the middle opaque, much more finely and closely punctured than the scutellum, the apex depressed, aciculated, bluntly rounded at the end. The centre and outer edge of the metanotum are bordered by keels, the outer stouter than the inner ; it is smooth at the base in the centre, the rest obliquely, irregularly, not very closely striated. The narrowed part of the 1st abdominal segment is as long as the narrowed part of the 2nd. There is a yellow spot in the eye incision, one on the upper outer orbits, and 2 on the apex of post-petiole, the basal the larger, triangular, the apical smaller transverse. Wings fuscous violaceous, the hinder paler. The apex of the antennæ and the apex of the fore femora, the tibiæ and tarsi rufous.

Baeoprymna gen. nov.

Abdominal petiole of equal width throughout, three-fourths of the length of the thorax, the 2nd segment not much shorter than it, much wider than the 1st, campanulate. Mandibles short, broad, narrowed at the basal third, the

apical two-thirds broadly rounded on the inner side, the outer straight, the whole forming almost a semicircle; there are no teeth. Clypeus large, forming almost a semicircle, the apex with a slight, shallow incision. Labrum large, triangular. Scutellum large, not much raised, depressed at the base and apex. Post-scutellum obliquely sloped, separated from the scutellum by a wide, deep furrow. Metanotum short, hardly longer than the post-scutellum, flat above, its sides bordered by a stout keel laterally, the apical slope steep, it, with the scutellums, form a slightly oblique slope, almost on one level, only separated by the divisions. Legs stout, the tarsal joints, spinosely dilated laterally.

The head is wider than the thorax; the temples wide, broadly rounded; occiput margined. Eyes large, parallel, not converging below; there is no malar space. Trophi moderately long. Base of thorax margined, transverse. Wings as in *Zethus*. This genus of *Eumenidæ* is sufficiently characterized and separated from *Eumenes* and *Zethus*, the only genera with which it could be confounded, by the broadly rounded, toothless mandibles, by the thorax, having a straight, oblique slope from the base of the scutellum to the apex of the metanotum and by the longish abdominal petiole being of equal width throughout, not narrowed at the base as in *Eumenes*, or at the base and apex as in *Zethus*. The head is larger, more cubital than it is in the 2 genera just mentioned.

Baeoprymna rufo-ornata, sp.n.

Black, a large semi-circular mark on the centre of the clypeus, commencing at the base, and extending shortly beyond the middle, a sightly curved line on the front uniting the antennæ, the outer part of the eye incision, a short oblique line on the vertex running into the eyes, the inner, upper half of the eye orbits, the base of propleuræ broadly, its apex more narrowly on the upper half and the top still more narrowly, the outer and apical edge of the tegulæ narrowly; the tubercles, a moderately large, oblique conical mark below, a small irregular spot on the sides of the scutellum, shortly beyond the middle, one on the outer edge of the post-scutellum and the mandibles rufous; the lower half of outer orbits, malar space, the sides and apex of the clypeus, leaving the upper reddish part as a large semicircular spot; the reddish markings on the head and thorax are edged with yellow; the apex of the 1st abdominal segment from the outer part of the middle above to the end of the sides narrowly and a narrower line on the apex of the 2nd all round clear yellow. Legs black, the anterior except the coxæ and the middle femora in front rufous. Antennæ rufous, darker coloured above, stout, thickened towards the apex.

Montezumia ghilianii, Saus.

An example is probably this species. It is said to be a very variable species by Saussure, Syn. Amer. Wasps, 122. It certainly differs considerably in colouration from Brazilian specimens.

Montezumia pallidimarginata, sp.n.

Black, without blue or violet reflections; the sides of the metanotum from the spine and the lower part of the spine pallid yellow, the knees and the claws

rufous ; wings fuscous violaceous, the anterior pair much paler ; the 1st and 3rd abscissa of radius equal in length ; the 1st roundly curved at the base, the 3rd slightly broadly rounded towards the costa ; the 2nd one-fourth of its length and scarcely half of the length of the space between the recurrent nervures. Pubescence broadly pyriform, as long as wide, its apex laterally bluntly shortly dentate ; the apical half irregularly longitudinally striated, the middle weakly striated and punctured. Ocelli in a curve, the hinder separated from each other by a slightly greater distance than they are from the eyes. Base of thorax transverse, margined. Apical third of mesonotum with 2 wide furrows. Apex of post-scutellum gradually narrowed to a rounded point. Sides of metanotum margined, a blunt wide tooth shortly above the middle. 1st abdominal segment longish cup-shaped, shortly pedunculated, the 2nd as wide as long, not much narrowed at the base. The puncturation on the scutellum is weaker and sparser than it is on the mesonotum, on the post-scutellum it is stronger, on the sides of the metanotum still stronger. Pro and mesopleuræ strongly punctured, the upper part of the latter obliquely striated. Metapleuræ irregularly obliquely striated, finely, obscurely so below. Female. Length 23mm.

Montezumia striatifrons, sp.n.

Black, with blue reflections, which are more distinct on the pleuræ ; both wings deep fuscous violaceous, the stigma and nervures black, 1st and 3rd abscissæ of radius equal in length, the 2nd fully one fourth of their length, and fully one half of the length of the space between the recurrent nervures. Clypeus closely punctured all over, but more strongly so above, the apex depressed in the centre, transverse. Vertex irregularly punctured and more or less striated, the front closely, strongly longitudinally striated. Ocelli in a triangle. Base of thorax transverse, margined. Apical half of scutellum depressed in the centre. Apex of post-scutellum broadly roundly narrowed. Sides of metanotum broadly rounded, the sides of apical three-fourths forming an elongated depression rounded on outer side, the inner, next to the central keel transversely striated. 1st abdominal segment cup-shaped, a pedicle twice longer than wide, at the base ; the apex with a longish, wide furrow ; the 2nd is wider than long, slightly narrowed at the base laterally, above depressed. Female. Length 23 mm.

There are no longitudinal furrows on the mesonotum ; there is a distinct crenulated one on the mesopleuræ bordering the upper basal half. Ventral surface of 1st abdominal segment weakly punctured.

Montezumia rodwayi, sp.n.

Black, the scutellums, metanotum except the base and centre narrowly and the sides and apices of the abdominal segments and the sides and base of the 1st ventral yellow, the lines on the 1st wider than on the others ; wings fulvous hyaline broadly in front to the stigma, the radial and cubital cellules tinged with fuscous, the hinder part almost clear hyaline, the costa and stigma rufo-fulvous, the nervures darker coloured ; the 1st abscissa of radius nearly as long as the 3rd, which is roundly curved

towards the radius, the 2nd about one fourth of their length and not much more than half of the space bounded by the recurrent nervures. Base of thorax transverse. Apex of post-scutellum gradually roundly narrowed to a bluntly rounded point in the middle. Metanotum broadly rounded laterally ; 1st abdominal segment cup-shaped, very shortly pedunculated, a large longish oval furrow in the cente of the apex, clearly narrower than the 2nd which is as long as it is wide at the apex and has the base roundly narrowed.

Female. Total length 14mm.

Head and thorax closely punctured, the top of the head closely covered with short black hair, the thorax with a white pubescence and pile. Clypeus longer than wide, the upper half closely, strongly, the lower more weakly and sparsely, the apex with a shallow, rounded incision. Ocelli in a wide triangle, the hinder separated from each other by the same distance as they are from the eyes. Malar space obsolete. Apical 4 joints of antennæ rufous below. The puncturation on the front runs into longitudinal striæ.

Montezumia leptocera, sp. n.

Black, almost the basal half of the antennal scape and the flagellum below rufo-testaceous ; the apical two-thirds or so of the mandibles piceous red, the triangular hollow at their base, a line on the sides of the clypeus from above the middle and a line on the eye incision commencing at the lower half, pallid yellow ; the knees—the apex of femora more broadly than the base of the tibiae rufous ; wings hyaline, the fore half broadly rufous ; the costa and stigma rufous, the nervures pallid testaceous ; the 1st abscissa of radius longer than the 3rd, but not so long as it and the 2nd united, the 2nd not one-fourth of the length of the latter, which is about half of the length of the space between the recurrent nervures. Ocelli in an equilateral triangle, the hinder separated from each other by the same distance they are from the eyes. Clypeus longer than wide, the apex transverse. Post-scutellum large, gradually narrowed to a bluntly rounded point. Metanotum bluntly rounded laterally, short, steep. 1st abdominal segment longish cup-shaped, with a short pedicle, the apex smooth in the middle, not furrowed. 2nd segment hardly one quarter longer than wide, not much narrowed at the base. Female. Length 17 mm.

Front and vertex thickly covered with short, stiff black pubescence ; the vertex weakly, the front more strongly punctured and irregularly longitudinally striated. The pubescence on the mesonotum is shorter, sparser and not of such a deep black ; on the pleuræ it is sparser and pale. The basal ventral segment is pallid yellow and strongly longitudinally striated.

Eumenes lineatifrons sp. n.

Rufous, the 5th and following joints of the antennæ broadly above, except the apical, a line across the middle of the front extending into the outer edge of the eye incision, a broader one across the vertex enclosing the ocelli, the occiput except round the outer edges, the base of the mesonotum, the transverse part, produced into a narrower line, narrowed at the apex as long as it is wide, scutellar depression, an irregular line, widened below, on the upper, apical half of the meopleuræ, the base of the metapleuræ more broadly and regularly, the base of 1st abdominal segment narrowly all round, a broad line

down the dilated apex, bifurcated at the base, narrowed at the apex and the whole of the 2nd segment, black; wings fuscous, paler at the apex, the costa, stigma and transverse basal nervure rufous, the other nervures black; the 1st and 3rd abscissæ of the radius of equal length, the 1st almost straight, oblique, the 3rd broadly roundly, curved to the radius, the 2nd abscissa about one-fourth of their length and not half the length of the space between the recurrent nervures, the 2nd transverse cubital has the basal two-thirds obliquely sloped towards the apex of the wing, the hinder part being almost straight, the 3rd cubital cellule as a consequence being much wider in front than behind; the 1st recurrent nervure is roundly curved in front. Clypeus twice longer than wide, the top rounded; the apex with a shallow rounded incision. Thorax twice longer than wide, the base not quite transverse, the sides rounded. Apex of post-scutellum bluntly rounded. Metanotal furrow narrow at the basal fourth, then becoming gradually widened. 1st abdominal petiole as long as the head and thorax united, the basal third narrowed, the dilated part with a shallow, not clearly defined furrow down the middle; the 2nd segment longish, more than twice longer than it is wide at the apex, narrowed at the base, the middle tuberculate laterally. Female. Length 23mm.

Thorax narrower in front than in the middle, the mesonotum rounded at the base, becoming gradually widened to the tegulæ, the apex transverse.

Belongs to Saussure's Division "Zeta" (Syn. Amer. Wasps, 105) and comes near to *E. canaliculatus*, Oliv. of which it may form a local race.

Eumenes demararaensis, sp.n.

Black, the inner side of the eye incision, a narrow line on the upper part of the outer orbits, a longish conical spot, the narrowed end on the inner side, on the base of propleuræ, a narrow line round the edges of the pronotum, widened at the base in the middle, a longish slightly curved spot, the narrowed end below and rounded, on the upper apical half of the propleuræ, the point behind the tegulæ, a broad line, widened laterally and reaching to the middle, on the base of the scutellum, the post-scutellum, a square spot on either side of the base of metanotum, a longish triangular mark, the narrowed end above, on the sides below, commencing shortly above the middle and going slightly on to the pleuræ, a narrow line on the apex of the 1st abdominal segment, with a shorter one on the sides at its base, a wider one on the 2nd, its central (and larger part) narrower than the lateral, a wider line dilated in the middle, on the apex of the 2nd ventral and more obscure (perhaps discoloured) lines on the others, yellow. Antennæ rufous black above, the scape more broadly black than the flagellum. Ocelli in a curve the hinder separated from each other by a slightly greater distance than they are from the eyes. Clypeus widely pyriform longer than above, but not much, strongly, but not very closely punctured, the apex with a distinct, triangular incision, the sides forming triangular teeth. Thorax fully one fourth longer than wide, the base transverse, with the sides broadly rounded. 1st abdominal segment as long as the thorax; from shortly beyond the middle it becomes gradually widened to the apex, the node forming an elongated triangle. 2nd segment slightly but distinctly longer than

it is wide at the apex, smooth, shining. Wings hyaline, the apex of the costal cellule and the radial fuscous violaceous. Female .

Length 7 mm.

Front and vertex finely, closely punctured distinctly more finely and closely than the mesonotum. Thorax srongly punctured, the punctures clearly separated, the anterior part of the mesopleuræ much more coarsely, almost running into reticulations ; its apex and the base of the metapleuræ almost impunctate. The basal half of the 2nd ventral segment is obliquely sloped. Hing legs black, the 4 anterior tibiæ and the apex of the femora broadly lined with yellow. The middle of the abdominal petiole is widely furrowed on the sides, the node is brownish below. The pubescnce on the front and vertex black, on clypeus white, on the eye incision and clypeus there is a dense silvery pile.

Eumenes 8-*maculatus*, sp. n.

Black, densely covered with a silvery pile ; 2 small semicircular marks on the top of the clypeus, a broad line, narrowed towards the middle, on the base of the pronotum, a narrower one on the sides, widened in the middle, a narrow line, of equal width, on the base of scutellum, post-scutellum, an oblique, quadrangular spot on the base of the metanotum at the sides, a longish triangular mark, the narrowed end above, on the apical half laterally, a line on the apex of the 1st abdominal segment, with a short one at its base on the sides, a slightly wider one on the 2nd, with a wide, regular incision on either side of the middle and wider ones, tinged with rufous, on the others, yellow, the lines on the 2nd and following going all round . Legs black, the apex of the femora and all the tibiæ for the greater part yellow ; the 4 front tarsi for the greater part black. Wings clear hyaline, the radial cellule slightly infuscated, the nervures and stigma black. Female.

Length 7 mm.

Clypeus not much longer than wide, sparsely, rather strongly punctured, the apical incision not deep, semicircular, the teeth triangular. Front and vertex closely, strongly punctured (but not so strong as the thorax) except above the antennæ. Ocelli in a curve, the middle one not much in front of the hinder. Thorax about one quarter longer than wide, its base bluntly rounded ; the sides not angled ; the scutellum more strongly punctured than the mesonotum, which is more closely punctured than the metanotum—Mesopleuræ more strongly punctured than the mesonotum ; the metapleuræ not quite so strongly and more sparsely punctured, 2nd abdominal segment not much longer than it is wide at the apex, impunctate.

Eumenes rotundicollis, sp. n.

Black, shining, the head and thorax densely covered with silvery pile, the lower part of the metapleuræ and metanotum densely with white hair, a transverse mark, broadly roundly incised in the middle above, the sides rounded, on the top of the clypeus, a transverse spot over the antennæ the inner part

of the eye orbits, the mark incised in the middle, the upper projection the smaller, a narrow line on the upper fourth of the outer orbits, a broader line round the top of pronotum, a large conical mark on the base of propleuræ, a small curved spot, its lower part narrowed, on the upper basal part of mesopleuræ, the horny point behind the tegulæ, the depression at the sides of scutellum, post-scutellum, a small squarish spot on the base of metanotum at the sides, a large mark on the sides of the lower half, extending from the pleuræ onto the metanotum where its lower half is dilated and the apices of all the abdominal segments from the 2nd yellow; the lines on the apical ones wider and more irregular; the line on the 2nd ventral clearly divided into 3, the central straight, wider than the lateral which are dilated on the outer side, the under side of the 1st abdominal segment, except for a triangular black mark at the base of the node, and a broad band above near the middle testaceous. Antennæ black above, the basal third of the scape yellow, the rest rufous-testaceous. The apex of the femora, the tibiæ and the tarsi yellow. Wings hyaline, the radial cellule with the apical three-fourths smoky, the stigma and nervures black. Male.

Length 7 mm.

Thorax twice longer than wide, the base distinctly roundly narrowed. Metanotum short, the sides broadly rounded, the centre hardly depressed and with a narrow furrow of equal width throughout. Petiole, if anything, longer than the thorax; the narrowed basal part slightly longer than the dilated apex, which becomes gradually widened; above it is rounded gradually; the basal part more oblique, less rounded than the apex. 2nd segment as long as it is wide at the apex, the base narrowed roundly, the top obliquely roundly sloped. Clypeus as long as wide, aciculated, shining, the middle with scattered punctures, the apex depressed, the sides rounded, hardly forming teeth. Front and vertex closely and finely, the thorax more strongly punctured, the scutellum more strongly than the mesonotum, the metanotum, if anything, more strongly than the scutellum and with the punctures more widely separated. Ocelli in a curve, the middle only slightly in front of the others. Apex of post-scutellum gradually narrowed to the centre, the sides straight oblique.

A distinct species, easily known by the roundly narrowed, not wide, transverse, base of thorax by the metanotum not being depressed in the middle with the depression widened at the apex and by the wide pale fulvous band on the petiole. The 1st recurrent nervure is interstitial as in *E. totanacus*. Saus., but the scutellum is not "parted by a strong groove," nor is the antennal hook "very small," but longish and stout; and the body is distinctly greyish, through the dense grey pile, which is not the case with *totonacus*, which has also the metanotal furrow of the usual form, *i.e.* widened below.

Eumenes acapulcensis, sp. n.

Black, densely covered with a white pile, which is, as usual longer and denser on the metanotum, 2 oblique spots on the top of the clypeus, a small one on the inner edge of the eye incision, a line on the top of basal slope of pronotum extending on to both sides of the keel and dilated laterally, a line round

the top from the base to the tegulæ, the apex of tegulæ narrowly, the point behind them, the apical half of post-scutellum, the top of mesopleuræ broadly, a line down the base, largely triangularly dilated at the base above, the sides of the prothorax broadly, more broadly on the metanotum than on the pleuræ, the sides of the node of 1st abdominal segment broadly the apex above narrowly, the apices of the others more broadly all round and the sides of the 2nd below, red ; the apex of the femora, tibiæ and the tarsi yellow, tinged with rufous. Wings hyaline, the radial cellule smoky, the costa and stigma black. Ocelli in a broad curve, the hinder separated from each other by a distinctly greater distance than they are from the eyes. Clypeus, if anything, wider than long, strongly but not closely punctured, the apex with a shallow triangular incision, the teeth bluntly triangular. Thorax about one half longer than wide, the base not quite transverse, its sides broadly roundly narrowed. Apex of post-scutellum obliquely narrowed to the middle. Metanotum with a shallow furrow, widened gradually towards the apex. Abdomen as long as the thorax, the node one-third of the length of the segment, gradually widened towards the apex. 2nd segment longer than it is wide at the apex. 2d segment longer than it is wide at the apex, the base broadly, gradually roundly narrowed. Thoracic punctuation strong, close, running in places into reticulations ; there is a smooth, semi-circular space in the basal centre of mesopleuæ. The basal half of the antennal scape and the greater part of the basal 2 joints of the flagellum are rufous.

I, at first, thought this species might be *E. regulus*, Saus., with which it agrees closely in general colouration (*regulus* is very variable, in colouration) but Saussure's species should be readily know from mine by the base of thorax being transverse and with the sides angled, while in *acapulcensis* it is broadly rounded and not angled laterally. The general reddish colouration is pretty much as in *E. aviculus*, Saus. I have this species from Belize, but, that is larger and, otherwise, may easily be known by the 2nd abdominal segment being clearly punctured.

(*To be Continued.*)

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Owing to pressure of space the Journal of the Society's Proceedings for the half year ending 30th June, 1912, will be published in the December number.

TIMEHRI:

THE JOURNAL OF

THE ROYAL AGRICULTURAL AND COMMERCIAL SOCIETY OF BRITISH GUIANA.

VOL. II. DECEMBER, 1912. No. 2.

FOREWORD.

The purpose foreshadowed in the Editor's foreword to the first number of the present volume has not been lost sight of in this one. All the promises of contributions to this end have not, it is true, been fulfilled, nor, again, has the big subject of "Guiana whose rich feet are mines of gold" been exhausted, but we are still able to present to our readers some reflections of the doings of men in the colony and of the interests and problems which engage their minds.

The first article from the pen of the Curator, Mr. James Rodway, F.L.S., touches the chord of romance and mystery which breathes in the dark forest lands of the colony, "the deep vibrations of whose witching song" are retained by every ear which has listened in their depths, until the memory blends fancy and reality in monstrous images of Eldorados and anthropophagi such as rioted in the minds of men in the days of Good Queen Bess.

The real aspect of the "mines of gold" is presented in an article by Mr. W. A. Dunn whose long connection with the mining industry in Guiana enables him from his stores of experience to put pearls of knowledge within reach of his readers.

Drs. K. S. Wise and Minett contribute a valuable paper dealing with the results of their exhaustive bacteriological study of the water supply of twenty-four estates in relation to the health of the communities supplied. In giving space to the record of pioneer work of this kind, *Timehri* is not only securing for its pages a permanent place amongst documents of note in the progress and well-being of the colony, but is also bringing under the notice of all whom such questions concern directly authoritative information which may form a reliable basis for measures tending to these ends.

In "Our Villages and Country parts" the Rev. J. B. Cropper considers some aspects of communal life and customs to which more attention should certainly be paid in the near future. In "The Colony's

Foreign Trade" Mr. J. Van Sertima follows up the economic questions opened up in his article in the last issue of this journal. His article brings together figures highly valuable for comparisons from which conclusions as to the commercial position and tendencies may be drawn. The vexed question of the exact significance of the export-import ratio is touched upon, and there will doubtless be different opinions upon the moral to be drawn from the excess of one or the other, but this in no way affects the value of the writer's contribution to the subject.

Mr. Fred: C. S. Bascom's article on "The Labour Question" is likely to attract as much attention as any, and deserves careful study and consideration. In a land in which millions of acres are not only unexploited but unexplored, the population question, as distinct from the labour question, may well engage the thoughts of every citizen, if only because the upkeep of a large estate with small resources is likely to be trying in proportion to the plenitude of the acres and the paucity of the means to work them. As a resident sugar planter, engaged in the administration of his own property, Mr. Bascom's views on the labour problem in relation to production for the world's markets should have great weight with those interested directly and vicariously in the same industry.

In the article on "Labour and Food" the writer has found out the fact referred to in another article that "of statistics of our home trade and industries there are none," but states an aspect of the problem of production which some may think worthy of further investigation.

"A View of Canadian Law" presented by Mr. Justice Riddell of Toronto so combines expert statement of doctrine and procedure in the Courts of Canada with a humorous appreciation of the relations of law and life, that others than our legal readers will find instruction and entertainment in its perusal.

In two articles on our East Indian citizens the venerable Archdeacon Josa and Mr. E. A. Luckhoo touch upon the characteristics and customs of this people in their western place of sojourn. Mr. Luckhoo, as one of the race who has raised himself to prominence in the community, gives perhaps the best practical answer to questions as to the position of the East Indian immigrant, questions which have engaged the attention of Royal Commissions and aroused from time to time excited, if ill-informed, criticism in Parliament and popular meeting house, when he points to his compatriots in civil employment, Government Medical Service, and professional employment, some with University degrees and qualifications the means to which careers were put within their reach by the immigration system of the colony.

"Moruca" by the Rev. Father Lickert, S.J., describes in sympathetic vein a bush pilgrimage and gives the reader some pretty sketches of Aboriginal Indian life. Father Cooksey, S.J., deals with the Indians of the great North Western District of the colony, and

together with the preceding paper brings us into intimate acquaintance with the Mission work carried on by their communion in this partially opened up area of the Essequebo Province.

Dr. Godfrey's address on "Village Administration and Local Government" was, it will be remembered, delivered to the Society on September 18th, of this year. The comprehensive review of the history of local administration will be found an important contribution of data for the statesman or student of questions affecting the amelioration and improvement of the condition of the peasant population of the colony. Than Dr. Godfrey no one is better equipped to speak on this subject to which he has devoted both time and earnest effort for many years.

"Some Graves of the Colony" by Mr. McTurk embodies the painstaking labour of many a journey to abandoned sites of old-time habitation and has the value which attaches to accurate records of monuments which furnish the raw material of history.

In lighter vein by Mr. R. P. Stewart, the artless log of a short holiday trip "To Paradise" gives lively glimpses of stream, forest and savannah on the Berbice Rio, Wikki and Itani Creeks, as seen by an alert eye in this year of grace 1912; a diary of who knows what value to future travellers thitherward.

"St. George's Cathedral" is the subject of a sketch by Dean Sloman, and just now while the fabric is undergoing reconstruction is a timely notice of an interesting building; Mr. A. A. Thorne contributes his views on "British Guianese Progress and Limitations." Mr. A. D. Ferguson, Honorary Secretary of the B.G. Philatelic Society, gives our readers the benefit of his life-long study of the "Early Postage Stamps of British Guiana." In "Lime-Growing on Clay Soils" Mr. Edgar Beckett contributes some results of his unique experience in the citrus branch of those planting industries which have in the old bad past been regarded as "minor." Mr. Harold W. B. Moore, from his store of accurate and painstaking observations of insect life in the colony, gives a further contribution on the "Ways and Habits of Butterflies and Moths," and in the same department a further instalment of Mr. P. Cameron's determinations of the Hymenoptera of Guiana continues the first study of a sort at all adequate or exhaustive of an order of insect life in which the colony so richly abounds. It cannot be considered inconsistent with the plan of such a journal as *Timehri* that a large space has been given in its pages to this work, and if the revelation of our riches in one order attracts the attention of scientific enquirers to other orders, Mr. Cameron's work will have a value apart from its intrinsic worth as a stimulus to the exploration of practically unexploited mines of knowledge.

The Museum.

For some months the Museum Committee has been engaged in considering steps for the improvement and better display of the Natural History collection. The Rubber and Balata case has been

housed in the corridor near the Economic Section, but its furnishing is still in an embryo state. We take the opportunity to appeal to all members who have an interest in these industries and facilities for obtaining specimens, illustrative of them, to send them to the Curator. In this connection we have to lament the loss of Mr. F. A. Stockdale, whose valuable advice and assistance had been promised in the arrangement of the case, to whom, at the same time, we offer our very hearty congratulations on the recognition, which his promotion implies, of those qualifications which cause his removal to his new appointment, to leave a vacancy which it is hard to fill. Four new cases are under construction to replace the time-worn and never very suitable cases in which some of the furred and feathered species are now exhibited. Meantime a number of sub-committees are at work reporting on the condition of specimens in several orders. The information thus gathered is intended to guide the Directors in laying plans for a complete rearrangement, and, where desirable, renewal of specimens, many of which, even when originally well prepared, have lost their pristine freshness.

Of course, this work will call for heavy expenditure, and it is sadly to be confessed that the resources of the Society are at present unequal to any added strain. Yet the Directors are getting ready for a day of better things, which, they are not without hopes, may be near at hand. They propose by the steps already and about to be taken that, so far as is possible with the means at their disposal, when that day comes it shall not find them unprepared. The spirit of undaunted optimism, for which the Society under the inspiration of its brilliant President, has come to stand, would be poorly illustrated if "when it rains porridge" the bowls were unready. We do not believe that the neglect of the Museum by private donors and the indifference to the vast importance from every economic standpoint of scientific inquiry, in which an adequate Museum holds an absolutely indispensable place, can long continue in face of the many influences at work in the direction of enlightenment. Should the Society again appeal to merchants, planters, and people interested, whether dwelling in or out of Guiana, we have a strong belief that a golden shower would fill the calabash. The Government also, spite of many demands upon its resources, is unlikely to consider the claim of the Museum for greater support the least important or least pressing which offers itself for consideration. Lack of funds may compel the postponement of many things which would tend to well-being and progress, but the neglect of due payment to knowledge raises a emulative debt of usury which even a wealthy state cannot afford to pay.

The Library.

The additions to the Library during 1912 number about a thousand volumes and include a collection of standard works in poetry and fiction. They are in many cases new, and in others replace damaged and worn sets. The Book Committee has tried to please the novel readers,

especially ladies, and at the same time secure a good selection of works in other classes. When funds will admit of the renewal of more of the worn-out books, it is hoped that the proposed new catalogue will be prepared.

Our President's Promotion.

We cannot conclude this foreword without expressing the widespread gratification felt by the Society in the appointment which has been conferred on its President. In the promotion of Mr. J. J. Nunan to this important official position we rejoice not only because it is a recognition of his brilliant legal and scholarly attainments, but because at the present time no choice which might have been made would have been likely to provide the colony with an official so thoroughly interested in and acquainted with its needs, nor with such an alert perception of the directions in which effort may best be expended for their satisfaction.

The Scientific Assistant Editor,
for the Editorial Committee.

THE GOLDEN CITY OF MANOA.
From De Bry.

2.—THE HEADLESS MEN.
From De Bry.

GUIANA: THE WILD AND WONDERFUL.

Introductory to a Series of Lectures.

By James Rodway.

"Guiana, whose rich feet are mines of gold,
Whose forehead knocks against the roof of stars,
Stands on her tip-toes at faire England looking,
Kissing her hand, bowing her mighty breast,
And every sign of all submission making,
To be her sister—"

Such was the language used by the poet Chapman when he wanted to glorify the exploits of Sir Walter Ralegh and his "Discovery of the large, rich and beautiful empire of Guiana." No doubt Ralegh believed in the myth of El Dorado, the gilded King, and the golden city of Manoa, as so many others did, who thought it the richest place in the world and, in very many cases, lost their lives in the search. It was a mysterious and wonderful country, where lived "anthropophagi and men whose heads do grow beneath their shoulders," amazons, mermaids and dragons. Even the name Demerara was changed to De Mirara on some maps as if it meant the wonderful.

Where nothing was known everything could be imagined. No doubt the early voyagers asked questions and got answers, but these were necessarily vague, for even when, as in the case of Leonard, the Indian from the Oyapok who lived with Ralegh for several years in the Tower,* the interpreter knew some English, he could hardly be expected to understand such questions as were commonly asked. Here were Englishmen who did not yet appreciate the idea that America was not the India of Marco Polo and Mandeville—they expected to find monsters and were encouraged in these expectations. To go a little farther and state that these wonderful monsters and cities of gold had actually been seen was only a step. The artists of that day drew their pictures from such reports, aided by their own imagination; hence we get such views as are here figured. The cannibal was a reality, but the amazon, headless men and mermaids have never been found.

The real Guiana was however quite as interesting as the ideal. The powerful Carib with his weapons of wood and stone preserved the country from Spanish raids in search of gold, slaves or cassava bread. To this early period belongs the story of the origin of the name of Essequebo, River of Fire Stones. Long, long ago, said my Indian friend, Spaniards came into the rivers of the North West, hunting for slaves, with powerful

* In the Chelsea Parish Register, according to Lyson, was a baptismal entry "Charles, a boy, by estimacon, 10 or 12 years olde, brought by Sir Walter Rawlie from Guiana, baptised 13° Februarii, 1597-8."

dogs that were fed upon Indian babies. The people fled to the great river, taking with them their pepper-pots and other necessaries, including the stones on which these pots are supported. These stones were valuable because none were to be got in the lower lands of the coast. However, one party in coming through one of the channels between the islands, was met by chopping seas which upset every corial and overwhelmed people. pots and firestones. The people suffered little, most of their pots were recovered and put back into the corials, but the firestones quickly sank out of reach. Hence this great river became the River of my firestones (Dissekebe).

The two great tribes, Arawaks and Caribs, were continually fighting with each other and must therefore have been different from our Indians of to-day. The Captain's position was by no means a sinecure ; he must undergo severe trials of endurance before his election. The illustrations of such tortures are copied from Van Berkel's little book, 1695, and purport to be what he saw in a journey from Fort Nassau, Berbice, to the Demerara, when on a visit to Kyk-over-al.

These old pictures, although by no means life-like, represent the ideas of the country and people as given by the writers to draughtsmen who otherwise knew nothing of them. It follows therefore that none of them represents the figure of the real Indian and very few anything like their habitations. The European type was evidently the model for every race and people, and the surroundings were as plainly European landscapes. In the two pictures from Ralegh's voyage we see the voyagers fully dressed in their finest clothes, when on a river journey in open boats, and the knight sitting with the Indian Chief in an elaborate tent which could not possibly have been carried on such a journey.

Possibly the most curious thing in the old pictures is the armour-clad man of the time. It is very difficult to conceive of a journey in an open boat with a burning sun pouring down upon steel plates, for even the woollen underclothing must have been scorched. Yet it is an undoubted fact that armour was found in quantity when Cayenne was captured in 1667, and we may presume that it was worn to some extent. The Mexicans used quilted cotton and this was soon adopted by the Spaniards as a safe and effective protection against arrows and spears.

That the rough thick woollen clothing of Europe was unfit for the tropics was something to be learnt from experience. Even yet Europeans have not appreciated the fact that everything worn here should be light and loose. When we read that the people of Surinam in 1684 wondered that Governor Sommelsdijk *wore white clothing and bathed every day*, we can appreciate the advances made. Even a century ago an official was supposed to sit down to dinner in the skin-fitting uniform of that day. Charles Waterton tells how the Spanish Governor of Guayana went to dinner and how he got up and excused himself to lay aside his

3.—BERBICE MERMAIDS.
From Britannic Mazagine, 1805.

4.—THE TWO-FINGERED MAN.
From Hartsinck's Beschryving.

official uniform. Waterton was very glad to follow suit. The Dutch planter ultimately learnt that a loose linen covering and a broad hat were the most suitable and healthy.

When Van Berkel went overland from Fort Nassau to the Demerara there were no settlements on that river nor even on the Essequebo below Bartica. All the coast was a wilderness and not the least clearance could be seen anywhere. A stranger might easily come to the conclusion that no white men lived here; nothing could be seen but the line of couridas with here and there an opening into a river. The trading settlements of Essequebo and Berbice were of such small importance that even when reached they made little impression. True. Kyk-over-al was built of stone and brick, and in its insulation, no doubt, well proteeted against Indian foes, but Fort Nassau could be fired and could hardly be expected to stand a siege. It is reported that the defenders of Kyk-over-al once repelled a party of corsairs by pouring melted fat over them as they attempted to mount the steps.

The traders from Kyk-over-al and Fort Nassau made long journeys in the interior and could, no doubt, have told stories of what they had seen and heard. But, they thought only of their bargains —what could be got for a pound of beads, an axe or a hawk's bell. The only wonder seen was the Crystal Mountain, which shone in the sunlight like a big diamond; possibly this may have been an exaggeration of Roraima.

Whether the pictured rocks were noticed in early times is not recorded—they were however seen by Dr. Hortesmann in 1749. Possibly also some were engraved or touched up at this period, although it appears as if most of them were of an earlier date. The fact that a figure of a ship was seen by Humboldt goes to prove that this particular Timehri rock was engraved after the arrival of the white man. This however is not strange in face of the fact that picture writings are still being made on some of the branches of the Rio Negro.

This was reported by Dr. Theodore Koch-Grunberg in his book Sudamerikansche Felszeichnungen, 1907, in which a flood of light is thrown upon these supposed ancient relics. In his journeys 1903-5 on the Upper Rio Negro and its branches he came across a fair number of rock pictures, most of which he figured. He does not agree with the opinion that they are ancient, in fact he saw some that could easily be recognised as newly cut. Nevertheless some of the tribes ascribed them to an ancestral hero, Yaparkuli. Possibly the aboriginals of Guiana may be near the truth when they say that some ancient tribe engraved them, and it is not unlikely that the descendants of this tribe may be now in the Upper Rio Negro and still at work on similar figures.

The learned Doctor considers that many of the figures represent dancers in their elaborate dresses. Certainly the more ornate answer to such an identification; two of those in our block can be easily recognised and those from the branches of the Rio Negro, although

varying greatly, are of the same type. The dancer has his feather crown and cloak of palm leaves, the hands and feet being covered by the latter. Where only a head appears (sometimes presumed to be the sun) the figure is imperfect, and it is suggested that these are retouched and elaborated at later periods. The Doctor found examples which had been recently deepened and is of opinion that most of them are the result of intermittent work. Two elaborate figures, which could only have been a few days old, were found on clay banks; these would naturally be obliterated by a flood. There was no difficulty in identifying some of them such as the King vulture and butterfly. The former is a common emblem in Mexico and is often figured on the old pottery found in our kitchen-middens. Sharp-pointed stones are used, together with wet sand, but the complete work naturally takes up much time; possibly the engraver gets tired and leaves his task unfinished. A stone pick we have in the Museum would be a very useful tool for such a work.

The suggestion that the figures are connected with dances is confirmed by the fact that some of them are like what we have as ornaments to dancing sticks. Among them are conventional half-moons, armadillos, birds and fishes. The block for this journal contains three examples of the dancers, only one of which may be considered complete, a turtle with eggs, frogs, two monkeys with curled tails, a lizard, a coiled snake and a wheel-like figure.

We may dismiss the idea that the Timehri figures have a historical significance. The real esoteric meaning will probably be found if we ever get to the significance of the dances. That something is meant by every detail is practically certain, but only the initiated Peaiman knows the secret and he is bound to keep it from the white man.

Dr. Koch-Grunberg found 39 examples of Timehri rocks, 19 on the Rio Caiary-Uaupés, 9 on the Aiary and the remainder on the Negro and other branches. The number appears to increase as we get away from the settlements.

When we read the old books we find many a tale which can hardly be taken seriously. Sometimes a monster or freak is taken as representing a tribe or people, such as the Touvingas of Hartsinck who are represented with claws like a crab on both foot and hand. Probably only one or two cases were found of such a malformation and the picture is no doubt an exaggeration. Possibly other old stories grew up from such unique malformations.

Everyone looked for wonders and in many cases found or invented them. Bancroft in his "Essay on the Natural History of Guiana," 1769, figures a real two-headed snake as an Amphisbœna to which it bears no resemblance. Pythons or camoudis of enormous lengths were reported; ninety feet long and as big round as a barrel was the general idea. Of course they were considered very dangerous; and stories of narrow escapes were told where the snakes rushed upon travellers and coiled

5. THE REAL BUSH NEGRO or WILD MAN.
From Stedman's, Surinam.

6.—WATERTON'S "WILD MAN OF THE WOODS."
From Waterton's Wanderings.

round them in ways quite impossible for any serpent. I have seen a picture of such an attack where the reptile has its back arched like that of a cat!

Bush negroes were a real danger to the early colonists and were probably responsible for stories of jumbis, duppis, didies and akreos. They were the wild men of the bush and in most cases were much dreaded by the plantation slaves. In 1793 it was reported that a slave sent aback of Peter's Hall to cut bush-ropes was almost frightened to death. In pushing his way through the tangle he heard a bell ring overhead, and at once a frightful naked monster appeared and pointed a gun at him. The slave ran back without his bush-ropes and was too much afraid of the bush negro to go back alone. An expedition to the place ended in the capture of a gang of these savages and destruction of their hiding-place.

The Indian Kanaima, or avenger of blood, has helped to frighten the negro and boviander, as well as his possible victim. This tiger or camoudi kanaima is considered something more than the mere man—he is a demon, or possessed by one. When a glimpse of him is obtained everyone in the neighbourhood fears to go out alone. My boatmen have told me stories of these dreadful personages and of their tracking their victims, which suggest cunning and endurance almost preternatural. One old black man had seen a didi peeping round a tree-trunk, but of course he did not attempt to find out whether it was a kanaima. It was as far as he could see in a frightened glance, a small hairy man. He dared not look farther but ran off for it was highly dangerous to even peep at it. A month or two ago a balata-bleeder hinted to me that there were still didis, akreos, duppies and other strange and dreadful creatures to be found. He was of course brave enough to run the great risk of encountering such monsters, but he hesitated when asked to give some idea of the locality. As for taking anyone to investigate, that would bring trouble and make his work impossible.

Charles Waterton tried to poke fun at these wild men of the woods. His "Nondescript" was a triumph of the art of taxidermy, the head and shoulders of a red howler; he spoke of it in a very ambiguous way in the "Wanderings," but here in Georgetown he put it on show as the head of the real *wild man of the woods*, and gave an account of its capture. Hundreds of people went to see it; some wondered at such a curiosity, others wanted to find out how it was done. Letters were written to the Guiana "Chronicle," poking fun at Waterton and his wild man; we can picture the genial traveller quietly chuckling at their mystification.

Waterton did much to put naturalists right on many points. His writings on monkeys, the sloth and snakes, show that he was a most careful observer. He crititised the pictures accepted by the closet naturalists, as well as specimens in the Museums. Everything was wrong and he was able to tell them how they could be put right. When attacked

his retorts were often humorous, sometimes hardly what we should now consider courteous. At the same time, it was no doubt galling to have his work criticised by people who knew nothing of the life-history of animals. A century ago literary men like Oliver Goldsmith compiled what were called Natural Histories at the request of booksellers; these were compilations from any and every source, often jumbles of refuted errors. Sydney Smith was one of this class, no doubt a good writer on subjects within his knowledge. Yet, his review of the "Wanderings" is an example of ignorance. Now-a-days such a book would be generally reviewed by a naturalist. No doubt Sydney Smith was clever with his pen when he wrote :—

> "How far does the gentle reader imagine the campanero may be heard, whose size is that of a jay? Perhaps 300 yards. Poor innocent, ignorant reader! unconscious of what Nature has done in the forests of Cayenne, and measuring the force of tropical intonation by the sounds of a Scotch duck! The campanero may be heard three miles!—this single little bird being more powerful than the belfry of a cathedral."

* * * * * * * * * * * * *

> "The Yorkshire gentlemen have long been famous for their equestrian skill; but Mr. Waterton is the first among them of whom it could be said that he has a fine hand upon a crocodile."

The cayman incident was continually misrepresented. In one of his letters Waterton said "I wondered much that he (a writer in Fraser's Magazine) should have invented such a silly tale as that of my riding on a cayman across the Orinoquo."

The following extracts from his letters show his opinion of the closet naturalist :—

> "Our English naturalists will swallow anything."

> "You and I have it fully in our power to dress over those who defile the science by their pedantry, ignorance and lies."

In a letter to Professor Jameson he said :—

> "If the contents of this letter should sting you, pray reflect, sir, that you deserve to smart a little for your wanton imprudence in holding up to public animadversion the conduct of a gentleman who has never used you unkindly either by word or deed. You are a regius professor with above forty titles after your name; I—am a private individual, scarcely known, whose care it is through life never to be the aggressor, but who will always resist to the utmost any attack made upon him, come from what quarter it may."

The wonders of Guiana have not been lessened because we have got rid of a lot of fancies. The real is even more striking and beautiful. The sloths, monkeys and snakes have lost nothing by stripping off their mythical coats. The red howler is still heard in the forest although we do not credit him with holding conferences or preaching in the wilderness.

7.—THE CAYMAN OR DRAGON
From Gottfreid's Reysen.

8.—RALEIGH'S RECEPTION IN GUIANA.
From Gottfreid's Reysen.

9.—CHARLES WATERTON.
From Waterton's Essays.

10.—WATERTON'S HEADQUARTERS ON THE MIBIRI CREEK.
From St. Clair's, West Indies.

We get rid of the monsters and raise up pictures of beasts, birds and insects all the more interesting because they are true to life. The wonders of the world are a great deal nearer to us than is generally supposed.

Ages ago discoveries were made by the American peoples which are probably more striking than anything known in the Old World. To discover that the poisonous root of the cassava could be utilised for food was, no doubt, a grand step towards civilisation. Where this discovery was first made is impossible to tell, but it was probably near, if not actually in, Guiana. We can hardly conceive of such a discovery being made by one person; probably many persons died before the proper means of eliminating the poison was discovered. Not only was one food product discovered but a whole series. First, probably came selection by which the non-poisonous root was obtained, then the baking of cassava cakes which could not be too thick or some poison might be retained, followed by preparations such as ovicou, couac, farine and tapioca which could be stored for long periods. Another discovery was the Matapee or snake press by which the pulp was dried, and then perhaps the most wonderful of all that which gave us cassareep. However any one could have learnt that the poisonous juice could be not only rendered harmless but useful as a preservative is impossible to conjecture. With the pepperpot came sterilising, a process only developed in Europe of late years, yet known in America for ages not only by the pot, but the barbecue as well. Further developments are the drinks made by fermenting infusions of cassava, generally connected with chewing. We thus have from the one root a boiled vegetable, bread, farine, tapioca, sauce and intoxicating liquors. We can hardly suppose that such grand discoveries were made by savages; they point to a civilisation perhaps far in advance of that of Mexico.

Another wonder was the hammock. Why was not such a convenience discovered in the Old World? We can understand the necessity for hanging beds in a wet country like Guiana, and that they were invented to supply a want. Bunks on board ship were largely displaced by hammocks after the first voyagers to the West Indies returned with specimens. The invention was appreciated at once and hammocks became so common that their origin was forgotten.

Among the wonders of America was the beautiful Mosaic featherwork which had been brought to such perfection in Mexico before the arrival of the white men that Spanish priests utilised the art for making pictures. Unfortunately this beautiful industry is almost gone, but good examples are to be seen in the Museum, including feather crowns and a decorated hammock. We may conclude that the art has degenerated, and probably it will be lost in the near future. This suggests that every care should be taken to preserve specimens of such work. Two or three examples sent from Mexico to Charles V. are still preserved in European museums and go to prove that the art was brought to great perfection and

that the descriptions of feather cloaks worn by Montezuma and his captains were fairly accurate.

A grand invention of the Aborigines was the Curari or arrow poison. No doubt it is the result of long experience and of many trials. Like the medicinal compounds of the middle ages it is somewhat of a jumble of ingredients, varying a little as prepared by different Peaimen. Nevertheless the main ingredients, species of Strychnos, are the same, the differences being mainly in those plants which go to give body to the extract. The use of the fangs of poisonous snakes and fire ants is hardly necessary and appears not to be general. Waterton's journey to get the poison is particularly interesting and his experiments to find an antidote are particularly valuable. In connection with the poison is that almost unique weapon the blow-pipe, only known elsewhere in Borneo. Everything connected with it shows what must be the result of careful observation and experience.

Inoculating for snake-bites may be considered as one of the strange things worth investigating. How far it is really successful has never been proved: it can hardly be expected that anyone would risk his life to test his immunity. It is however believed in by most of the Surinam creoles, many of whom have been inoculated by some mysterious compound that suggests the witches' cauldron. Besides the immunity from snake-bites the operation is also supposed to render harmless the stings of scorpions, etc. Inoculating with beenas is another curious and wonderful notion, possibly, like the other, useful from its promoting that feeling of confidence so necessary for the huntsman.

11.—ORDEAL OF INDIAN CHIEF: FLOGGING.
From Van Berkel's Voyagien.

12.—ORDEAL OF INDIAN CHIEF: BURNING.
From Van Berkel's Voyagien.

THE GOLD INDUSTRY OF BRITISH GUIANA.

By W. A. Dunn.

There is one thing at least that must have struck the casual observer in connection with the Gold Industry of British Guiana, and that is the rather extensive production, in the absence of systematic mechanical appliances. The gold output, commencing in 1884 with an export of 250 ounces, rose rapidly to 138,527 ozs., 16 dwts. in 1893, and to date aggregates a total of 2,247,454 ozs., valued at $39,330,455.58.

It is interesting to note that our production at one time placed British Guiana among the ten gold-producing countries of the world, as shown in the following extract taken from a report to the Council of the Institute of Mines and Forests on the Gold and Forest Industries of British Guiana for the year ending June 30th, 1895, by T. S. Hargreaves, F.G.S., F.R.G.S., Secretary:—"Under the auspices of the Government, and with the assistance of the British Guiana Bank, specimens from our goldfields were last year exhibited in London. A most useful and instructive handbook was compiled by Mr. H. I. Perkins, F.R.G.S., and published at the expense of the Government and distributed in London at the same time. By these means, and from the fact which is just beginning to be realised, that British Guiana now stands by no means last of the first ten gold-producing countries of the world, a considerable amount of attention has been directed to the colony and its mineral resources."

The localities over which this yield has been won is spread over an equally extensive area; not that large areas have been worked, but the finds have been made in a belt of country, stretching in a N.E. and S.W. direction, practically across the whole colony, with the notable exception of the county of Berbice, from which no remunerative workings have yet been recorded. A glance at the map will show that this belt continues in a direct line to the famous Caratal district in Venezuela, in which is situated the world-reputed "El Callao Gold Mines."

The gold production may be said to have been almost entirely due to the placer workings of a few lucky finds of abnormal richness in isolated districts and the subsequent squatting of men of the labouring class in and around those finds. With the exhaustion of those has come the decline of returns, but not the possibilities of the industry. It is easy to understand that with already little or no capital in the country to finance prospections, the little there was could not last long in the hands of, and was soon squandered away by, unscrupulous or incompetent prospectors. The natural result of this has been the withdrawal of all local capital and credit from this class of work: so honest and regular prospection has practically come to a standstill. Placer workers are now tied to the immediate surroundings of the early finds, which inevitably must sooner or later be totally exhausted.

Turning to the prospects for organised capital, it is easy to see that, with the numerous waterways stretching all through the auriferous territories, dredging may be regarded as a very promising outlay for investment. Already one company with a capital of $240,000, operating four dredges, has paid 52½% in dividends, from a gross production of 24,424 ozs to date Another recently incorporated company, at present operating only one dredge, is also full of promise, and has recorded a production to date of 4,033 ozs. The dredge workings at Omai were practically the most successful part of their undertakings, and yielded 4,392 ozs. Prospective dredge operators will always have to realise that allowances have to be made for local conditions. First of all come the difficulties of "Tacoubas," *i.e.*, old fallen trees of almost imperishable hardwoods, lying deep down under the water, and which foul the buckets and have to be removed, Next comes the comparative shallowness of our gravels; no where in the colony have there been found gravels up to the present time of such a depth as are found, say, in Oroville. As a consequence, lines have to be more often changed and new alignments taken up. Taking these delays into consideration, it is therefore well to figure that no dredge can treat a yardage of earth much in excess of one-third of its full capacity. This, of course, is due to the enforced delays and stoppages outlined above. Any operators ignoring these facts will eventually find himself faced by disappointment and perhaps financial failure.

Hydraulicking has so far been responsible for the largest records of gold won by organised capital. At Omai, on the Essequibo river, a production was recorded of 27,123 ozs., and at the Tassiwinni on the Barama river, N.W.D, a gross production of 10,178 ozs. has been won. The operations at the former place were eventually shut down through the exhaustion of their capital, and the immediate difficulties imposed on a further supply of fuel. This fuel question will be referred to later on. Omai, it might be mentioned, has proved the most payable area yet discovered in the colony, and has been responsible for a gross production of close on 100,000 ozs. from an area of about 60 acres. The Tassiwinni in the N.W.D. closed down after a very short career, from much the same cause, plus the circumscribed area of their holdings, water, and timber rights. Undoubtedly hydraulicking in British Guiana offers advantages by its freedom from all dangers of litigation on behalf of nearby townships which in some countries are prejudiced by the inevitable fouling of streams and so forth. It may be well also to record that at Omai, whereas the prospections gave a depth of about 14 feet as payable, in actual operations values were found to continue apart from quartz to a depth in some instances of from 100 feet to 125 feet, thereby greatly increasing the valuable material. Gravity water was not attainable in the above-mentioned properties, artificial means were adopted, which in nearly all cases proved expensive. With the many waterfalls available, electricity may be used to advantage for all purposes of power. It must be borne in

mind, that the flatness of the ground and lack of fall must not be lost sight of, as dump-room is one of the essential factors in hydraulic mining.

Before proceeding to deal with the quartz milling phase of the gold industry, it may be well to revert in a few lines to the question of power, as whether in hydraulicking or otherwise this question is one of vital importance. Although fuel for power purposes is fairly abundant all over the country, its distribution, the configuration of the country, and the humidity of the soil, all create problems that take some solving and expenditure. In the first place, as in all tropical countries, not more than 25% in every acre is available as efficient fuel; as a consequence, four or five times the normal area has to be covered to obtain a full supply. This naturally means abnormal transportation expenses, and wear and tear of stock; the configuration of the country in gullies and ravines further increases this difficulty of transportation, and lastly, the excessive humidity of the soil imposes heavy burdens on the construction and maintenance of roads, all of these culminating in the one unpleasant fact, that every half-year of a mine's existence makes the question of fuel, and consequently power, one of increasing difficulty and expense by the increase of distances and the impassability of old roads. There are, of course, various ways and expedients for mitigating these difficulties; such as the establishment of commercial power-distributing schemes, or the individual erection of hydro-electric power plants.

Resuming the thread of this paper, one may well say that for real permanent benefits quartz-mining must ever be looked to in any gold industry. But, up to the present, local quartz mines have not been a conspicuous success although there always was, and is, great promise in this direction. The Wariri workings undertaken in 1863 provide our first object-lesson. Apart, however, from the intrinsic value of this property, it would seem that being located so very near to such a vast extent of water as the Cuyuni river and because the Matope Falls provide at that point the water to be contended with in the lower levels, these facts would always create an active source of annoyance. Power here would have to be of a very cheap description to cope with the vast extent of pumping that may very well be suspected.

At Kanaimapoo on the Demerara River, it is clear that there was never a sufficient development of ore bodies to justify the erection of a milling plant but deep prospections may have, or may yet prove the existence of extensive quartz bodies. At this point it may be observed that there has been practically no underground prospection for permanent quartz bodies in the colony; underground work, perhaps from a force of circumstances, having been more or less of the nature of exploration of known veins or outcrops. Again, in the North West District the absence of any well-defined quartz deposits at depth has proved the undoing of all enterprises.

At the Peters' Mine in the Puruni District larger bodies of quartz were encountered and operations continued over a longer period than at any other quartz mine in the country. Work, however, was suspended for domestic reasons, and pending a more satisfactory adjustment of the fuel and freight problems. Speaking generally, from surface indications and previous experience, British Guiana belongs to the class of country of small quartz mines with short lives but very rich quartz. The total production from quartz milling all over the colony has amounted to 67,782 ozs.

Owing to the heavy alluvial deposits of about 150 feet found on the properties already explored in the colony, it is extremely difficult to say if any really great quartz mine, such as have made other countries famous, will ever be discovered within its borders; but from my own experience, with deep boring down to one thousand feet, I should say it is quite probable: but prospection will have to be conducted with skill and patience, and at some considerable expense. This question of deep level prospections can not be made too much of, and calls for more than a passing reference if British Guiana is ever to possess a permanent gold industry.

In the meantime, nothing is so advisable as the economical equipment of the small mines already known and their consistent exploitation; along these lines there is money to be made; and such operations may yet lead to the discovery of some great mine such as we all hope for.

Before closing this paper I wish to thank the officials of the Lands and Mines Department and other gentlemen for their courtesy in assisting me to the best of their ability in gathering the above data together.

DRINKING WATER SUPPLIES:

A Chemical and Bacteriological Study of the Drinking Water Supplies on Estates from a Hygienic Point of View.

By
K. S. Wise, M.B., B.S., B.Sc., D.P.H.,
Government Medical Officer of Health and Bacteriologist,
and
E. P. Minett, M.D., D.P.H., D.T.M. & H.,
Assistant Government Medical Officer of Health and Bacteriologist.

When first directed to begin this investigation it was with considerable trepidation that the commission was received; especially as our colleague, Professor Harrison, was, owing to pressure of work unable to co-operate with us by carrying out the chemical analyses. This meant that both bacteriological and chemical analyses had to be carried out in the laboratory, Public Hospital, Georgetown, by one of us. a very considerable amount of extra work. It was therefore decided to spread the investigation over a longer period than was originally intended.

The scheme briefly was as follows:—By taking a large number of samples of water and carrying out a complete bacteriological and chemical analysis in each case, a set of results would be obtained from which it would be possible to form an opinion as to the hygienic value of the water supplies and to arrive at an approximate standard of purity for future guidance. In order to negative climatic and local influences as much as possible samples were taken both during the dry and wet seasons, especially after heavy rains, in order to demonstrate the possibility or otherwise of surface contamination due to improper conservation of the supplies. An enormous number of investigations were carried out and embodied with full detail in a departmental report for Government consideration. As this is the first attempt to make a complete bacteriological and chemical survey of the estates' water supplies of the colony, no efforts were spared to ensure the accuracy of results in order that a reasonable standard might be available for future investigations.

The scheme adopted was based on the following essentials acknowledged by all water experts as the irreducible minimum:—

1. A careful topographical survey at the time of collection together with a rough sketch made on the spot available for future reference.
2. A bacteriological examination carried out as soon as possible (frequently within an hour, rarely later than 3 or 4 hours) after collection.
3. A chemical analysis carried out on the same day as the sample was collected.

4. A microscopical examination of the centrifugalised deposit.

5. A careful note of the weather conditions at time of collection especially with regard to recent heavy rains.

The population on sugar estates (500—5,000 people) is usually supplied by water in an open trench of varying length usually from 50 to 100 yards long and 12 to twenty feet broad and 3 to 4 feet deep. The water is rain water which has collected on savannahs aback of the estates and become deeply impregnated with peaty materials. This is allowed to flow many miles down the canals of the estate, which are purged of the previous water. The flowing water is then considered pure and passed into the drinking trench and dammed off. This procedure is repeated at intervals of 3 to 4 months according as need arises. A few estates conserve rain water in direct trenches alongside the dwellings. One or two estates collect rain water in large concrete reservoirs. These shallow trenches, often alongside the public road, are in many cases unfenced and unprotected in any way. Heavy rain quickly washes all sorts of pollution into these trenches, and it is no uncommon thing to see pigs, goats, cows and other animals walking in these trenches undisturbed. In some cases, houses and coolie ranges have been built on the banks, within a few feet of the drinking water supplies; in consequence, all kinds of household and animal refuse can be seen upon these banks, which frequently slope from the dwellings towards the water.

This enquiry into the hygienic suitability of these water supplies comprised a survey of 24 different estates. On all twenty-four bacteriological analyses were made, for which purpose sixty-seven samples were taken, some estates having three or four different supply trenches and in some instances 4 or 5 samples were taken of the same supply at different times of the year and during different seasons. On eleven of these estates the supply was examined chemically, twenty-nine samples being taken for this purpose. For these analyses sterilized chemically clean, glass-stoppered bottles were employed. The sample was collected from 6 inches below the surface of the water. The stopper was then replaced, tied over with sterilized wool and canvas, and finally packed in ice.

The bacteriological and chemical analyses are tabulated below, the details of the examination being omitted since they may possibly confuse.

TABULATED RESULTS OF BACTERIOLOGICAL ANALYSES.

Total Organisms.					Faecal Organisms.				
Below 1,000 per cc.	1,000 to 5,000	Above 5,000 per cc.	Not Done	Total Specimens exam'd.	Absent 1 cc.	1 to 10 per cc.	10 to 100 per cc.	100 to 1,000 per cc.	Total Specimens exam'd.
17	39	8	3	67	10	31	14	12	67

B. Enteriditis Sporogenes in 100 cc.				Streptococcus Faecalis in 5 cc.			
Present.	Absent.	Not Done.	Total Specim'ns.	Present.	Absent.	Not Done.	Total Specim'ns.
11	39	17	67	22	28	17	67

RESULTS OF CHEMICAL ANALYSES.

Re-Action.

Faintly Acid.	Neutral.	Alkaline.	Total.
9	19	1	29

Free Ammonia in Parts per 100,000.

.01 to .05	.06 to .10	.11 to .15	.16 to .20	Over .20	Total.
9	7	5	7	1	29

Albuminoid Ammonia in Parts per 100,000.

.01 to .05	.06 to .10	.11 to .15	.16 to .20	Over .20	Total.
5	9	6	4	5	29

CHLORIDES.

Expressed as Chloride Parts per 100,000.

0.8 and under.	0.8 to 0.89	0.9 to 1.0	1.1 to 2.0	2.1 and over	Total.
4	0	4	12	8	28

PHOSPHATES.

Expressed as Parts Phosphorous pentoxide present in 100,000.

0.10 to 0.19	0.20 to 0.29	0.30 to 0.39	0.40 to 0.49	0.50 to 0.70	1.0 and over	Total.
7	7	4	4	4	3	29

Faint traces of Nitrites and Nitrates were found in seven specimens. The hardness varied between 1.2 and 5.5 parts per 100,000. The solids were between the following figures: Organic 7.0 to 39.0; Inorganic 2.4 to 24.0 in parts per 100,000.

In placing hygienic values on these analyses we were confronted by the difficulty that the usual standards relied upon in Europe for detection of sewage were of little avail especially from a chemical standpoint. For example, the albuminoid and free or saline ammonia figures are so high in the peaty, and even the rain waters of this colony that a small extra amount present as due to sewage contamination cannot possibly be identified as such. Further Nitrites and Nitrates, usually accepted as indicators of pollution at a somewhat remote date, were almost invariably absent. Not because there was no sewage present (that was abundantly proved by the topographical and bacteriological data), but because the waters of the colony contain a large amount of reducing substances, ferrous iron amongst others, which prevent the normal oxidation of Ammonia to Nitrates taking place. Under these circumstances, after consultation with Professor Harrison, we decided to fall back upon the figures given for Chlorides and Phosphates as of most value.

Chlorides are looked upon by sanitarians as evidence of urine contamination, in the absence of sea water. Phosphates are the most stable of the ultimate products of decomposition of faecal material and come from no other source save chemical manures, etc. If the chlorine figure is high, that is, in excess of the average for the district, it may reasonably be inferred that the material which yields the chlorine is a great part of animal origin. For the purpose of comparison we, therefore, in agreement with Professor Harrison, propose to adopt a standard of .8 parts per 100,000 of Chlorine, and to regard with suspicion water containing more than .05 parts of Phosphates per 100,000. These figures were of course adopted after comparison between the original water as obtained from the source in the savannah lands, and the water after admission to the drinking water trenches. For example, if the Phosphates amount to nil or at most to a mere trace in the original savannah water, the fact that it increased greatly later, will be proof positive either that the water has been exposed to animal pollution, or that surface water from manured lands has gained access. In either case this is sufficient evidence to condemn it for drinking purposes. Of a large number of samples examined the table above indicates that only four showed a reasonable degree of freedom from pollution as judged by the chlorine figure, whilst as regards the Phosphate figure not one sample fell within the limits given by Hehner as constituting a water "free from suspicion."

From a bacteriological point of view the chemical results were fully confirmed. A water which is contaminated with sewage sufficiently to yield evidence of pollution by chemical methods will show overwhelming evidence pointing to the same conclusion on bacteriological grounds.

The bacteriological data require more skill and experience to interpret, but on the other hand the possibility of false deductions from careless collection or local impurities is far greater. Owing to the inherent difficulties in the way of isolating actually specific disease producing bacteria from a water sample, bacteriologists all over the world agree to rely on the detection of organisms known to be associated with faecal material; this method although perhaps not perfect, can be relied upon to detect the presence of 1 part of recent sewage added to 1,000,000 parts of pure water.

The organisms relied upon as indicative of pollution are Bacillus Coli Communis, Streptococcus Faecalis, and Bacillus Enteriditis Sporogenes. In a good water it should not be possible to detect any of these organisms as present in 10 c.c. in temperate climate. We however proposed to accept 1 10th of this standard as applicable to British Guiana. In other words B. Coli should be absent from 1 c.c. We regret to record that only ten samples out of a total of 67 samples examined reached this very low standard of purity, a somewhat depressing result!

The amount of solid matters, both organic and inorganic, present in the water was in nearly all cases higher than that contained in the water from original savannah source, and allowing that the inorganic increase may be due to stirring up the mud, this would not account for the organic increase, even after allowing for vegetable and animal life present except as added matter. This view is strongly supported by the detection of animal hairs, cotton fibres, wood fibres. Ascaris Ova. Cyclops, larvae of ticks, etc., found in microscopic examination of the centrifugalised deposit from 500 c.c. of this water.

It has frequently been stated that there is no necessity for sanitation in a tropical country because sunlight is in itself such a strong disinfectant. This matter has also claimed our attention and after exhaustive tests with various organisms we are convinced that although it is true faecal organisms are destroyed by direct sunlight on the surface of the water, yet this does not apply to the water at a depth of a few inches, especially in peaty water, which appears to be most efficient in cutting off the actinic rays. Delicate sewage organisms can live at a depth of six inches, and even less will suffice, if there is vegetation on the surface to act as a shade.

The above remarks apply only to the more delicate varieties, but some of the hardier sewage organisms can resist the action of strong sunlight successfully for a very long period.

The following table indicates the action of sunlight under specially favourable conditions. The water was 1½ inches deep in a vessel with a white bottom.

Faecal Organism.	Per cc. before exposure.	Presence after Exposure.					
		5 hrs.	9 hrs.	24 hrs.	72 hrs.	96 hrs.	120 hrs.
B. Cloacae	1,000	x 1cc.	— 1cc.	x 2cc.	x 2cc.	— 5cc.	—10cc.
B. Neapolitanus ...	1,000	x 1cc.	— 1cc.	x 2cc.	— 2cc.	x 5cc.	—10cc.
B. Lactis aerogenes	1,000	x 1cc.	x 1cc.	x 2cc.	— 2cc.	— 5cc.	—10cc.
B. Coli Communis	1,000	— 6cc.	— 10cc.	...	...	...	...
B. Coli Comm: in media on Petri dish.	100	x	x	—	—		...

(Note : x Indicates present)

— absent

Under the far more favourable conditions found in the usual water trenches the above organisms will persist for months.

All pathogenic bacteria such as typhoid for example have been known to exist in mud for long periods so that if sewage gains access to drinking water supplies the micro-organisms fall to the bottom. It must be remembered that bacteria have weight, and obey the law of gravitation.

Sedimentation acts in two ways, causing not only the subsidence of the actual bacteria but also a sinking of the organic particles in the water, so that the bacteria are protected from the influence of the sun's rays.

It becomes obvious that water conveyed and conserved in trenches such as those found on the estates of the colony shows abundant evidence of pollution. It is naturally reasonable to enquire if it is possible to prevent or remove the contamination. The results in this direction already obtained give great encouragement and show that simple reasonable precautions lead to very considerable reduction of pollution indicated by both chemical and bacteriological analyses. The mortality rate on the various estates bear this out. On certain estates the authorities have surrounded the drinking water trench with a bank vertical on the inner side and sloping away on the outer ; around this is placed a strong animal proof fence provided with openings to a raised wooden platform over the water, from which the water may be dipped. In such a case surface washings are directed away from the supply and animals are unable to gain access. Taking four of the estates the morbidity rate (number of cases occurring per year for every thousand persons living

range from 14.9 at Leonora to 36.2 at Nonpareil. On other estates with an unprotected supply in no case is the rate below 47.2 and it rises on some to as high as 96.3.

It is important to realise that water thus impounded, lying still, undisturbed and free from added contamination, proceeds naturally to purify itself. It is on this fact that a large portion of European cities depend for the purification of their supplies. The provision of large settling reservoirs by the various metropolitan and borough water companies shows their appreciation of the importance of this process hardly second even to filtration.

When, however, frequent driblets of pollution are being added to water, this purification process is unable to make headway against it. Analysis of open trench drinking water supplies usually reveal 10–10,000 faecal organisms per cubic centimetre, whereas the following table shows the result in some protected water supplies.

Plantation.	*Faecal Organisms.*
Wales	1 per cubic centimetre
Nismes	absent in 5 cubic centimetres
Port Mourant	absent in 5 cubic centimetres
La Bonne Intention	1 per cubic centimetre

Some few estates have supplies conserved in concrete tanks or reservoirs. These are filled from the roof of the factory buildings or from adjacent ranges. In such cases the water is of a purity far surpassing that achieved in any system of trench supply. At Blairmont the supply is equal to that of a European city.

The following results indicate the results obtained :—

Plantation.	*Faecal Organisms.*
Providence, Demerara	absent in 6 cubic centimetres
Uitvlugt	absent in 3 cubic centimetres
Blairmont	absent in 10 cubic centimetres
Springlands	absent in 5 cubic centimetres

The chemical analyses give analagous results.

During the course of the investigation attempts have been made to estimate the period at which pollution took place. From the bacteriological analysis and from the types of organism isolated, it was hoped that it might be possible to ascertain whether the pollution was added yesterday, last week, last month or last year. This has been succeeded in to a certain extent within broad limits. Work on this subject was recently carried out by Major Clemesha in India and our results correspond very closely where surface waters are concerned. By isolating different types of faecal bacteria it is found that some are more resistant than others and while purifying powers of nature will destroy certain kinds in a few days others will remain still living for a few weeks and others for a few months. The presence of the Bacillus Coli Communis, if in large

numbers, indicates old or a slight recent pollution. The Streptococcus Faecalis is indicative of very recent fouling probably dating from only a few days previous.

The Bacillus Lactis Aerogenes usually indicates a pollution of a few weeks old and if the Bacillus Coli Communis is absent indicate that a moderate amount of purification has taken place.

The Bacillus Cloacae and Neapolitanus are found most frequently when the fouling has been remote, possibly months old.

The Bacillus Oxytocus Perniciosus is a delicate organism and is eloquent of very recent pollution.

The Bacillus Rhinoscleroma is rare in any but human excreta and therefore is indicative of the fouling being of human origin.

In conclusion it should be recollected that when water supplies are improved, not only does the case incidence and death rate from water-borne diseases show a marked decrease, but the improvement of the water supplies has invariably been followed by a general all-round improvement in the health of the community. This we cannot impress too greatly on the villages and estates of the colony, for the village water supplies are usually in a far worse condition than those on the estates.

In thus completing the first bacteriological study of estates' water supply many difficulties have necessarily presented themselves and many unsuspected sources of error arisen. European standards have been found wanting and the customary methods of work have required adaptation to peculiar local conditions. Much of the work has thus been necessarily groping in a mass of facts for true actualities which may be safely used for comparative results.

The subject, however, has been conceived from a critical standpoint and practical conclusions have been drawn only when they are thoroughly justified by the available evidence. The object has been to get as far as possible a firm bacteriological and chemical basis and then to explain the scientific experiments upon which these are based and the lines along which future work should develop.

OUR VILLAGES AND COUNTRY PARTS.

By Rev. J. B. Cropper.

In the early days the "plantation" with its proprietor or his representative and its staff of labourers and labour superintendents was all that represented rural life. After emancipation abandoned sugar and cotton plantations were bought by groups of liberated slaves who parted the land among themselves and settled down in communities. Work on the adjoining plantations and the growing on their own lands of plantains, cassava and other provisions maintained these communities in a large measure of prosperity.

The plantation system of locating the residents in one section separated from the cultivable section was followed and each plot in the residential section had its corresponding plot in the cultivation section. As time went on and the whole of the empoldered lands became occupied new areas were empoldered and plots allotted to the original residential lots. In most of the villages the divisions were not made by survey and the portions secured to each proprietor or family by title, deed or transport. A friendly arrangement seems to have sufficed for the marking off of the plots to be occupied by each family. In some parts, notably in Berbice, reef lands were chosen for the site of the "village" irrespective of its proximity or otherwise to the public road. In many cases no attempt was made to "lay out" the village, houses being erected anywhere about the section chosen for residence. In some instances—of later date than that of the early village settlement—abandoned plantations bought each one by more purchasers than one, or occupied by more than one family, descendants of the original—or of an earlier individual proprietor, have less of the village look about them. In comparatively recent years other forms of village settlement have arisen. Some of the proprietors of sugar plantations have sold out their front lands or portions of them in lots along the public road. These lots have no cultivation plots aback, being simply, as they are termed, house lots. Other proprietors have been themselves laying out their properties in lots and selling them to individual purchasers. In almost all, if not all, of such cases the land is divided lengthwise of the estate, the lots running in narrow strips from the seashore to the backdam, a convenient position for the erection of houses being found on each side of the public road which in every case intersects the estate. The Government also has done some experimenting in community forming, in some cases in the sub-dividing and selling out of estates which had fallen into their hands, and in a few others in an effort to settle time-expired East Indians. They have in their case reverted to the old plantation system of a village section in the front, the lots in which are not continued into the cultivation lots aback.

Something may be said in defence of each of these modes of laying out. The lots along the estate fronts provide a community dependent more or less directly on the estate and yet not bound to the service of the estate as are the residents on the estate itself. Such communities should be thriving. With factory and field work nearby putting into circulation anything between one and several thousand dollars per week, there must be something radically wrong if they do not thrive. From the estates' point of view, however, opinion is divided as to the wisdom of establishing them. In the case of the village adjoining the estate the housing of the people in a laid-out village community has more to commend it than has the same system in a community separated from the estate. A large number of people will be finding employment on the estate while others will be engaged in various forms of service arising from the immediate proximity of the estate. In all the cases, however, the main considerations are drainage and facility of access to the homes. It is claimed that in a land without stones the cost of making and keeping up roads would be prohibitive, while sanitation would suffer under the present and only practicable system of drainage. I admit cost and some difficulty in regard to the roads but I set up the very opposite claim in regard to sanitation. It is also claimed that the locating of the houses together is desirable from the social point of view and helpful from an administrative point of view. The latter may be dismissed as receiving undue weight. As to the former it might not be amiss to inquire somewhat into the question. In all countries there are and ever have been wide differences between urban and rural life, born partly of differences in occupation and partly of differences in conditions and associations of residence. And while it is acknowledged that the characters developed under these respective conditions are mutually helpful and both necessary to the full life of the community, it is also recognised that the inflow of the influences born of rural life are essential to the moral toning up and physical improvement of city life. There is a conventionality and an almost slavish submission to fashion and custom which are a prominent feature of city life. To this conventionality and submission our towns present no exception. The proximity of residences to each other is no negligible factor in bringing about this condition and as it acts in the city so will it act in the village. Whatever little advantage then is gained by the grouping together of the houses, city-like, it is more than outweighed by the loss of rural influences.

The distance, too, of the "Provision beds" from the houses in the village proper cannot but be a drawback. In some cases several miles each way must be travelled before half an hour's work can be done. Added to the drawback of distance is the inconvenience of ingress and egress from and to the "beds," the side-line trench, with anywhere between two and four feet of water, having to be crossed each way.

The class of houses built by the early villagers differed much from those now put up. I am not bringing into comparison the large and expensive house sometimes erected by a villager of means. Those early

buildings did not aspire to architectural beauty or embellishment. Even the glass window was not very much in evidence. But they were large and roomy and suggested no overcrowding of the family. Not unfrequently they were of two-storeys. They have given place to a smaller house with smaller rooms (not fewer occupants though), but presenting a greater display of the carpenters' and painters' decorative art.

In whatever way they may be laid out, however, too many of our villages need to be *ruralised*. This may seem contradictory but it is true. Especially is this the case on the East Coast of Demerara, where the idea seems to be emphasised that every little village aspires to be a miniature Georgetown, both in its natural appearance and in the style and life of its inhabitants.

The life and character of our villages and country parts have suffered also because of the absence of a resident gentry. There are no country residences (or so few as hardly to affect the statement) with gardens and lawns suggestive of quiet and ease. No "Squire" moves up and down the country side, taking an interest in the families and homes of his neighbourhood; and spending his leisure among his well-kept garden beds and inspecting cattle and sheep and poultry that vie with those of his neighbour at the Agricultural Shows. There is, of course, the Parson and the Doctor; and where there are estates in the neighbourhood the Manager of the estate. But, with few exceptions, the first named two are residents in "miniature Georgetown," while the situation of the estates prevents the last named from exercising any influence on village life. Thus shut up to themselves, the villagers have little or no opportunity of feeling the touch of refined country life.

I fear that the Government itself cannot be held entirely free from blame in this matter of huddling the people together in the villages. Where it has undertaken to settle communities the conditions set up have been the reverse of conducive to the development of rural life. Indeed in some cases they are positively insanitary.

Many villages are witnessing a striking change in the nationality of their inhabitants. The descendants of the early negro settlers are giving place to the East Indian. Neglected farms have ceased to yield produce and the owners go away in search of a living elsewhere. In many cases neglected drainage is the cause of the neglected farm; in others, false ideas of labour lead the younger generations away from their farms; in others the excitement and romance of the goldfields or the prospects of the balata bush draw the muscles of the manhood of the village from the shovel and the fork. The de-ruralising spirit, too, creates dissatisfaction in the breasts of the imitators of the city gent. To see the ruins of a large board-and-shingle house in which lived the now past generation unlettered, it may be, but thrifty and industrious, and beside it a tottering collection of uprights, wattles, mud plaster and coconut leaves supported by props of Courida or other easily reached wood, the shelter now of the

sons of the residents of the other ruins, while either rich acres lie aback in uncut bush or the people are hired in the rice-fields—the lands their father left them now owned by the despised wearer of the baba and the turban—such a sight tells a sad tale. A further explanation of the condition may be noted if the village is visited on a Sunday afternoon when the latest cut of coat and the newest style in hat and skirt make gay the village street. The malady is evident; its cure not easily applied. But wise leadership, firmness and prudence in administration, less sail and more ballast in the education boat, will certainly effect improvement.

The East Indian is also originating his own villages. In these it is interesting to note how soon the wattle-side thatch-roofed hut gives place to crabwood boards and zinc sheets. I often hear the complaint in Water street that Sammy will not spend. The saw-mills and lumber yards, particularly of New Amsterdam, tell a different tale.

But a bright day is coming for our land. Already on the horizon is the soft light of approaching dawn. There is no reason why the sons of Africa and India with the settlers from the British Islands and Madeira together with our neighbours from China and the original possessors of the soil should not find, all of them, room for their activities and recompense for their toil.

THE COLONY'S FOREIGN TRADE.

A TEN YEARS' REVIEW.

By J. Van Sertima.

The importance of statistics, more especially those having reference to the industrial organism, does not seem to come home sufficiently to those bodies here the like of which in other countries would feel as if chaos had come again if they were as poorly equipped as we are with the material through the agency of which useful data can be collected. This is to be regretted. The proper function of statistics is to enlarge individual experience. There are several public questions which cannot be fairly or adequately discussed without those particulars which statistics alone can furnish. In their absence recourse is had to theorising; personal bias intervenes; and subjective impressions cannot be driven off. This is undesirable in the interests of truth, at any rate. Moreover, there is the temptation sometimes for the uninitiated to intrude with all the dogmatism which bewrays the ignorant. When predilections are in play it is unlikely that the information at hand will be put in the right perspective, and if relativity of importance is lost, it is no wonder. In the circumstances the student, say, of the economics of local industry, does not find his task go smoothly. To him statistics are the straw out of which he must make his bricks. He has to tread warily, make most careful use of what figures he may lay his hands upon, and at times be compelled to call indirect evidence to his aid. The less skilled the investigator the more cautious he must needs be, lest his generalisations be misleading and his findings worthless. Of statistics of our home trade there are none, but the anomaly involved in the fact that we know more of our foreign than our home trade is not peculiar to this colony. Says Mr. Andrew Carnegie somewhere: "The home market of America takes 96 per cent. of all manufactured articles, only four per cent. going to foreign markets. Even Britain's home market takes four-fifths of her manufactures, only one-fifth going abroad. Politicians give far too much importance to distant foreign markets which can never amount to much, and far too little to measures for improving conditions at home, which would increase the infinitely more important home market. If the people of the United Kingdom would spend even £1 per head more per year her home commerce would be increased by more than the total value of her exports to all of Australasia, British North America and China combined. Truly foreign commerce is a braggart always in evidence: home commerce is the true King." This dictum may be applicable to a large country like the United States which has within its confines climate of so various a character that it is largely independent of the products and manufactures of other countries; but Mr. Carnegie's statement loses nearly all its force when applied to a colony such as British Guiana,

situated as it is entirely within tropical latitudes and capable only of supplying economically the local community with its requirements as regards tropical products of the field, the forest and the mine. The colony's supplies of foodstuffs, clothing and manufactures of all kinds, must largely be obtained from outside sources, because they can be produced in the great manufacturing and industrial centres at a much cheaper rate than they could be produced in a small community like this ; and on the other hand the colony is pre-eminently adapted for the production of certain articles which are in demand in the large centres of civilisation, and which can only be produced in certain latitudes. Consequently the only sound trade policy for a country such as this to adopt is to send her produce to the world's markets where the best prices can be obtained, and in the same way purchase the articles required for consumption which can be obtained at a cheaper rate than they can ever successfully be produced in the colony. It is true that a small nation with a dense population when it is capable of producing its food, raw materials and manufactured articles within its own borders may be very prosperous with a very small external trade, but, as shown above, the condition is inapplicable to British Guiana. Its commercial prosperity is almost exclusively bound up with its foreign trade, that is, all trade not domestic. In this colony there is no Census of Production, no Industrial Census, no register of earnings, no labour statistics, no unemployment records, no traffic returns, no statistical abstract, &c. These would be eminently useful, but there is the black fact that there is no public demand for them ; and the Government are not concerned to undertake a service which would be of incalculable value alike to the statistician, the economist, and the Government themselves.

Happily the conditions are far different in the case of the colony's overseas trade ; and it is with a rapid review of this, extending over the past decade, that the present article will concern itself. The period is sufficiently long to allow for minor variations and to eliminate the unusual conditions that may characterise any particular year ; at any rate it is agreed on every side that a short range test of commercial transactions must in the nature of things be untrustworthy. It is not difficult to account for trade fluctuations even in so comparatively small a community as ours with its almost stationary population. There are such purely incidental circumstances, as, on the one hand, the advent of new commercial agents, the action of consignors, the shifting of consumption from one article to another, which is accepted as a substitute in consequence of a reduced price, &c., and on the other hand, the withdrawal temporarily or otherwise, of consignors, the allowing of stocks to run down at certain times of the year, the rise in the prices in the supplying markets and over-consignments. But there are other causes, among which mention may be made of seasons, fiscal arrangements, and the conditions of competition brought about not alone by the foreign carpet-bagger, but also by those who abridge distances, as well as by those who promote intercourse by bringing the city nearer the country by the simple expedient of establish-

ing rural emporiums. This latter is exemplified more particularly in respect to the consumption, use and enjoyment of luxuries and decencies, the swell of whose volume has been marked in recent years, in spite of the rise in the price-level of commodities.

During the past decade the curve of progress in respect of the colony's transactions is distinct though its level may not be high. The value of the imports—the purchasing-power index—has risen from $7,278,187* to $8,575,556, an increase of $1,237,369, or about 17 per cent. Meanwhile the value of the exports (the bulk of which is responsible for the imports) has risen from $8,782,796 to $10,429,275. Put in another way, we find the progress made on the respective values per head of the population of the imports and exports to be :—

1902-03	1911-12.
Inports ...$ 22.93	$ 28.96
Exports...$ 28.96	$ 35.22

The improvement thus disclosed in the colony's commerce is reflected, as one would expect, in the revenue returns, which, showing a sum of $2,675,285 in 1902, were represented last year by a sum amounting to $2,848,793, an increase of more than 6 per cent. Such progress as can be recorded is largely due to the improvement of our labour forces, and more particularly to their employment in those channels which are found to be most productive from the mere trade view-point. Though the progress made may not be deemed by some to be striking, it is appreciable, especially when account is taken of the fact that the population has actually declined during the period under review—from 302,172 to 296,041—and that the gold industry, whose activities used to contribute in so large and direct a manner to the commercial well-being, has, as measured by its production, declined to the extent of nearly 50 per cent. Again, the Index Number† has gone up ; the dollar does not go as far as it did ten

* The official figures given are $6,931,605, but from 1903-04 the system has been adopted of adding a certain percentage to the original cost of each class of goods to cover the cost of freight, insurance and packages on the goods, the object being to show the value of the goods when landed at the port of destination. This is the course followed in most British Colonies, and, with the view of securing uniformity of method, and because it is considered to be more correct than merely giving the original first cost of the goods, its adoption was recommended by a Committee which sat in London in 1891. When it is desired to make comparisons between the figures relating to imports prior to 1903 and those after that date, it will be necessary to deduct from the figures of the later years or add to the figures of the previous years (as I have done in this case) that average rate of percentage (15 per cent.) representing, approximately, the total additions which have been made to the invoice or entry value of the goods imported to cover the charges of transit between the ports of shipment and entry.

† During the past ten years the Index Number in the United Kingdom has risen from 1948 to 2503. The method of Index Numbers is as follows:—A certain number of representative commodities are chosen, and the prices of these for a certain year or series of years being taken as a basis, the price at the date at which the calculation is required is worked out to a percentage of the basis price ; these percentages are then combined to form a composite number representing the percentage change in price in the whole group of commodities. Thus if sugar had risen during the decade, say, 20 per cent., beef 30 per cent., cotton 24 per cent., and coal 26 per cent., it may be said that, taking these

years ago. Note, too, that the sugar industry (once epigrammatically called "the colony" by a publicist now gathered to his fathers) whose contribution to the Wages-Fund is large, has not made progress, there being no expansion of the area under cultivation. and also a falling-off in the crop for export—the 99,368 tons of 1911-12 comparing with 120,127 tons of 1902-03, and with as many as 125,949 tons of 1903–04, this latter yield being the highest during the two decades ended 31st March last. And yet prices are higher now than they were ten years ago. Then dark crystals were fetching $41.50 a ton; last year the valuation was given as $66.68. Rum has dropped from $23.60 to $20.23 a puncheon, but on the other hand molasses have improved from $15 to $18.15 per puncheon. Yet, in all fairness, another word is necessary in explanation of increasing imports and exports. To draw conclusions as to prosperity or otherwise from the value of imports and exports is a matter fraught with great difficulty because of the many factors that enter into the equation. Values are not to be regarded as being absolutely correct, but as they are computed in the same way from year to year they may be regarded as being substantially accurate for the purpose of comparing one financial period with another. The value of exports has risen during the decade: as also the value of the output per head of the population, but these facts do not necessarily mean that produce has been exported in larger quantities in 1911–12 than in 1902–03, or that the people are working harder to-day than they did ten years ago. The cause is chiefly due to an advance in the price of the staple products of the colony, and the introduction of labour-saving devices on sugar estates and elsewhere, so that greater quantities could be produced with less expenditure of man power. The value of imports has increased during the same period, largely because the cost of production in the industrial centres of production has increased. Owing to the substitution of machinery for manual labour the price of manufactured articles should have decreased, but wages have increased enormously in Europe and America: and in the United Kingdom, as elsewhere, legislation having for its object the bettering of the conditions of the labouring classes has had the effect of raising prices. The increasing production of gold has also not been without its effect in this connection. It is agreed by economists that an increase of wages has the first effect of lowering profits, but when profits in a particular industry fall to the level of the normal profits of all industries the cost to the consumer is raised; otherwise, capital would be no longer attracted to that industry. The result is, that as wages advance

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commodities as a whole, the rise of price is one of 25 per cent., so that the Index Number for the latter date would be 125 with 100 as basis; or 500 if 400 were taken as basis. This illustration serves to show that the Index Number does not represent any given price, and may not even represent the change of any particular commodity. But it is a device for comparing a whole series of otherwise incomparable price schedules, the result representing what is known as the general level of prices. If the Index Number is accurate it represents the change in the purchasing-power of money; that is to say, it tells us how much more or less $100 will purchase at one period compared with a previous period. A rise in an Index Number means that fewer commodities may be purchased for a dollar, a fall means that more may be purchased.

prices of commodities advance in sympathy, and in the end the labourer is but little better off financially, because, although he has more money for disbursement he finds its purchasing power is reduced.

It is in regard to the subsidiary industries that gratifying progress is to be seen, not so much in the value of the products as in their volume and call for labour. Not the least of these is the rice industry. Just ten years ago the export trade of this cereal began. In the first year we sent away only 10,506lbs. Last year's trade report gives the export as being 6,686,820lbs., but the record year was 1909-10, when the exports reached a total of 12,294,815lbs. The prediction of a former Comptroller of Customs, now no more, in regard to the growth of this industry has been fulfilled. When first the cereal engaged the attention of his statistical staff, he wrote :—" It will be observed that a beginning has been made in this direction—very small, it is true, but sufficient to strengthen our hopes for such a trade. It will take time, it will encounter difficulties, but it is pretty sure to come to stay." A very large protection is afforded the rice industry, importations of rice having to bear a duty-burden of 50 cents per 100lbs., first imposed in 1910-11, previous to which the impost was 35 cents per 100lbs. In the year of the Martinique disaster the consumers of rice were specially taxed in order to meet this colony's contribution to the Distress Fund. An additional tax of six cents per 100lbs. was put on, making the duty 41 cents altogether. The protection referred to is a substantial one, and has had the effect of reducing importations of rice to a negligible quantity. In the year when first the local product was exported, the per caput consumption of imported (Indian) rice was 49lbs. Last year it was not quite 2lbs., and in the year immediately preceding the figure stood at .67. The protection has had the effect aimed at : it has secured fuller employment and remuneration for the capital and labour interested in the industry. The question, however, is whether this protection may not be carried too far —whether it may not raise prices too high to the consumer, which would be all the more apparent when the commodity used partly as a substitute for rice, viz., flour, happens to be high in price. Note in passing that there is but little freedom of exchange in regard to the sale of local rice, or rather of the paddy—the raw material of the article. Commenting on the sensible falling-off of the flour imports in the year 1909-10, the Comptroller of Customs said : " No data are available for the purpose of ascertaining the quantity of locally-grown rice consumed within the colony ; but as far as may be judged from a study of the imports of flour since the inception of the rice industry in the colony, it would seem that the home-grown rice is not supplanting flour as an article of food to any great extent so long as the price of both articles is normal. In short, it would appear that the people prefer their dietary to consist of a certain proportion of rice and a certain proportion of flour, and the ratio is only as a general rule affected by serious disturbances in the price of either article." It may be deemed a peculiarity of British Guiana that all classes of its heterogeneous population eat rice, and so it is not surpris-

ing that the rice exports are small in comparison with the local consumption. The principal overseas consumers in the order of their takings are Trinidad, Barbados, French Guiana and the French West Indies. It is computed that only one bag in every seven produced is exported; and so it comes to pass that the local demand regulates the market. It seems safe to assert that the per caput consumption of rice is the largest of any of the food products of the colony. It is patent that the prosecution of this industry, even although its organisation is not efficient and the relations between grower and entrepreneur not as they should be, has had a healthy effect on the social and economic situation. It has given trade a fillip and the connection between it and the marked increased consumption of what may be deemed luxuries is so near as, in the opinion of not a few observers, to preclude any suggestion of a mere coincidence. Let us take spirits. The following statement, an official one, shows the quantities (gallons) of wines and spirits (home made and foreign) and malt liquor entered for consumption within the colony for the ten years ended 31st March, 1911 :—

Year	Spirits	Wine	Malt	Total
1902	198,005	21,154	137,692	356,851
1903	185,239	27,980	142,070	355,289
1904	177,419	21,261	154,626	353,306
1905	142,811	25,097	134,953	302,861
1906	178,597	24,061	111,709	314,367
1907	208,555	23,388	170,316	402,259
1908	194,616	28,622	196,011	419,249
1909	195,769	29,486	176,545	401,800
1910	212,214	30,940	191,068	434,222
1911	303,368	31,366	185,834	420,568

Note in regard to the foregoing table that the volume of consumption began to expand just as the industry had begun to feel its feet, so to speak. It is very significant also that the year of the largest consumption of spirituous liquors coincides with the year which saw the largest volume of the export of the cereal. It falls to be recorded, too, that since rice gained for itself a place on the export list there has been a marked increase in the consumption of those articles which are affected more or less exclusively by the East Indian community, such as salt, ghee, seeds, spices, dholl and mustard oil. Bags and sacks are brought into the colony chiefly for the purpose of bagging rice and sugar. Inasmuch as the sugar exports have actually declined during the past decade, the fact that the quantity of bags and sacks imported meanwhile has risen from 1,238,478 to 1,317,575, the importations standing at 1,420,225 in the year (1910) when the rice export trade reached its zenith, must clearly be attributed to the expansion of the rice industry. Yet more evidence regarding its development is afforded by the import trade in agricultural implements. The value of these imports has increased almost without a break for the past five years. Beginning with an importation of $22,174, the indent mounted to $33,850 in 1910 (the year of the rice boom, so to speak) then sank the next year to $26,543, to rise the following year to $28,409.

Setting aside sugar and gold, the industries connected with which have declined during the decade, the latter most conspicuously, the balata industry, measured by the value of its exports, as also by the amount of labour-force it sets into play, is the most important of local industrial enterprises. So far as is known, it is only in the Guianas that balata gum is found in quantities sufficient to maintain an appreciable trade. In this respect it occupies a peculiarly favourable position, not so enviable an one as, say, Chilian nitrate, it is true, but still valuable enough. Superadded to this advantage, it is said that for certain requirements there is no substitute for the product of *mimusops globosa*. The industry has of recent years entered into an interesting stage of its existence, and, thanks to the beneficent invasion of outside capital, though its attendant change of management is not irreproachable in regard to efficiency, a remarkable development, incited by the high prices offering in the consuming markets, has taken place. Exports are swelling visibly. An output of 548,800lbs., in 1902-03, was represented last year by one of 1,101,593lbs., with an official valuation of $673,350, the high watermark of 1,162,528lbs. having been reached in the year immediately preceding. This means, among other things else, that there was an increasing demand on the labour supply, of which there is no superabundance. There are now some 9,000 men employed in the balata fields of the colony, these embracing an area of upwards of 80,000 square miles. There is no manual labour better paid than that now being employed in winning balata. The men are paid by results, than which method there can be none better, one should suppose, to ensure satisfaction on all sides. Yet maximum efficiency has not been attained, not a little to the concern of the capitalists interested in the enterprise, who, having an irreducible minimum of expense to meet, are anxious that as much gum should be gathered as possible. The larger the amount collected the better it is for employer and employed alike, but as yet this fact has not been borne in upon the junior partners in the business, though the senior partners, the capitalists, have endeavoured to impress it upon them. To this end they have gone so far indeed as to offer a bonus to those who supply over and above a given amount of the article. While some men bring down in a season as many as 2,000lbs., some are not able to procure even 500lbs., which seems to point to the fact that the energy and skill displayed by the workers are very unequal in volume. Much capital has been sunk into the balata industry; and as offering some gauge in this respect it may be mentioned that the outgoings for the past half of this year of the largest company engaged in it have reached a sum of £60,000, being £109,000 for 1911. The adventure is profitable enough under normal conditions; but as it is not yet without its hazards, be they the whimsicalities of the weather, the acts of God, or the eccentricities of the genius of the bleeders, it seems that a return of 7 per cent. on the capital invested is not particularly handsome. Yet there is much hope that when there is an adjustment of the balance of power between employers and employed, and when the directing agencies are freed of certain restrictions imposed ostensibly in the interests of the Crown, the

industry will lift its giant head and proceed on the paths of peace and increasing profit. The industrial expansion that has marched with the activities of the balata and timber industries during the past quinquennium seems to be reflected in the increased importations of certain articles of dietary used by the labourers. I do not go back to a decade ago, for it is within, say, the last four years that balata has loomed so largely, and within the last year that so much attention and energy have been concentrated on the possibilities of the Guiana forests as a provider of furniture woods. In respect to the last-named proposition, there is the big agreeable fact that the S. W. Bonsall Timber Properties, Ltd., of New York, have introduced capital here and are directing their efforts towards increasing the utility of certain timber-producing lands in the three counties. The company's energies promise to play a most significant part in the colony's economic development. It has afforded employment to a goodly number of hewers and converted into economic units those who otherwise would have made but poor contribution to the indirect taxation revenue. Withal, it has awakened a consciousness of the colony's possibilities in a direction which its own people have all along sadly neglected. We find that in spite of enhanced values, the importations of beef and pork went up during the quinquennium from 17,655 barrels to 19,391 barrels. While 389,025 lbs. of tinned fish sufficed for requirements in the first year of the period, indents were filled last year for as many as 506,629 lbs. Of dried fish there was need for more also, the respective importations being 40,399 cwts. and 41,528 cwts. The demand for canned meats also grew greater, the annual consumption advancing from 348,665 lbs. to 426,779 lbs. In flour, however, there was a falling-off from 195,444 packages to 176,319 packages, a phenomenon not to be wondered at in view of the high prices in the supplying markets and the competition set up by creole rice which in some measure is a substitute for flour. Nor should it be forgotten that during the past two years the import duty has been raised to the extent of five per cent. on the tax—$1 per barrel. The female relations and connections of the sturdy axemen and bleeders shared also in the increased income of comfort. We find an appreciable augmentation of the indents for haberdashery and millinery and linen, cotton, and woollen goods—from $250,402 to $293,176 worth in respect of the former and from $826,110 to $921,849 worth in respect of the latter. Thereto the local lumber (particularly crabwood) industry has also contributed. A gauge of its improvement may be gathered from the fact that whereas ten years ago our importations of lumber, dressed and undressed, amounted to 5,981,497 feet, only 2,647,332 feet came to hand last year. Another indication of progress is afforded by the sensible increase of trade licences. The number of shop and store licences has gone up from 2,175 to 3,144, an improvement of more than 44 per cent. If we were able exactly to evaluate the proportional contribution to the commercial economy of the several industries, there is no doubt that it would be found that that of the hinterland enterprises was second to none. It is notorious that the majority of labourers on the sugar estates suffer from the disease known

in economics as "under-consumption." On the other hand the knights of labour engaged in the forest industries are, according to the present Comptroller of Customs, "not possessed to any appreciable degree with traits of a miserly nature and their earnings and savings are quickly disbursed on their return from the bush to civilisation in such goods as clothes and other articles of personal adornment, alcoholic liquors, and tobacco and enjoyments of various kinds." Of recent years he shows that importations of ladies' and children's ready-made clothing have been considerably on the increase and these articles are also partially accountable for swelling the returns of ready-made clothing during 1910-11 The following table giving the values of ready-made clothing during the decade ended 31st March, 1910-11, attests the truth of the Comptroller's observation :—

Year	Value.
1900	$ 33,495
1901–2	28,383
1902–3	22,634
1903–4	24,649
1904–5	27,765
1905–6	37,923
1906–7	34,537
1907–8	18,108
1908–9	50,347
1909–10	82,520

Yet it might have been more satisfactory if the stuff could have been supplied by local labour. It would probably keep many a young woman off the débris heap of our civilisation.

Trade must also have been beneficially affected by the development of coconut cultivation. Of late years increasing attention has been paid to this, thanks to the remunerative prices offering in the New York market. The English investor is now being or about to be informed of the goodness of the cult of the coconut as an investment, and the company-promoter, that useful servitor who makes matrimonial matches between capital and dormant utilities, has been with us, to some good purpose, it is to be hoped. During the decade the exports of coconuts have increased from 17,255, of a value of $155, to 1,517,418 of a value of $23,386. The by-product, copra, first appeared on the list of exports in 1910–11, when 67,784lbs. were sent away, the great bulk of it to the United Kingdom. In the next year the output reached 159,697lbs. with a valuation of $6,549. Molascuit or cattle-food was placed on the export list for the first time ten years ago, the official valuation being $22 per ton, but, according to last year's figures, the price has dropped to $11 per ton, the respective quantities exported being 385 tons and 5,102 tons. But in 1906–7 when the stuff was worth a little over $14 per ton, high water-mark was reached with an export of 12,961 tons. With the exception of cocoa which exhibits a slight falling-off, all the other items of colonial produce of comparatively minor

importance show increases during the decade. The whole export trade, the net produce of our labour and capital, has improved, notwithstanding the uninterrupted and serious decline of the gold industry, the diminished output of sugar, and last year's drought, a parallel for which cannot be found. The value of the exports of colonial produce and manufacture ten years ago was returned at $8,782,796, while last year it was $9,430,247.

The percentage value of the products of the colony other than sugar with its by-products declined during the decade from 29 to 23. Clearly this has been due to the high prices offering for sugar during the past two years and not to any decadence of the "minor" industries. It is true that the value of these declined—from $2,322,409 to $2,163,925—but it must be remembered that the gold export of 1902–03 was worth $1,789,587, as against $915,516 last year. The subsidiary industries have developed steadily if slowly. It is well that they should move forward, for any improvement in that respect ministers directly to the well-being of the body economic. Moreover, it is matter for rejoicing, for it secures the more general distribution of the wealth of the colony and the greater good to the greater number. In his report for 1903–04 the late Mr. D. G. Garraway, Comptroller of Customs, remarked: "What is really desirable is that the exports of colonial produce other than sugar, rum and molasses, should at all times represent a fair proportion of the total exports of the colony. Twenty years ago their proportion stood at two per cent., which was neither fair nor satisfactory. That was indicative of a policy of *laissez-faire*—it meant that the extensive agricultural, mineral and other industrial resources of the colony remained undeveloped, and that no attempt was made to improve the material condition of the mass of the population."

Cotton re-appeared on the export list in 1904–5 when 1,785lbs. were shipped. It was thought that the enterprise would have developed, but it has not, the item having slid off the list in 1907–08 when the exports had dwindled to 12lbs. It seems that we are unable profitably to produce commercial cotton nowadays. At one time cotton figured largely among the articles of colonial produce for export. In 1810 as many as 5,821,776lbs. of cotton, valued at over £2,000,000, were shipped hence. Once again has coffee come upon the list, its second coming dating from 1908–09 when 88,704lbs. were exported. As shipments have increased without a break since, last year's returns being 136,420lbs., it seems that progress is being made, especially when regard is had to the fact that imports are declining. Ten years ago over 300,000lbs. of coffee came in, mostly from the United States. Last year's importations totalled only 65,631lbs. In the enjoyment of a protective duty of 4½ cents per lb., the industry should go forward without let and be a means of adding appreciably to the list of revenue contributors. The area under coffee cultivation has increased during the past nine years from 718 acres to 2,546 acres. We are importing more chocolate and prepared cocoa, the importations ten years ago being 9,068lbs., comparing

with over 10,000lbs. last year; and we are exporting less cocoa, the shipments of 93,917lbs. of 1902–03 comparing with 82,800lbs. last year. Concerning this item, the Comptroller of Customs, in his last report remarks: "The cocoa industry does not appear to be in a very robust condition, however, as the value of the cocoa exported in 1911-12 was not equal to the average annual value of the exports a few years previously, although the fact must be borne in mind that very little foreign cocoa was imported during the years 1908–9, 1909–10 and 1910–11, so that more of the locally-produced article was retained for home consumption. but the increased quantity cannot be ascertained." As there are now more local chocolate factories than ever there were, we may conclude that the consumption of this article, both imported and home-made, is on the increase. Curious to note in this connection is that the consumption of tea is also on the increase. last year's importations reaching 85,469lbs. against a consumption of 69,183lbs., a decade ago—and all this with a lesser population. another factor contributing to the impression that the standard of comfort has bettered. From the foregoing figures it can safely be deduced that the consumption of sugar has also increased. Figures relating to the consumption of sugar, tea and such like beverages are generally appealed to as significant of general progress. The acreage under cocoa cultivation has increased during the past nine years from 901 acres to 2,016 acres.

The bulk of the Customs duties continues to be collected from goods subject to a specific rate of duty. Nearly 80 per cent. of the duties were so collected last year, while ten years ago it was 84 per cent. The specific rate is levied for the most part on articles comprising food, drink and narcotics, the *ad valorem* rate being levied on decencies and luxuries. Those excellent folk who, in season and out of season, delight in asserting that the people are overtaxed, but cannot for the life of them prove it, will be interested to learn that the incidence of Customs duties has declined during the decade. For every dollar's worth of goods imported for consumption in 1902-03, a little more than 25 cents was exacted as a revenue toll. Last year the corresponding figure was a trifle over 20, the respective collections being $1,679,995 and $1,713,791, and the respective values of the importations (not including transhipment goods) being $6,582,667 and $8,147,114. Without entering upon the never-ending question of the ethics of taxation, it may be said that the specific rate of duty is the more convenient for Customs purposes, if only because, as a former Comptroller of Customs once remarked, the value of goods paying an *ad valorem* rate of duty have a habit of diminishing at times in respect of particular items.

The principal changes in the Customs Duties Ordinance during the decade that fall to be noted are the inclusion in the Free Schedule of rice machinery and agricultural implements of all kinds, certain articles used in the manufacture of soap, mechanics' tools, cattle for breeding, candles used in mining operations, and variation of the method of assessing the duty on tobacco in the leaf.

Note must also be taken of the beneficent reform which provided a means by which importers are prevented from rushing their goods through the Customs at any time that the Combined Court may be considering changes in the rates of Customs duties. The Ordinance (32 of 1905) provides that changes of duty when effected by the Court come into operation from and inclusive of the day upon which the Court resolved itself into a Committee of Ways and Means at the session at which the Customs Duties Ordinance is passed, unless otherwise provided for. The object of this amendment is to prevent loss of revenue by persons taking out of bond, or passing through the Customs during the sitting of the Combined Court or before the coming into operation of a new Tariff articles upon which new or increased duties are imposed. There has been a repeal of the Customs Ordinance of 1884 relating to the production of a landing certificate in respect of goods exported. The new provision relieves the exporter of any obligation to produce any proof of the landing of the goods at the port of destination unless specially required to do so by the Comptroller of Customs; and to allow drawbacks to be paid on a declaration made by the party exporting on goods that they have been actually exported and have not been relanded in any part of the colony. Landing certificates must however be produced for all drawback goods exported in sailing vessels of less than 100 tons registered tonnage, and no certificates of drawback are to be prepared until such landing certificates are produced.

In 1908 the *ad valorem* rate of duty was reduced from 15 per cent. to 12½ per cent. There was no relief of the burden that hangs upon those necessaries of life upon which a specific and a higher rate of duty is imposed. A surtax of 5 per cent. was imposed in 1909-10. The next year saw the abolition of the surtax on imported matches, the *ad valorem* rate was put back to 15 per cent., and the surtax thereon was raised from 5 to 10 per cent. The drawback on oil used as fuel for driving machinery was changed so that the amount of duty retained for the public use was increased from one cent to ten cents per gallon. The importation of balata from Venezuela was prohibited in December, 1907. It had been the custom to refund the import duty on Venezuelan balata as drawback when the balata was shipped hence, and a certificate was produced of the landing of it at some port abroad. The foreign balata paid a half cent per lb. on importation; it passed into the possession of the importer, it was negotiable, it entered into competition with the local production, and then it was sent to the markets abroad unburdened by any fiscal charge. The royalty on local balata meanwhile was two cents per lb. An unnecessary export tax was imposed in 1910-11 on balata, but it was removed in the following year.

A word must suffice as to the direction of the colony's trade. The United Kingdom continues to be the best customer as a supplier. The

value of the trade with each group of countries is given herewith for the first and last years of the decade under review :

	Import Trade per cent.		*Export Trade per cent.*	
Countries.	1902–03	1911–12	1902–03	1911–12
United Kingdom ...	50.45	48.49	41.84	32.83
British Colonies ...	9.19	12.87	7.79	43.06
Foreign Countries ...	35.33	33.65	46.40	19.99
Transit Trade ...	5.03	4.99	3.97	4.10

The falling-off in the import trade with the United Kingdom is more apparent than real. During the last three years the system of crediting the countries with the value of the trade done was changed, and the statistics have been kept according to the country of origin instead of the country of shipment. So it comes to pass that the United Kingdom does not get as much credit as she used and ought to get, while there is an apparent improvement in the trade with the British Colonies. A further change is announced : from the current year it is the country of consignment that will be credited with the trade. The export trade with the Colonies has more than quintupled, due of course to Canada's sugar transactions. Ten years ago, when a surtax was placed by Canada on German sugar entering her ports, the Dominion took only 13,777 tons from British Guiana out of a total export of 120,127 tons. Last year her indents amounted to 63,377 tons out of exports totalling 99,368 tons, the takings of the United States being 21,523 tons against her indents of 89,896 tons at the beginning of the decade. Exports to the United Kingdom have meanwhile dropped from 16,327 tons to 14,454 tons. A further falling-off may be expected in view of the Reciprocity Treaty between the West Indies and Canada and the denunciation of the Brussels Sugar Convention by the United Kingdom.

A distinguishing characteristic of the colony's trade is that its exports exceed its imports in value. So far as my researches go, it is only on three occasions since Emancipation that it has been the other way about. One of these occurred in the decade under review, as will be seen from the subjoined statement of the value of imports and exports during the period :—

Year	Imports.	Exports.
1902–3 ...	$ 6,931,605	$ 8,782,796
1903–4 ...	7,948,913	8,688,181
1904–5 ...	7,380,437	9,557,029
1905–6 ...	7,978,587	9,573,093
1906–7 ...	8,115,862	8,846,917
1907–8 ...	8,473,720	8,215,408
1908–9 ...	8,826,946	10,100,047
1909–10 ...	8,517,396	9,529,620
1910–11 ...	8,398,879	8,736,951
1911–12 ...	8,575,556	10,429,275

The excess in the value of imports over exports in 1907–08 was due to the short crop of sugar in that year, the exports being 14,124 tons less than in the year immediately preceding. By many this excess of exports is regarded as a trade balance in favour of the colony. So it would be if the excess came back in the shape of re-investments ; but it does not. This being so, I think I am entitled to regard the phenomenon as constituting economic hæmorrhage. Excess of exports over imports in a colony like this where trade is carried on to a very large extent by means of outside capital, is only to be expected. The excess value goes to meet current liabilities in respect of borrowed capital for both Government and private enterprises ; and as nearly all the owners of sugar and other estates are absentee proprietors, the profits also go to fructify abroad. In some Crown Colonies, notably those in West Africa where the lands belong principally to the people, and not to the Crown, and where the products are chiefly agricultural (except the gold mines in the Colony of the Gold Coast) the profits of trade fructify to a great extent at home, and consequently the value of the imports exceed that of the exports. When new enterprises commence in a country the value of the imports increase because of the value of machinery, implements, &c. for purposes of development, but when a country is completely developed, the difference between import and export values assumes a natural ratio, and the prosperity of the country can then be more readily ascertained. It must be conceded that the general condition of British Guiana would be poor indeed if it had to depend on local capital and enterprise to exploit its resources and direct its industrial activities.

THE LABOUR QUESTION.

THE PROBLEM STATED.

By Fred C. S. Bascom.

The present would seem to be a fitting time to urge anew the importance of an adequate labour supply to the well-being of the colony.

Rather more than a year ago a census of the population of the colony was taken, and it is now several months since the Census Commissioner's report on the figures obtained has been published, so that all who cared to could study them

Lessons of the Census.

It will not be disputed by anyone who has studied it that the document in question shows British Guiana to be in the unhappy position of being dependent on outside supplies for the labour it needs for its economic development. The evidence of the report on this point is clear in the extreme. The Commissioner on page 4 of the Report compares the natural increment population, that is the figure at which the population would have stood had births and deaths been the sole causes operating to produce change, with the population as enumerated in 1911. The result shows an excess of the enumerated population over the natural increment population of 19,980. The origin of this excess is shown on page 5, where the emigration is deducted from the immigration for the period under review, the result being again 19,980. The Commissioner then adds the following comment : " The East Indian section of the population is responsible for the whole of the immigration here shown." And a couple of paragraphs lower down the page, going more fully into the matter, he adds :

> " Had there been no East Indian immigration the population would have shown a decrease of 9.8 per cent. on the population in 1891, while had there been neither immigration nor emigration the decrease would have been 7.2."

A Natural Increase.

Confronted with these facts, the man who undertakes to oppose immigration would seem to have an uphill task before him. He might, it is true, if the extracts I have made from the Census Report stood alone, object on ethical grounds to people being persuaded to emigrate to a colony where the population decreased in the absence of immigration. But happily for the colony, whose chief need is an increase of its labour force, they do not stand alone. On page 24 of the Report there is a table showing the increase of the native-born population. All races show an increase except the Aborigines, who show a decrease of 7.53 per cent. The increases per cent. are : Europeans 8.99, Portuguese 20.45,

East Indians 105.56, Chinese 60.45, Blacks 9.85, Mixed Races 13.08. Of the races named above the Portuguese, East Indians and Chinese are the only ones who have been brought here as immigrants to work as manual labourers, and the figures show that the descendants of the original immigrants are adding to their numbers. For although it is true that the Commissioner warns us on page 25 that in considering the figures of the increase of the native-born, we must bear in mind that the children of immigrants are classified as creoles. This warning does not apply to the case of the Portuguese and Chinese, who have long ceased to come to the colony as immigrants, and it is obvious that new arrivals either from Madeira or China must either be non-existent or so few as to be negligible, and yet both the races named show substantial increases. While in the case of the East Indians, where the warning does apply, the increase is so large that it could be halved and still leave the race with a substantial increase to be credited to its native-born.

The paragraph of the Report I am now considering closes with the reminder that in considering the death-rate of the immigrants it must be remembered that the foreign-born element is almost entirely adult on arrival here,—that is, that they spend only a part of their lives in the colony.

The above would seem to constitute a very strong case for adding to our labour forces by immigration, and taken in conjunction with the historical fact that the present scheme of East Indian immigration when first established lifted the colony out of the grave condition of economic stagnation into one of considerable prosperity, the case becomes unanswerable. Yet, outside the planting body, who being the largest employers of labour in the colony are compelled to think clearly on this matter, the attitude of the majority of colonists would seem to be: "Let us do anything and everything to lift the colony out of the slough of despond in which it is sunk except take the straightforward course justified by history of adding to its labour forces." And this attitude of the colonists has hitherto been duplicated by our Governors, who have left this important matter severely alone.

"The Pet Fad of the Hour."

There are in the colony many earnest men who are always urging their fellow-colonists with tongue and pens to multiply the industries of the colony, to attract foreign capital, and to build railways. This last is the pet fad of the hour Ask them if they are prepared to increase the labour supply and they give a ready assent. But it is only lip-service. Watch their general attitude on the question of the development of the colony, and you will see that the augmentation of the labour supply is a secondary matter with them. Now, I have nothing to say against the lines they are working on. Applied under proper conditions they have proved powerful factors in the development of other lands, and similarly applied, a like result should attend their adoption by us. But I am thoroughly satisfied in my own mind that multiplication of indus-

tries on a limited labour supply is a policy doomed to failure, that the wealth of the Rothschilds, if we had it at our disposal, can only be beneficially applied to the economic development of the colony through the medium of an adequate labour supply, and that railways, while they are powerful means of opening up a country, require a labour force in the country to make them effective. I have heard of many different kinds of railway, but never of one whose rolling stock when not in use as rolling stock could be put to work, planting rubber, limes or coconuts, bleeding balata or rubber, or cutting timber and digging gold and diamonds.

Will a Railway Attract Population?

The railway folk, it is true, tell us that the railway will attract population. But the examples of growth of population following on railway construction which they cite are not convincing. They usually bring up the case of some country with a cold climate which is open to settlement by the surplus population of Europe. Now a railway built in a tropical country, if it is to attract labour which is to be of any use to such a country, must attract tropical labour, and this it cannot do, simply because the people are not there to be attracted. The tropics in the present day are, taken as a whole, the most sparsely populated portion of the earth.

I make the above statement on the authority of Mr. Alleyne Ireland, a man whose opinion is entitled to respect. He has devoted some 16 years of his life to travelling about in the tropics (the Heat Belt, as he calls it) studying tropical systems of administration and tropical economic development. The statement appears in one of his books "The Far Eastern Tropics" And what adds to the value of it is that he builds no theories on it. He simply gives the facts as he has ascertained them and there leaves the matter. I have not got the book by me at the present, but, briefly put, the substance of his statement is that the majority of tropical countries are short of the labour necessary for their full economic development. He mentions only five countries in the Heat Belt as known to him that are sufficiently supplied with labour—Barbados, Porto Rico, Cuba, Java, and India.

The majority of tropical countries are poorly populated according to him, and those that have a sufficient population for their needs are the minority.

Erroneous European Ideas.

This statement of Mr. Ireland is a flat contradiction of the view usually held among the great Northern people, both those who own colonies and those who do not, and I will doubtless be told that if it is a case of Mr. Ireland against the world the world would have the vote of most people. To this I reply that the seeming contradiction arises from the fact that Mr. Ireland is describing the conditions of to-day, while the idea of the Northern peoples as to the density of tropical populations

refers to a state of things that existed when the new countries were first discovered but which has now passed away. There is nothing strange in the North not having up-to-date information on a tropical question. The number of people in Europe and North America who are interested in the tropics is small. The number who are sufficiently interested to study handbooks on the subject of the distribution of tropical population is negligible. No such handbooks are published therefore, and a great wastage of the tropical populations has taken place without attracting the notice of the Northern peoples. This wastage has been the outcome of the meeting between the white races and the wild races with whom they came in contact during the great era of discovery in the 15th and 16th centuries. This is not mere hypothesis ; it lies entombed in carefully collected and tabulated statistics published in every Department of Public Health in America, Australia, and Polynesia, with which I as a layman am unfamiliar. For what follows, therefore, I am indebted to a chapter entitled " Bacteria as Empire Builders " in a book on Heredity written by Dr. Archdall Reid and published in 1905. The doctor lays it down that a migrating race armed with a new and deadly disease and with high powers of resisting it possesses a terrible weapon of offence. Here is some of the evidence he produces in support of that statement :—

> " The ancient condition of the Old World was reproduced in the New. Again we read of plague and pestilence, of water and air-borne diseases, coming and going in great epidemics, and of the famines that followed. Measles, and in later times, cholera piled the earth with dead. The part played by smallpox was even greater. When taken to the West Indies in 1507 whole tribes were exterminated. A few years later it quite depopulated San Domingo. In Mexico it destroyed three and a half millions of people. Prescod describes this first great epidemic as sweeping over the land like fire over the prairies, smiting prince and peasant, and leaving its path strewn with the dead bodies of the natives, who (in the strong language of a contemporary) perished in heaps like cattle stricken with murrain. In 1841 Catling writes of the United States :—Thirty millions of white men are now scuffling for the goods and luxuries of life over the bones of twelve millions of red men, six millions of whom have fallen victims of smallpox. But the principal part was played by tuberculosis. Air and water-borne diseases generally left immune a remnant, but against tuberculosis no immunity could be acquired. Red Indians and Caribs could not in a few generations achieve an evolution which the inhabitants of the Old World had accomplished only after thousands of years and the cost of hundreds of millions of lives. . . . . The following is an example of the manner in which tuberculosis went to work. The tribe of Hapaa is said to have numbered some 400 when the smallpox came and reduced it by one-fourth. Six months later a woman developed tubercular consumption ; the disease spread like fire about the valley and in loss than a year two survivors, a man and a woman, fled from the newly-created solitude."

Mr. Ireland's statement refers to the conditions of to-day after this great slaughter had taken place. European and American ideas are a survival of the stories the early discoverers brought back with them of lands teeming with people.

A Difficult Problem.

I have gone into this matter somewhat fully, because I think it will tend to bring about a healthier public opinion on this great question of an immigration scheme capable of expansion according to the needs of the hour. The average colonist holds the Northern idea of the tropics as being, for the most part, densely populated and thinks of Demerara as one of the few places in a densely-populated tropical world that is short of population. The immigration question thus looked at becomes a small local question capable of an easy solution whenever the colonists as a whole wish to solve it. Whenever, therefore, the interest of an individual demands that he should take up an anti-immigration attitude he does so readily, salving his conscience for his action against the interest of the colony by the thought that the matter is one easily put right if it proves damaging. But if Mr. Ireland is right the difficulty is not one capable of easy solution. His discovery (for it amounts to that) shows our local shortage to be part of a great world question. In making it plain that we have to collect our tropical man-power from a world not too well supplied with it, he shows us the difficulties of our task. But he is helpful too, since he shows us clearly just what the nature of our task is Many things follow from Mr. Ireland's statements. Among other things the failure of the tropics to progress is not the outcome of the enervating effects of tropical climates on the people resident in them. It is due to the lack of man-power. The problem of tropical development is thus seen to be a problem of the redistribution of tropical populations.

A Limited Supply.

But if we see our task more clearly, the light which Mr. Ireland throws on the scene also shows us unsuspected danger. If tropical man-power is scanty and our development depends on our securing a full share of what is to be had, we must get to work quickly. At any moment competition which we cannot see might begin for the limited supply of man-power. The Census Report tells us that the descendants of the immigrants we have already brought to the colony are increasing their numbers. It will be well for us if when a world-scramble for the available tropical labour starts we have made such good use of our time before it began that we can rely for further development on the natural increase of our people.

Southern Europeans Unsuitable.

There is only one more point to be noted and I am done with this part of my subject.

It has been suggested, doubtless with the idea of getting over the difficulty of the shortage of tropical labour, that we should try South Europeans as immigrants. The plan, however, would seem to be impracticable. First, it is no use bringing out people to a country who cannot live in it and bring up families if they elect to remain. Now, it

is certain no South European could do this on the coast-lands or even in the river valleys of the interior. At the Hygienic Conference in 1891 (section, Demography) a discussion took place on the possibility of colonization—that is acclimatisation—for Europeans in the highlands of the tropics. Dr. Felkin considered that to enable Europeans to live and work and bring up families an altitude of nearly 4,000 feet would be required for Portuguese, Spanish and Italians; while for British and North Germans from 6,000 to 10,000 feet would be necessary, and even then the areas must be carefully selected and all sanitary precautions must be taken; the typical altitude for these races would be above 5,000 and under 7,000 feet. An elevation of 3,000 feet in the tropics corresponds to a reduction of 10 degrees Fahrenheit, in temperature 6,000 feet to 20 degrees F., and so on. On an isotherm of 70 degrees F., therefore, to obtain a mean temperature equal to that of Britain (about 50 degrees F.), an elevation of 6,000 feet is required. Although an invigorating climate may thereby be obtained Dr. Felkin considered that there will always be certain elements which will detract from its value, viz., the powerful sun, the rarified air, and the absence of a summer and winter. Sir W. Moore also said that a European must be free from labour under a tropical mountain sun, and especially in tropical mountain valleys which are generally essentially malarious. His work must be that of supervision and not actually manual.

What Experience Proves.

But even with these conditions all experience and reasoning are against a European founding a family and against his descendants living and retaining their mental and physical characteristics as they do in a temperate climate, whether on tropical plains or tropical hills. The temperate climate of altitude will not supply the place of the temperate climate of latitude. Dr. Van De Burg came to the conclusion that though the settlement of Europeans on tropical highlands is physiologically conceivable field-work should be excluded, and permanent colonisation will probably not be accomplished for several centuries. Sir Clement Markham, however, considered that under suitable circumstances the mountain ranges which cover large areas in the tropics are well adapted for the healthy growth of development of generations of Europeans of pure blood. The climate is suitable; all the food supplies most conducive to their well-being are cultivated and raised, and we have at least some proof of the fact that European settlers do thrive for generations on tropical plateaus of large area. Isolated or knife-like mountain regions of small area, he thought, suited for sanatoria but not for continuous European settlement, being too much under the influence in various ways of the adjacent low lands.

At first sight there would seem to be considerable divergence of opinion between the various speakers, but if we take into consideration that Sir W. Moore was speaking of India and by European meant British, and Dr. Van De Burg chiefly from personal experience in the Dutch East Indies,

while Sir Clement Markham was speaking of Spanish families of pure blood settled in Peru, the utterances of the various speakers seem rather to confirm the conclusions of Dr. Felkin.

The facts that concern the subject we are considering that emerge from the discussion are, that the conditions required for successful South European settlement are not obtainable in British Guiana. A plateau of large area, even if obtainable, would have to be of such an altitude, having regard to our vicinity to the equator, as to emphasize unduly the admitted drawbacks of rarified air and a tropical mountain sun.

Our labour problem, then, would seem to be the seeking out in the sparsely-populated Heat Belt of possible resources of tropical man-power, which, when found, we must proceed to tap by an immigration system capable of expansion or contraction in accordance with our varying needs. A possible scheme to do that belongs to the second part of my subject.

A SUGGESTED SOLUTION.

The first and most important suggestion that I have to make is that the principle should be adopted of free labour for all industries, and that there might be no doubt about what I mean by free labour, I will explain that my meaning is, that the Government should import immigrants and hand them over free of charge to employers, whoever they may be, whether planters, wood-cutters, or miners, or what-not, so long as the said employers satisfied the Government that they were prepared, and in a position, to carry out the Government regulations relating to immigrants. In the interest of the newcomers themselves they would have to be allotted to the employers who accepted them on arrival for a certain number of years, say five, as at present. A period of tutelage is absolutely necessary.

I am perfectly well aware of the outcry this suggestion will give rise to. I can hear in imagination the angry storm of protest. Is the man mad? Where is the money to come from? What, tax the labourers already in the colony to bring others to take the bread out of their mouths! etc., etc. I will deal with all this presently. First, let me explain why I put so very controversial a suggestion in the very fore-front of my programme.

Change the Present Scheme.

I take it that all will agree that if this country is ever to progress the present immigration system must go. You can keep the present immigration system and stand still or change it and go forward. But you cannot keep it and go forward. Think for a moment what the present system is, and what it means. A single industry is singled out and specially taxed to pay for the cost of introducing the outside labour at present brought into the colony. The general revenue of the colony pays a fixed amount, and whenever the

planters' indents are just under 3,000 (2,800 are the actual figures, I think), they under this arrangement pay half of the cost of immigration, and the general revenue half. But since the planter contributes heavily to the general revenue, in practice the planter invariably pays the greater part of the cost of immigration, and the numbers introduced therefore depend on the prosperity of that industry. But since land, labour and capital are the factors of production, and not land and capital alone, it is evident that you cannot have any considerable economic development without a large increase of the labour forces, while, as I have shown, such increase does not depend on the colony's labour needs but on the state of the sugar industry.

His Excellency, speaking at the Reading Rooms, said that he thought in the past the colony had made the mistake of putting all its eggs in one basket. That mistake was the direct outcome of the system we are discussing. Because the planters paid the greater portion of the cost of immigration (and in the old days they paid even more than they do now), the immigration scheme was allowed to become an East Indian immigration scheme; there was practically no provision made for any other industry that might arise requiring other labour than East Indian. Accordingly all new industries to procure labour had to outbid sugar in the local labour market, and with sugar at 26s. to 30s. per cwt. the result was a foregone conclusion: they either disliked the outlook so much that they never started, or starting succumbed. I submit my case is proved. The present scheme must be changed. But for what?

Make Imported Labour Free.

It would seem at first glance as if the simplest thing to do would be to make all industries pay for the labour introduced from outside. But how are you going to do it? You cannot make a law compelling all industries to use imported labour if they do not wish to do it. Take the case of a peasant industry like rice-growing. In many cases the tiny venture is amply staffed by the labour of the man and his family. Are you going to compel him to employ labour he does not want? You would kill the industry. He would be quite unable to carry out the multitudinous provisions common to all immigration schemes. And the case of the hinterland industries is but little better. An Immigration Ordinance similar to the one in use for coolies would be quite unworkable on distant balata and wood-cutting grants. And even if a class of immigrants for bush work was obtained, and the regulations, framed in the interest of the new-comers, greatly simplified, as they could be under such circumstances, the fact that they had to use labour calling for such regulations, however simple, would be regarded as a drawback by those engaged in such industries and might, and probably would, check enterprise—a most undesirable thing to do. What are the alternatives? If you make it optional, the new industries would do as they do now and you would simply perpetuate the present system. If in recognition of the fact that the labour supply of this colony is to a great extent an artificial creation, you imposed a tax of so much per head on each individual

employed by an industry not using imported labour, this tax would be open to the same objection as a law making it obligatory on all industries to employ imported labour. You simply could not impose it on the small rice-farmer making use of no other labour but his own and that of his family, because it would appear in the guise of a tax on their right to earn their livelihood. By the chiefs of the bush industries, many of whom are strangers to the colony, whose previous experience of labour conditions leads them to think of a labour supply as something given by God and as untaxable as air, rain, and sunlight, such a tax would be resented and the existence of such a feeling would operate as a check to enterprise. But if you cannot go on taxing one industry only, because it results in limiting the labour supply, and you cannot tax all because it is impracticable, what remains to be done but to make imported labour free to all?

What Recent History Teaches.

Remember, you must increase the labour supply if you are to have progress. The objections that the cost is prohibitive and of its being unjust to the labour already in the colony need not detain us long. The man who stands aghast at the cost of giving free labour to all industries must have persuaded himself that no economic development results from addition to our labour forces. Surely he must have forgotten recent history? Let him study history and see what was the state of economic stagnation in which the colony was sunk just before the coming of the coolie, carefully comparing it with the position of to-day. This he should find helpful in eradicating his hallucinations. And if he would get a firm grasp of the fact that the colony has borne the cost of an immigration system of a sort from 1845 and earlier, and has not only not suffered but derived benefit from it in spite of the fact that the burden was thrust almost entirely on a *section* of the community, his doubts as to the *whole* colony being able to pay for the immigration it needs will vanish.

To those who believed that paying for the immigrants that the colony needs out of general revenue means taxing the labourers already in the colony to bring in others to take the bread out of their mouths, I would also recommend a study of the history of their country. Such study would teach them that the coming of the coolie took the bread out of no man's mouth; on the contrary, it produced an economic development that made it easier for everyone, from the highest to the lowest in the land, to make a better living. And since economic development meant expansion of the revenue, the cost of bringing them here fell as a tax on no man, but represented an investment that was repaid to the colony nearly eight-fold. There is no trouble about finding the money, and there is no question of injustice to any inhabitant of the colony.

The real difficulty that would arise if the Government provides imported labour free would be to find enough employers willing to take advantage of the new labour to secure a sufficiently large immigration to produce economic development on the scale all are hoping for. From

past experience we have no reason to believe that any other industry save sugar would use the new supply. Of course the planters, under the conditions of labour famine that prevail in the colony to-day, would indent very largely; and if new sources of supply are tapped, giving healthy immigrants, it is quite possible that the finished article they turned out will appeal to a larger public than does the trained and acclimatised coolie. In that case the planters will have a constant stream of the new-comers passing through their hands.

In this way there will be a considerable increase on the numbers now introduced, but they will not be large enough, and it is to be hoped that other industries will be tempted to take immigrants by the fact that the labour is free. They are far more likely to do so if new sources of supply are tapped, giving us fine strong men of good physique, instead of the anæmic physical wrecks we get from India nowadays.

No Wild Rush Anticipated.

Say immigrants from the West Coast of Africa were imported. Why should not the Demerara Railway try a few of them as porters? Or certain of the Georgetown merchants join to get together a corps of them to be used for the same purpose? Doubtless in the early days of the movement, to encourage as large a use of the new labour as possible, the Surgeon General would allow them to pay a fee and to send their sick to the Colonial Hospital, and the necessary periodical inspection of the newcomers could take place there also. Something of the sort will have to be done if the full benefits to be derived from free labour are to be realised. For although it used to be the fashion to speak of coolie immigration as a bounty to the planter, I fancy it will be found, even if labour other than Asiatic is introduced and is handed over to employers free of charge, that there will be no wild rush to secure this particular form of bounty on the part of employers outside the sugar industry. The gentlemen who run the other industries, probably knowing the bounty statement to be a fatuous lie, and that the planters who for years have taken the raw immigrant and in the great majority of cases turned him into a self-reliant, self-supporting colonist, were rendering a service to the colony in the civil sphere similar in kind to that which Sergeant What's-His-Name of Kipling's poem, who . . . . . "had a charm for making riflemen of mud," rendered in the military, I may add that, like the sergeant "we were not allowed to forward any claim."

The Source of Supply.

Assuming that the principle, free labour for all industries, was accepted, obviously the first step to be taken to give effect to it would be to get an idea of the available supply of tropical labour. This should not be an onerous task, and it will certainly not be costly. All that is necessary is that the Government of British Guiana should address letters of

enquiry on the subject to the Governments of all British tropical possessions possessing large populations. These letters need only contain an enquiry as to whether a supply of surplus labourers existed who would be willing to seek to better themselves by immigrating, and would give the terms the British Guiana Government were prepared to offer to such immigrants, and an estimate of possible earnings in a great number of unskilled occupations, such as would be suited to new-comers. As to the result of such enquiries I think they should give us a knowledge of all possible supplies of tropical labour. For while the information gained would not be of so complete a character as that obtained by Mr. Ireland by travelling and personally investigating conditions on the spot, it would obviously cover a great deal more ground in very much less time. I think too it would be successful as regards unearthing new sources of supply. My reason for this hope is that although I am only a private individual who happens to be interested in the labour question, and although I have not been outside the lightship for three years I believe that I have been able to add another place to the five Mr. Ireland mentions as possessing sufficient labour for their full economic development.

A year or two ago Mr. Gavin Smith, an engineer on the Lagos Railway and son of the late Mr. William Smith, was in the colony, and in a conversation I had with him, he told me of the large labour supply they had in Lagos, mentioning as an evidence of this abundance that for common labour such as carrying dirt to build a railway embankment the pay was five cents per day. I made a note of Lagos as a place in which we might get labour, and thought no more about the matter until about a year later when Captain Calder, of the British Guiana Police, gave me a book called "The White Man in Nigeria" by George Douglas Hazzledine. Remembering Lagos and the five cents a day labour, I thought Mr. Hazzledine's book might prove interesting. It did. The second paragraph on the first page started the interest, where the statement is made that

> "If any one asks he is told the population of Northern Nigeria, or the Hausa States, is 10 million or 25 million with a frank ignorance of the mere fives of millions which should provide food for thought," and later we read: "We have been in touch with the Hausa States for centuries and the Hausa traders have for centuries been in evidence throughout the whole of Northern Africa from Lagos to Tripoli, from Fez to the Nile. It has been known for centuries that the land was fertile beyond all dreams and teemed with people, swarming in vast cities of anything up to a quarter of a million souls. . . . It has been known as the great Negro preserve for centuries, and therein lies our uncertainty as to how many people up to 15 million there are up the Niger. We have known for centuries that the innumerable villages swarmed with kiddies, but we do not know how many have been left alive."

A Bit of Hausa History.

But here I must give you a little bit of the history of the Hausa States. Rather more than a hundred years ago there wandered into Hausaland a tribe of gipsy-like people, the Foulani, whose business was keeping cattle. Their place of origin is unknown, but they seem to have heads on their shoulders, and to have had a great talent for organization and government. They did not mix with the people of the country, but as the soil of Hausaland was rich their cattle increased mightily, and when cattle became currency the Foulani became rich. This was their first step to power. Later they became bankers, lending money to little kinglets who wanted to fight one another. There seems to have been a fine opening for this sort of business in Hausaland at the time, since it was one of the customs of the country to have frequent wars with your nearest neighbours—something like the way the English counties play one another at cricket every summer, except that in the Hausa war games they only played adjacent countries and war was always in season. This sort of thing went on for some time until there arrived on the scene a gentleman of the name of Othman Fodio. The idea occurred to him that if you financed war you only got your commission, but if you took a hand in it as a principal and financed it yourself you secured the entire profit. The publishing houses of Hausaland do not seem to have brought out any work at the time the exact equivalent of Mr. Norman Angell's "Great Illusion," written to prove that war does not pay. So Othman's mind was shaken by no doubts, and he put his project into execution, with the result that he became master of all Hausaland. As everywhere he appointed Foulani Governors and petty Governors the whole Foulani race shared in his good fortune, and became the rulers of Hausaland and the Hausers became their hewers of wood and drawers of water. It is worth noting in passing that Othman started operations about the same time as Napoleon Bonaparte, but seems to have had more staying power, as the Foulani Empire did not begin to decline until the Germans were on the boulevards. Whatever the Hausas lost in national prestige by this change they gained in security. For although the Foulani collected tribute in slaves, Hausa fecundity which Mr. Hazzledine insists is immense, was proof against this blood-tax and as tribal wars ceased and slave-raiders from the coast were absolutely barred out during the height of the Foulani power, Hausa fecundity asserted itself and their numbers increased immensely. With the decline of the Foulani power, however, all the old bad conditions returned. As outlying provinces broke away from the central power at Sokoto, petty kingdoms multiplied and tribal wars began again, and the slave-raiders from the coast took advantage of the confusion in the country to resume business. Hausa fecundity could not stand against the waste of human life that took place, and the country became greatly depopulated.

When the English came a strong power was badly wanted. They have restored the security the country enjoyed under the Foulani dynasty

when it was strong, minus the slave tribute, and once more the country is filling up with people. On this point Mr. Hazzledine writes:

> "Quite recently the traveller came across village after village, silent, black and empty; but now the hum of one hardly dies away behind him before he hears the stir and hum of another."

There is promise here not only of a present supply but of a growing supply of labour. Mr. Hazzledine's book is full of promise in other directions. He does not put wages at the Lagos rate, but quite low enough to show that in the country where such rates abound labour is abundant, and their rates we could easily outbid. I submit that if from Mr. Smith's hint, and Mr. Hazzledine's book, I have been able to add a sixth place to the five mentioned by Mr. Ireland, there is every reason to hope that a Governmental enquiry would bring to light others.

Government Should Have Control.

But if a new source of supply is tapped, and free immigration is established, it is evident there must be changes in British Guiana itself. The Government would have to have absolute control over the numbers brought in. And to enable them to exercise such control wisely, they would have to be much better informed as to the trade outlook in the country than I take it they are to-day. But in divising an immigration scheme intended to last some time, every effort must be made to provide for all possible contingencies. As races vary in physique there would have to be a minimum weekly earning fixed for each race. It would not do to apply the coolie scale to powerful blacks from West Africa. I would give power to the Government also in case of an employer having more people than he could properly employ at a minimum wage in an average year, to remove a portion of the people, the people to be removed in ship-lots. And to provide for the possibility of a case arising of an unscrupulous employer evading all safeguards and getting an excess amount of labour on his property at a time when the Government could not place them with other employers owing to their being fully supplied, I would give the Governor power to suspend such a man's right to indent for a term of years. This may sound severe, but the attempt is so easily avoided that the man who committed it ought to be made an example of. I think also that when a new source of supply is first tapped the establishment of anything like an elaborate agency ought to be avoided, until a first year's favourable verdict on the immigrants had been endorsed in two or three succeeding years. As an example, let us suppose we had decided to import Yorubas. Apparently we might do worse. Here is what Mr. Hazzledine says of them: "They do as they are told." Obedience is not a virtue in Central Africa; it is a habit; a national trait." Here I imagine readers would try to picture in their minds, and fail utterly, employees who do as they are told, not as the outcome of a special effort on their part to be good, but because "They can't help it; they are built that way." But to return to

our Yorubas. These people are brought from the interior *via* Lagos, and, says Mr. Hazzledine, "the Lagos Government charge £1 per head registration fee and the registration mounts up when they are shipped 400 at a time." I take it if Lagos was pocketing £1 per head on our indents we would have no difficulty in findiug a Lagos official willing to supervise the shipment of the Guiana immigrants during the first few years for a modest addition to his salary, seeing that he would be adding to his own and his colony's revenue at one and the same time. And if fate did not decree that we were to go to Lagos, similar arrangements would doubtless be possible elsewhere.

I do not think I need elaborate further. A finished scheme is more properly speaking the work of the professional Empire-builder of the colonial service. I as one of the governed never aspire to do more than give a rough-out line of a possibe solution.

I would point out that in putting the question of the labour supply first, I am but following the teaching of political economy, and what is perhaps quite as important, the teaching of plain commonsense.

A Question that Cannot Wait.

In conclusion, may I be allowed to point out that other schemes of development will be helped, not hindered, by what I propose? In British Guian well provided with labour for present needs and possessed of the means of obtaining as much more as it wants, industries will multiply, no man exhorting, and capitalists will be attracted by promising opportunities for investment not by honeyed words, and the demands of the railway builder will shrink as the prospects of traffic for the finished line brighten.

The labour question cannot wait. The Northern peoples are using up the northern supplies of wood, iron and coal at a rate that makes a resort to tropical supplies in the near future imperative. We are already at the beginning of the lumber famine. When the great rush comes those countries which have tropical possessions inhabited by fecund races of tropical men will enjoy an advantage in the struggle for the economic development of the tropics similar in kind to that conferred by a rich coal-field in establishing a flourishing manufacturing industry. But the tropical man will rise in value. He will be the new black diamond of that period. It is because I believe that British Guiana will get on faster if she gets to work now when there are but few rivals that I have written as I have written.

FOOD AND LABOUR.

By Rev. James Aiken, m.a.

In the discussion regarding labour problems in the colony it is seldom that the relations between the price of food and the price of labour is referred to. Yet that the relationship is a vital one there cannot be a doubt, and the direct effect of these factors on the cost of products intended for export make the question of cheap food one of the first with which the economist and statesman should deal. The effect of indirect taxation is, in this respect, very important as the taxation of foodstuffs at the port of entry tends to fix an artificially high price and it is easy to see, in the colony, the tendency to level the price of local products up to the price of foreign stuffs which have borne various charges of handling, freight and duty before reaching this market.

To take one example of an imported foodstuff, Irish potatoes, which perhaps are generally Continental or Bermudan, yield the farmer who grows them something like 48 to 72 cents per cwt. while the wholesale price in the colony fluctuates round $3 per barrel or, say, $2.24 per cwt. That is to say, less than one-fourth of the market price in the colony represents cost of production while 75% is a factitious addition, not due to the actual food value of the product, but to the circumstance that a body of consumers habituated to this food are compelled to use it under exotic conditions.

Yet, when we turn to a comparison of the prices of local roots with this exotic product we find that, somehow or another, they have levelled themselves up to the exotic. Thus sweet potatoes, eddoes and tannias range from $1.44 to $2.40 per bag, yams and cassava are generally around $2 50 per barrel, prices which, as far as I have been able to ascertain the average weight of the bag and barrel, average $1.30 and $1.90 per cwt. respectively.

Probably the food value of these roots is no greater than that of the imported potato and a fair price on cart, rail or boat would be respectively 40 to 60 cents for sweet potatoes and eddoes and 60 to 80 cents for the other roots per cwt.

The cereals grown in the colony are much in the same position. La Plata maize reaches the markets of the United Kingdom at 14s. per quarter of 280lb. after bearing charges of at least 20% so that reducing it to the sack and barrel of British Guiana markets the grower must sell at about $1.72 per sack or $1.80 per barrel of the local standard. The price on our markets is generally about double this amount.

Wheat is, of course, an exotic but a still sharper contrast is presented by the price of bread in the colony and the price in the United Kingdom when we compare the market prices of wheat flour in the respective places. A sack of flour is usually estimated to give about 90 loaves of 4lb. each, or 360lb. of bread and the United Kingdom price is about 6½d. per loaf or $1\frac{11}{16}$d. per lb., say $3\frac{1}{10}$ cents, with flour about 40s. A sack of wheat flour (196lb.) in the colony should give on the same basis about 255lb of bread. On the average of a number of loaves I have weighed, the local price works out at 6 to 8 cents per lb. of bread with flour at $7 per sack. There seems to be no reason for this large difference cost except that the local baker demands a much greater margin of profit than that which satisfies the United Kingdom operative, and perhaps that the labour employed is dearer.

It will, of course, at once occur to anyone considering the cost of provisions that, as the editor of the "Statist" points out, high prices benefit the producer but come against the wage-earner except in so far as wages rise with prices, which, though they tend to do so, do not always keep step with sharp fluctuations. Some time ago the question of cost of living in the colony was brought into prominence as a part of the complaint set forward by the labourers who were implicated in a riot on a Demerara estate It does not appear that this factor was the sole or even a principal one in the case in question; but that it is a possible factor in future troubles between capital and labour there is not much room for doubt. In passing it may be remarked that the agriculturist, if he can produce at anything like a similar cost to the agriculturist here, in the United States, Argentine or United Kingdom, is in a very happy position indeed, where produce is valued at approximately from two to three times its value to the grower in the places named.

A friend at home cultivating some 2 to 3,000 acres in Midlothian has very kindly furnished me with some data as to costs of cultivation from 1910–1912 which I will give for comparison.

The cost of raising 10 tons per acre of potatoes he puts at £19 15s sterling—say £2 per ton. As the selling price averaged 65s. per ton it appears that these crops must have been early on the market and secured the highest prices. Doubtless the high cost of production was expended with a view to this end. Of the total cost $16.80 was paid for labour, $25.80 for draught animals. Implements, rent, manures and capital charges made up the remaining $55.20.

Wheat crops in the same period averaged £12 2s. per acre, $14.40 for wages, $9.60 for draught animals and $34.08 for other charges.

The large average yield of 60 bushels secured shows that the cultivation was of an up-to-date kind and the profit of $19 per acre may be taken as a high average even for good wheat lands.

With other crops the average cost of cultivation of the whole estate comes to $72 per acre, employing 7 labourers and 4 draught animals to the 100 acres at a cost for man labour of $18.00 per acre per annum. And for draught animals of $15.60

I have been unable to obtain figures for the systematic cultivation of roots and corn in the colony but some basis of comparison may be found in the figures for cane cultivation Apparently including manures $20 to $24 is the average cost per acre for a crop, in ordinary seasons, of 20 tons per acre. To this would require to be added a percentage for capital charges, etc., which probably add 50 to 60% thus bringing the canes to the mills at something like $30 to $40 per acre.

This is of course, under indenture conditions or at least where prices are controlled by indentured labour, and the cost of cultivations outside of sugar estates cannot easily be kept down to such a mark. The probability is that nearer $50 per acre would be a minimum cost on average land, and to be profitable this would require a crop of about three tons of sweet potatoes or two tons of cassava at the prices which have ruled for the last year or two. Much larger yields than this are secured even with the very insufficient cultivation usually applied, but here again the possibilities of returns are not ascertainable with accuracy. In Barbados, however, 12,000lb. of sweet potatoes and 6,000lb. of yams per acre is considered a good crop.

When, however, we come to consider the possibilities for the small man we can see that given any reasonably cheap means of getting his produce to market, there is no reason for extraordinary high prices and that a given quantity of labour expended on his own land is likely to bring him an immensely greater return than the same amount of labour at current rates of wages. We may safely guess that the same amount of labour as is applied to an acre of canes would produce a crop of at least three tons of sweet potatoes. The difference of reward to the labourer is the difference between $24 and $78, less such charges as are incidental to marketing his crop. So long as such an enormous disparity exists and land is so cheaply obtainable as in the colony, so long there will be an irresistible tendency to take the abundant opportunities of easy and well paying occupation in preference to any man's hire.

On the other hand, the worker for hire, in the towns at least, feels acutely the effects of high prices, and complaints from domestic servants, male and female, that their wages are insufficient to maintain them and a constant tendency to increase in the scale of pay will be a natural consequence of conditions eminently desirable from the agriculturist's point of view but equally undesirable from the point of view of the wage-earner.

I have already said that the factor of cost of living is likely to come more and more into prominence here in questions of production of commodities for competition in the world's markets such as sugar and rice. One has only to compare conditions of production in the United

Kingdom and Belgium to see how cost of living equalizes natural factors, enabling Belgium, with its comparatively infertile soil but a low rate of cost of living, to compete with the States in wheat production, where prairie lands and labour-saving appliances barely keep the balance with a high labour rate.

To show how the means of prices in labour and food keep step we may turn a few ages back and compare wages and foodstuffs.

In the 14th century the price of wheat was about 4s. a quarter, of a sheep 1s., of an ox 10s. to 12s. A labourer at this period was well paid at 3d.-4d per day, the rate which appears from account books of that period to have been current.

In the early part of the fifteenth century wheat was about 6s. per quarter, oxen fetched about 12s to 16s., 25 eggs 1d., cheese ½d. per lb. At this period the best paid labourer got 5d per day, a ploughman 18s. 4d. per annum with food and lodging, for ordinary labour 3½d. per day seems to have been an average.

In 1784 the labourer's wages had risen to 12s. per week, but he was not better paid than those we have named for the purchasing power of his money only amounted to a coomb of wheat in 10 to 12 days while the fourteenth century labourer's pay was equal to the same quantity in a week. Nor is the labourer of the present day, with much higher wages, better off than his fifteenth century prototype, who, with his bushel of wheat for 9d. and his 16 lb. of beef for about 6d. had still nearly half his week's pay in hand to meet other necessities. Still there is a constant tendency for wages to come level with other values and all the strikes and difficulties between capital and labour are just symptoms of the struggle for adjustment.

When it comes to a question of competing for a place in the world's market, the statesmen of a country must take into their calculations the average cost of production the world over, which now determines the price of every commodity. If a country is to compete successfully it must have advantages of some kind, such as a fertile soil, a population proportioned to the extent of its industry and of at least average efficiency, cheap labour either by natural or mechanical agencies, and, if the former is relied on, then such an administration of its economy as will secure cheap food. This latter because a given amount of food is as necessary to produce a unit of man or animal power as a given amount of fuel is necessary to produce a unit of mechanical power, and the cost of the fuel is a final determinant of the cost of the unit.

It is curious in view of the extreme importance of the relations with which we are dealing that the subject has to such a very small extent engaged the attention of those engaged in staple industries here. While the increase of labour reserves by immigration from one source or another, sources of supply of labour and most other phases have received

attention, I cannot recall any article in the local press which has dealt more than casually and indirectly with what is certainly a prime factor in every labour problem.

I am not out to suggest remedies. In a tentative essay such as this it would be unreasonably venturesome to do so. It will be sufficient if such considerations as I have been able to put before my readers direct more attention on the part of those directly concerned in production to this aspect of their problem.

So long as the abandoned sugar and cotton estates were being fairly well worked by the black people who took them over, and before the drainage of these places had fallen into decay, provisions were plentiful and cheap enough. Up to the end of the apprenticeship period areas of provisions existed on many estates and even as late as 1874 there were fifty-nine plantain estates of considerable size in the colony. With the rehabilitation under the Local Government Board Ordinances of the drainage of various peasant-owned estates, rice has attracted more attention than provisions and, instead of having a favourable effect on general prices has, for various reasons, tended rather in the opposite direction. The measures which, taken probably without full appreciation of the results, gave the first fillip to rice-growing in the colony, would probably have a considerable effect in removing the anomalous position of supply which compels the local markets of this good land and large to depend on provisions imported from the islands. The man with capital invested in the colony and his local agents have a very direct and vital interest in these matters and a full ventilation of the question is desirable if healthy and natural progress industrially is so closely bound up with it as history proves it to be. As a matter of fact cost of living in an agricultural land like this is not at its proper level even when about on a par with a manufacturing country like the United Kingdom. The exigencies of a country producing raw material for the world's markets demand a low labour rate and to secure this it is the business of captains of industry to see that labour can live at those rates.

A VIEW OF CANADIAN LAW.

Delivered before the American Bar Association by Mr. Justice Riddell, of Toronto, (and so far as known now printed for the first time by the favour of a leading Lawyer to the Editor-in-Chief.)

May I say, before attacking my subject, that I have been very much interested indeed in the discussion which has just been going on? It illustrates what I have so often said, that the time of the American lawyer is taken up more by constitutional questions in one day than the time of an Ontario lawyer is in a year. Because you know, if you use the word "Constitution" in the sense in which it is used in these United States, the Constitution of Canada may be described by a parody upon that famous chapter on the Snakes of Ireland. "There are no snakes in Ireland." (Laughter.) We have no Constitution in Canada in the sense in which you use the term. The Parliaments in our Dominion, like the Imperial Parliament in England, can within the ambit of their jurisdiction do anything which is not naturally impossible; indeed it is a maxim among our Canadian as among English lawyers that Parliament can do anything except make a man a woman, or a woman a man. (Laughter.)

When I read the announcement that I was to read a paper to this Association I was struck somewhat with terror—and I made up my mind I should at once throw myself upon the mercy of the Court and confess immediately that I had no paper. That is due to more than one cause, possibly; in part, perhaps, to the fact that I have my own share of judicial temperament, which, of course, you know is defined by Mr. Dooley somewhat in these words: He says "Hinnessy, I would like to be a Judge, I have the judicial temperament?" Says Hinnessy, "What is the judicial temperament?" Says Dooley, "I don't like to work." (Laughter.) But in justice to myself, I cannot say that is the only reason. (Laughter.) One other reason is that we have still in Ontario an absurd superstition that a Justice of His Majesty's Bench ought to do at least some judicial work—occasionally. (Laughter.) I know it is suggested that some of my judicial brethren disregard that superstition to a very great extent—one of them, indeed, when he received Her Majesty's Warrant appointing him one of Her judges, immediately proceeded to sell his library and buy a new gun. (Laughter.) All of us do not have the courage that gentlemen had, we are not so greatly daring, and consequently some of us, at least occasionally, do a little judicial work.

In the short time I was at home since I received the invitation to write a paper on this subject, I was exceedingly busy; and since I left home I have been in a continued series of intellectual debauchery in which there was no "morning after the night before" only because the

night before extended into and, as it were, absorbed the morning after: and I have not had time to reduce anything to writing. But it may perhaps console you a little bit to know that some years ago I wrote for my friend, Dr. Lawson, the Dean of the Faculty of Law in the University of Missouri, a short article upon the Courts and the Practice in Ontario. I did not know until I came to this city, and indeed not until yesterday, that he had published it; but you will find some of it in the forty-fourth volume of the "American Law Review" at page 597. If, however, you or your secretary desire I should write a paper so that it may appear upon your minutes, I shall be delighted to do so as soon as I get home and shake off that temperament which I find growing upon me as years go by, and get a little leisure so I can do so.

The courts in Ontario are all one court (speaking of the Superior Courts). Before 1881 we had two concurrent Law Courts and a Court of Chancery. In 1881, following the Mother country—and the Mother country following the State of New York, because of course the State of New York was the pioneer in that regard—we abolished all the courts then existing in the Province of Ontario, which were the two Common Law Courts, the Court of Chancery and a Court of Appeal; and made one general court, the Supreme Court of Judicature. That we divided into two branches, one the Court of Appeal and the other the High Court of Justice; and the High Court of Justice was divided into three branches or divisions. A fourth division has since been added to the High Court. A Judge can sit in any of these divisions or in the Court of Appeal; any Judge of the Supreme Court of Judicature to-day may be trying a murder case and to-morrow be sitting in the Court of Appeal or Divisional Court; but as a rule the High Court Judge remains in the High Court and does not sit in the Court of Appeal—although he may do so when called upon by the Chief Justice. In our practice there is no distinction between law and equity; and everything is tried in the same court; where the rules of equity and the rules of law do not agree, the rules of equity prevail—we have abolished (following the Mother country) the distinction betw een law and equity in that regard. With the exception of a few cases, few comparatively in number, although of great importance sometimes, every matter which is brought before the Court is brought by writ. If you want a will interpreted, or anything of that kind where there are no facts to be determined, then you may bring it before the Court by an originating summons or notice of motion. Sometimes counsel get together and state a case and that may be heard before the Court without writ. Feigned issues are not allowed with us; neither is there any compulsory submission to arbitration. Outside of such cases as I have mentioned, everything is begun by writ, and that is so whether it be for damages, for slander or upon a promissory note or on a mortgage—whatever anybody wants to sue for is sued for by way of a writ. In this writ the cause of action is set out in the most general terms. The writ is

served on a corporation by serving an officer of the corporation, on a lunatic by serving the lunatic or his committee or the person in whose charge he is. It may be served on a married woman; because there is no distinction between married women and other women in that regard in Ontario. On the service of the writ, the defendant is given ten days to appear. One may specially appear simply to dispute the amount of damages. If that is done, then it is referred to a Master at once to determine the amount of damages without further pleading. If there be a general appearance, the practice is different. Some writs may be endorsed specially, as we call it, that is practically what you might call liquidated claims set out on the writ. If an appearance be entered to a specially endorsed writ, an application may be made by the plaintiff, if so advised, to the Master to strike out the appearance and cause judgment to be entered if he can show that there is no defence. That can be shown by affidavit on the part of the plaintiff himself. If the defendant does not answer that, judgment goes against him. He may answer by affidavit, he may be examined under oath before a Master on his affidavit, and if it appears there is really no question at all to be tried, and the appearance is simply for the purpose of delay, the appearance is stricken out and judgment entered. If there is a plausible case to be tried, the Courts do not cause the appearance to be struck out. A statement of claim is delivered by the plaintiff, the statement of claim corresponding to the old bill of complaint in equity or to the declaration in the common-law courts. The statement of claim, according to our rules, must set out facts, not conclusions of law. All the facts upon which the plaintiff desires to base any claim must be set out and the statement of claim is divided up into paragraphs for convenience. Now, it may be that the statement of claim does not disclose any cause of action. Demurrers in form are abolished; but we have demurrers in substance. Application may be made to the Court to strike out the statement of claim as disclosing no cause of action; and if that appear, judgment will be entered for defendant by the Court, unless the plaintiff is in position to amend. After the statement of claim has been delivered and is not demurrable, using the old expression, *i.e.*, it cannot be struck out, the defendant may not be able to answer, may not be in a position to understand precisely what the plaintiff's claim is, and he may demand particulars. If particulars are not furnished he may have particulars ordered by the Master or Judge. Then he serves and files a statement of defence. The statement of defence must set out also the facts on which the defendant relies for a defence. I am sorry to say—perhaps I ought not to say that I am sorry, because I am one of those who have, collectively, a right to change it if thought fit—I am sorry to say that in our practice where an allegation in the statement of claim is not specifically admitted it is taken to be denied. I think very much better is the English practice in which every allegation in the statement of claim is taken as true unless it be specifically denied.

Again, suppose the statement of defence sets up no real defence to the action, a motion may be made by the plaintiff to strike out the defence and have judgment in precisely the same way as the defendant had a right to move to strike out the plaintff's statement of claim. As soon as the statement of defence is in, either party has a right to serve what is called an "Order to Produce," directing the opposite party to produce on oath, all documents, copies of documents, etc., etc., which he has or has had in his possession bearing on the issue to be tried. Then either party may be examined under oath by the other generally upon the whole case. If a corporation be one of the parties to the action, an officer of the corporation is selected by the opponent, who may be examined.

Now, there is a great deal of difference of opinion as to the value of this "examination for discovery," as we call it. In practically every case in Ontario there is an examination for discovery. That increases the cost of the action undoubtedly. I heard the other day, very much to my astonishment, at a meeting of the Ontario Bar Association which I attended before I had the pleasure of meeting you here, one very eminent member of the Bar say that an examination for discovery was absolutely useless except to show the opposite side what one's case was. In my own experience, I did not find this to be the case. My experience (and I know the experience of a great many others practising at the Bar is the same) was that the "examination for discovery" is an exceedingly valuable proceeding. When you examine the other side for discovery you find out what his case is. It is true you must disclose, to a certain extent, your own case; but that is not always of much importance. I have found that the examination for discovery leads to the settlement of at least one-third and perhaps more of the cases which would otherwise be tried, and I have found it exceedingly valuable. But opinions differ in that regard.

In a great many instances the plaintiff also requires to make application to the Master in order to have particulars delivered. Particulars may be required to be delivered of the statement of the defence, that is what particular matters the defendant relies on for his defence. When delivering a statement of defence, the defendant may counterclaim for any claim he has against the plaintiff on any cause of action. In an action brought on a promissory note a counterclaim may be brought of a claim for libel—with this provision, however, that if the Court sees that the issues should not be tried together the Court may strike out the counterclaim, or order it to be tried at a different time from the general claim.

Then we come down to the trial. We have the jury system the same as you, but I do not think we are quite so—I shall not say crazy, I know better than to say that to lawyers—but we are not so *wedded* (that is a good word) to the jury system as you are. There are certain cases such as malicious prosecution, libel, slander, actions of that character

which are tried by a jury unless both parties agree that they be tried by the Judge. In most instances they are tried by the jury—I mean false imprisonment and that sort of thing. Equitable issues which before the Judicature Act of 1881 were tried in the Court of Chancery, are tried by the Judge alone, unless the Judge directs them to be tried by the jury. It may sometimes happen—I dare say it happens in the experience of every lawyer—that an equitable issue, an issue that is really equitable, comes up and after all it turns out to be a pure question of fact, it turns out that the case will depend upon the determination of a question of fact, and that perhaps upon the credibility of two witnesses ; and a Judge sometimes likes to cast the responsibility upon a jury and let a jury find out which one of those two men are lying, if not both of them. Accordingly the Judge has the power to direct even an equitable issue to be tried by jury.

Outside of these I have already spoken of, every issue in our High Court of Justice, or in our County Courts, may be tried by a Judge if he sees fit. If either party to an action desires a case to be tried by a jury rather than by a Judge, he files what is called a jury notice. If no jury notice is filed the case goes on the non-jury list and is tried without a jury unless a Judge sees fit to transfer it to the jury list. If a jury notice be served, the case goes on the jury list, and when it comes down for trial the Judge may say, " I will try this case myself," and there is no appeal from that. The Judge is absolute master of the situation. Sometimes a plaintiff or defendant asks that the jury notice be dispensed with and the case tried without a jury. Sometimes both of them agree it should not be tried with a jury, sometimes they have agreed it ought to be tried by a jury ; but whatever they may say, the Judges have it in their own power to try a case without a jury ; in a very great majority of cases the cases are tried without a jury except those particular cases I have mentioned, and, added to that, accident cases, which are becoming more and more frequent.

The old French system, the Canadian system before 1759, was to try all issues without a jury and by Judges alone. When Canada was conquered in 1759 by the British, and particularly in 1763 when the Royal proclamation was issued, the English law was introduced and juries were introduced also. The French Canadians could not understand how the Englishmen would sooner have their property rights determined by the agency of tailors and shoemakers than by Judges. That same idea is still prevalent in Lower Canada, Quebec ; and it is becoming more and more prevalent in the province of Ontario, and we are trying fewer and fewer cases by juries every day. If a case is tried by a jury ten are required to agree in order to find a verdict. If a jury should not agree, the Judge may discharge them and either put the case over or call another jury. I follow either practice, according as it seems to me more convenient. Sometimes when a case has taken a long time and other litigants have been waiting with their witnesses, it does not seem fair to give these people whose

jury have disagreed another chance at the expense of those who have been waiting. Sometimes it seems to be absurd to postpone to a future assize a case which ought to be tried forthwith, and we call a new jury; or what is more likely to be the case, we discharge the jury and try it then and there and thus dispose of it.

If the jury find a verdict, the judge has no power to award a new trial. There must be an appeal.

An appeal may be taken to the Divisional Court of the High Court of Justice. The Divisional Court consists of three Judges. We have four Divisional Courts, and any member of any Divisional Court may sit in any Divisional Court. When counsel, as they sometimes do, skirmish for Judges—I suppose that is entirely unknown in your practice,—but it is said that in Ontario they do, and they postpone their cases not uncommonly, it is said, on account of the absence of necessary and material Judges. (Laughter.) Now, I am glad that excites your amusement, because it proves to me you cannot have anything of that kind in your practice—when counsel have skirmish for Judges, very often they find that very Judge whom they are anxious to avoid sitting up in the Divisional Court smiling at them. The grounds of appeal to the Divisional Court are very much as your appeals here, verdict against evidence, against the weight of evidence , surprise, absence of witnesses, exclusion of evidence and admission of evidence, and all that sort of thing. We do not have very much bother about admission or rejection of evidence in our Courts; unless we can see that the exclusion of evidence or the admission of evidence has led to some injustice, then we pass it by. Matters of law as a rule are the determining matters in the Appellate Court; although there are occasionally cases in which appeals succeed upon the ground of the non-admission of evidence, or the admission of evidence, which ought not to have been admitted. If a case is tried before a Judge, and he has improperly rejected evidence—and I may say that this is the rarest of all contingencies, because as a rule we admit the evidence subject to objection. and then we never allow it to influence our mind, of course, if a Judge has refused the evidence improperly, the Divisional Court as a rule does not send the case back for a new trial, but the Court often says, "We will sit on such a day, you can bring the evidence you desired the Judge to hear and we will hear it here." We hear the evidence and determine the case then and there, without sending it back with all the risk, expense, inconvenience, annoyance and trouble of a new trial. (Applause.) If there is a row about the pleadings—because even yet we have some people who talk about pleadings, though pleadings are pretty nearly defunct in our Courts, we know them by name and know them by sight, but we pay very little attention to them—if there is any row about the pleadings we say, "Very well, we will amend the pleadings." If a lawyer says, "If that amendment had been made in the Court below, we should have had other evidence," we may say, "Very well, what day will suit you? We will hear your witnesses." One of our substantial rules and one of the rules more bene-

ficial than perhaps fifty of the other rules is this, all amendments are to be made which are necessary in order that judgment shall be given according to the very right and justice of the case. (Applause.) No case in Ontario fails from defect of form—that is one of our rules. Again, no disregard of forms laid down, or disregard of the time under which certain proceedings should be taken, no disregard of terminology, according to our practice, bars a man who has a right, of his right. Disregard of form does not nullify the proceedings.

Then if the Divisional Court is thought by either party to have made a mistake, there is an appeal to the Court of Appeal composed of five Judges. Those appeals are heard by the full Court of five Judges, but are not very common. The more common practice is to appeal from the trial Judge direct to the Court of Appeal, skipping the Divisional Court; and those are not so very common either. These appeals from the trial Judge to the Court of Appeal direct may be heard by three Judges of the Court of Appeal or all the five. I will read you from the article which I wrote some years ago of the appeals in 1908. "In 1908, 1,153 cases were tried by the High Court, 180 of these were appealed to the Divisional Court and 130 dismissed, 37 allowed, 10 varied and 2 still undisposed of. The appeals direct from trial to the Court of Appeal were 62; 28 were dismissed, 14 allowed, 8 varied, 12 remained undisposed of." Because even at that late date people tried to settle their cases.

All appeals from the County Court, which has jurisdiction up to six or eight hundred dollars, come to the Divisional Court, as appeals from the High Court of Justice come to the Divisional Court. County Court Judges are members of our Bar of 10 years' standing. They are appointed by the Dominion Administration for life. The practice is precisely the same as in the High Court. Of all the cases in the Divisional Court, 544 in all, including the 180 from trials, only 43 appeals to the Court of Appeal, of which 23 were dismissed, 11 allowed, 3 varied. The above figures are derived from the report of the Inspector of Legal Offices. From the Court of Appeal to the Supreme Court at Ottawa in 1908 are reported in the Supreme Court Reports, 9 cases, 7 dismissed, 2 allowed (there may be, no doubt are, some cases not reported, but very few).

From the Court of Appeal, important cases may be taken to the Supreme Court of Canada. Rarely is there an appeal from the Divisional Court to the Court of Appeal; still rarer is there an appeal from the Court of Appeal, to the Supreme Court of Canada, which is an entirely different Court. If you practise in Canada you had better have your pleadings in proper shape before you get to the Supreme Court of Canada because that being a different Court, it takes the pleadings as brought to it from the inferior Court. From the Court of Appeal to the Supreme Court at Ottawa in 1908 there were reported in the Supreme Court Reports nine cases, seven dismissed, two allowed. In very rare cases there are also appeals from our Court of Appeal which are taken across the Atlantic instead of going to

the Supreme Court of Canada—and particularly in constitutional cases (because I am going to withdraw what I said about the Constitution a minute or two ago)—an appeal is taken to the Judicial Committee of the Privy Council in Downing Street, Westminster. We have a kind of constitution (although we do not call it that) by the British North America Act. The subjects of legislation are divided between the provinces and the Dominion, and sometimes we have disputes as to whether the Dominion has the right to pass legislation upon a particular subject, or whether the province has a right to pass legislation upon that particular subject; we do not, however, generally talk about "constitutional" and "unconstitutional," but we use the terminology "*ultra vires*" and "*intra vires*." Occasionally, and, as I have said, particularly where a question of *ultra vires* is concerned, an appeal is taken to the Privy Council. I have given an account of the Privy Council in an address to the Missouri Bar Association, printed in 44 "American Law Review," page 161. In the Privy Council in 1908 are reported six appeals from the Court of Appeal, of which five were allowed and one dismissed; there was also an appeal from the Supreme Court in an Ontario case which was allowed. From issue of the writ of summons to the final disposition by the Privy Council there is no need for two years to elapse. So much for civil practice.

On the criminal side the story is somewhat historical. When Canada was conquered in 1759 the French law was universal; it was, of course, based upon the Roman law, the Civil law. As soon as the British conquered Canada, the English criminal law was introduced and the English criminal law has continued from that time to the present. The criminal law is under the jurisdiction not of the provinces, but of the Dominion Parliament composed of members from all the provinces. It is true that provincial Legislatures have power to make certain quasi-criminal offences—for example, the watering of milk and that sort of thing which are quasi-civil and quasi-criminal—those are within the jurisdiction of the province, although the Dominion may make anything a crime. The other day I said to a lawyer who was arguing to me about a certain case being *ultra vires*, "If the Dominion Parliament saw fit they could make it a crime punishable by capital punishment for a man to chew tobacco." The Dominion has power to make anything a crime; it has absolute jurisdiction over criminal law and criminal procedure; but not over the constitution of Courts of criminal jurisdiction. The Courts of criminal jurisdiction are constituted by the provinces; so that (speaking generally) the same Court which tries civil cases is the Court which tries criminal cases.

Before 1892 we had the English criminal law as modified by the statutes of the provinces before Confederation and by the Parliament of Canada after Confederation; but in 1892 Sir John Thompson, the then Prime Minister, having been a Judge himself in Nova Scotia, saw the propriety of codifying the criminal law and accordingly, with the assistance of able lawyers in the Houses of Parliament on both sides of politics, he in 1892 drew up a code of the criminal law. The Judica-

ture Act of 1881 very nearly proved the death of some of the old equity men and common law men also in the Province of Ontario; but that was nothing to the dismay which spread in the ranks of the lawyers who practised in the criminal Courts, when the Code of 1892 was passed. The distinction between felonies and misdemeanors was abolished. Every crime was made an indictable offence. All the beautiful little pitfalls and holes that old criminal lawyers used to know so well about in indictments, etc., are filled up and done away with. Parliament provided that the indictment might be in the simplest form, so long as it set out and explained to the alleged criminal what it was he was charged with. If the indictment used the words of the statute that was enough. For instance, an indictment for murder is never more than three lines long, and it would read like this, "The jury for our Lord the King present that John Smith on the 7th of September, 1911, at the City of Toronto, murdered Tom Jones." That is all there is about it. There are no pitfalls in the criminal law.

If a person is charged with a crime, an investigation is made by a magistrate, sometimes by a coroner. Under the old practice, of course, the finding at the coroner's inquest could be laid before a petit jury. This is no longer our law. Everything of a criminal nature which is to be tried by the High Court comes before a grand jury. The accused first comes before a magistrate; he has a right to have his full defence gone into, witnesses called and examined; and if at the conclusion the magistrate thinks there is no case, he is dismissed—although the prosecutor may demand to be bound over to prosecute, in which case he comes before the next Court of competent jurisdiction. If the magistrate thinks a case has been made out, he commits for trial

Save in the case of treason, murder and a few others, within twenty-four hours of a person being committed to jail he must be brought before the County Court Judge. The County Court Judge is a Judge of inferior jurisdiction, but he must have been a barrister for ten years before his appointment and ought to know as much law as a High Court Justice—and many of them do. Upon being brought before the County Court Judge, the alleged criminal is told in simple language with what he is charged. He is told, "Now you have a right to be tried by a jury before the next Court of competent jurisdiction" (mentioning the Court, when it is to be held, etc., so that the prisoner will know), "or you may be tried by me forthwith without a jury." In nine cases out of ten the innocent man, and in quite a number of cases the guilty man, thinks he might just as well take his chances with a Judge as with a jury; and so he is tried by the Judge. A simple form of charge is drawn up, and the Judge tries him; that is all there is to it. So you see, this practice of "Speedy Trials" as we call it, relieves the High Court of Justice of nearly all the criminal cases with the exception of murder and a few others. We have not had treason for some years in Canada and we are not likely to have another crop for some time. If, however, the accused elects to be tried by a jury, the

case is brought before a grand jury (in Ontario of thirteen.) Seven may find a bill. The bill is drawn up in the form I have described.

The trial is before a jury of twelve: they must be unanimous either one way or the other. If a jury cannot agree I almost always discharge them and call another, right there and then, and get done with it. Some Judges prefer rather to postpone the case to the next assize and in the meantime commit the man to jail or let him out on bail. If a mistake is made at the trial, or a lawyer thinks a mistake is made in the trial—these are not quite synonymous expressions, you know—if it is supposed (that is better)—laughter—that a mistake has been made during the trial on questions of law, the lawyer may ask the Judge to reserve the case for the Court of Appeal upon that question of law, or the Judge may do it upon his own motion without being requested to do so. The Judge may refuse; that refusal is subject to appeal. If he has granted the case, that goes to the Court of Appeal, and the Court of Appeal of five Judges determines that question of law and whether the Judge was right. In most cases I am glad to say it has been found he was right, and so the appeal goes by the board. There is a provision in our Code which has never so far as I know been called upon; and that is this: In case the conviction be affirmed by the Court of Appeal by a divided Court there is an appeal to the Supreme Court of Canada. That has never yet so far as I know been called into practice; our Court of Appeal has always been unanimous.

This is the simple, every-day practice which has been found very advantageous and beneficial. I have never in all my thirty years' experience at the Ontario Bar and on the Bench taken more than thirty minutes to find a jury, even in a murder case. I have never yet—and I have defended lots of them and I have hanged quite a number; I do not mean that I did it with my own hands—I trust that I should not hesitate to do it if it were my duty; greater men that I have been charged with having exercised that function—none of the men that I defended got hanged I am thankful to say, though there are two or three in Kingston penitentiary to welcome me when I chance to go there—(laughter)—I have never yet in all my experience (except in one case) seen it take as much as four days to try a murder case. In murder cases before me I have never been more than a day and a quarter, and in most cases less than a day. We allow five expert witnesses on each side and that is all. An expert witness unless he has examined the prisoner himself is, of course, simply going to give opinion evidence. We bring him in Court to listen to the evidence. If he requests it he may take the man and examine him and then give an opinion. We do not have six or eight pages of a hypothetical question. The expert is asked simple, particularized questions. Our insanity law is simple. I see that my judgment was affirmed by the Court of Appeal since I came to this city in a case where a man was charged with murder. The man waited for another on the street and shot him. The first doctor for the defence was called and was asked, "Was this man insane"? "Yes, insane." "In what form"? "An incurable form of insanity, paranoia in an advanced stage." "Did he

know the nature and quality of his act"? "Certainly." "Did he know that what he was doing was wrong"? "What do you mean by wrong?" says the doctor. I said "Wrong in the sense of being against the law." He says, "Yes, undoubtedly." "What then was his mental condition?" "He knew what he was doing, he knew it was against the law, but he had an irrestible impulse to do that act, his power of inhibition was gone and he could not help shooting the man." The other doctors agreed. I charged the jury, "If you believe what these doctors say, or rather unless on your oath you think you know better than these doctors, then it is your duty to find a verdict of guilty. We are an iron people and we have an iron law. We must enforce the law as we find it. You have no more right to change the law than I have, and I have no more right to change the law than your minister has a right to take the word "not" out of some of the commandments and tell you to obey the commandment as so amended—to go and lie, steal and murder. Our law is, if a man, however insane he may be, knows what he is doing and knows that that is against the law, it makes no difference that he is insane—he must not be found not guilty on the ground of insanity. Our law says to a man who alleges he has an irresistible impulse, "I shall hang a rope up in front of your nose and see if that won't help you some?" (Applause.) We are not troubled with much expert witnesses. (Laughter.) If an expert witness attempts to give an opinion as to what ought to be done with the accused, he is checked—that is none of his business, it is not for him or for me, it is for the Executive to say.

Our civil practice we have found very convenient, very speedy. Please do not imagine I am up here to boast about my own country or find fault with any other—but we have found our civil practice very speedy, and a man can have his case tried just about as soon as he wants to. In ninety-nine cases out of a hundred the delays are due either to the client or to lawyers who do not want to have the case tried. They are skirmishing for a settlement or looking out for something else. There is no reason why a case should not be tried within six months of the writ or less. The first case that ever came before me for determination that went to the Privy Council, I heard in April, and in June of the following year it had gone through all the Canadian Courts, and had been finally determined by the Privy Council. There is no reason why any case should not be concluded in our country in less than eighteen months. There is no reason why a man who has met with an accident should not have his case tried anywhere throughout the country in less than six months. The practice, as I have said, we have found convenient.

There are two ideas which are the basis of the practice of law in different countries; one is that the Courts are a sort of umpire sitting up on the watch to see that the two men fight out this dispute according to the rules of the game. It is not a matter of very great importance whether a man gets his rights or not, but it is a matter of enormous importance that the smarter man should get a verdict. That is the old idea. The other idea is that a man should get his rights even although

the record gets in a shocking state. You remember when they talked about the English Common Law Procedure Act, Baron Parke said, "Think of the state of the record." Record I suppose I ought to call it on this continent. "Think of the state of the record." That was the old idea. The learned Baron suffered greatly. It is fair to say he had a new lease of life when he moved in the House of Lords as Lord Wensleydale.

You will, no doubt, remember Sir William Earle, when Baron Parke said "My monument is to be found in the sixteen volumes of Meeson and Welsby," replying, "Parke, if there had been seventeen, the people of England would have risen up and wiped out the Courts entirely." (Wise's Index had not then been published, and so the Courts escaped extinction.)

The other theory is that the Courts are instituted to do justice between man and man, to see that every one gets his rights irrespective of the way in which his lawyer asks for them. Accordingly, the present practice which we try to follow—and our rules are laid down specifically in that view—is to get out what the fact are and if the pleadings do not enable the parties to prove or rely upon these facts, amend the pleadings. If one party is inconvenienced or put to disadvantage, make him who has made the mistake pay the costs. Amend your pleadings, get out all the facts that bear on the issue and determine the matter according to the very rights and merits of the case. It is the client, after all, who has to pay the shot, and it is the client that should be considered, what harm if the record does get a jolt now and then.

I know too many lawyers, and perhaps too many Judges look upon the client as a simple Scotsman looked upon his wife. Donald met Sandy one day and said to him, "Sandy, ye're lookin' verra glum." "Aye," said Sandy, "ma wife's deid." "Oh, man, an' hoo did that happen?" "Weel, ye see," said Sandy, "about a week ago, I was waukened up i' the middle o' the nicht be the woman grainin' unco' grievous—an' I says to her, 'What's wrang wi' ye, woman?' and she said, 'Man, but I'm verra seek, wull ye no gang for the doctor?' and I said, 'I canna gang for the doctor in the middle o' the nicht.' But she lay there grainin' sae bad that I could no' sleep, and I happened to think o' some pooders the doctor had left for me the day afore; and sae I got up an' lookit at the directions an' it said, 'Take ane every three hours,' an' I thocht she was that bad that I better gie her eneugh—sae I gied her three at ance, an' in half an hour she was deid, stane cault, an' I had to gang for the doctor in the middle o' the nicht after a'. Well, I buried her, an' I'm unco lonely, for while she had her fau'ts like a' folk, she was a guid wife, tak' her a' thegither; but was it no' God's mercy I didna tak' thae pooders mysel'?" (Laughter.)

In the theory of law we first mentioned the lawyer may have the misfortune and mortification of losing a righteous cause by technicality; but it's God's mercy that he is not personally ruined or deprived of his rights. This is the part of the unhappy client.

THE HINDUS IN THE WEST INDIES.

By Archdeacon Josa.

When Christopher Columbus was searching for India and when he saw the Carib Indians, who dwelt in the lands he discovered, he believed that he had found the western parts of India. He had no idea that such large continents were in existence as North and South America. So impressed was he with what he believed to be a fact that the Aborigines of "The West Indies" were identically the same as the dwellers of India proper, that he called the Caribs and other inhabitants of the world he discovered, "Indians" and the countries "The Indies," and subsequently the word "West" was added to both words to differentiate between the dwellers of India proper and the inhabitants of these latitudes. Were Christopher Columbus to come to these parts now, he would find that in Jamaica there are many persons who migrated from India and that in Trinidad and British Guiana, they constitute half the population of these countries. These immigrants retain as far as they can their religions, customs, and languages, and if immigration continues even at the present rate in course of another century, these parts of the world will be in very deed India in the West.

A few notes therefore about these interesting people whose hoary religions, legends and customs might prove of interest to the readers of "Timehri" will not be amiss.

1. *Religion.*—The Hindu is naturally religious. It is impossible for him to be without religion. He travels, in his own country, thousands of miles to obtain salvation. He, to obtain freedom from his sins, undergoes great austerities. Now what is his notion about the Supreme Being? We learn this from his sacred books, which are written in Sanskrit. From the most ancient books (the Vedas) we gather that the Hindus originally were monotheists—worshippers of one God; from their later books (the Puranas), we find that they gradually merged into Pantheism, *i.e.*, a belief that every object in the universe is God.

After this we pass on to what might be called the period of fables. God is worshipped under human shapes. Mortals extorted from the "Supreme Being" immortality by sacrifices and austerities. The chief group of these immortalized creatures consists of three Deities, Brahma, Vishnu and Siva; a kind of Trinity, having nothing in common with the Christian doctrine of the Blessed Three, except the number. These respectively represent the Creating, the Preserving and the Destroying Powers. They are all married and appear also in many other characters and have thousands of names and epithets. The modern idol worship has increased to such an extent that 33,000,000 of deities have been enumerated. These Gods are worshipped by sacrifices and prayers. The original idea of the Hindu sacrificial system is to feed the Gods. Housewives are very naughty in this respect, for frequently they make their sacrificial cakes very tough and exceedingly thin. Prayers are said

by the Brahmans twice a day at least. Here is a very short one which many of our Indians say, "Let us meditate on the excellent glory of the Divine Vivifier. May he enlighten our understanding." This is repeated from 5 to 100 times on a rosary. The reader may be surprised to hear that one way of worshipping God is by getting married! Marriage is a religious duty incumbent on every one. One reason why many of our people are desirous to return to their own country is to get husbands or wives of the same social status as their own for their children.

There are several places of worship called Temples all over the colony. The writer has been obliged to remove his boots so as to be allowed to have a look at the objects of worship. In India there are Temples that have cost millions of money to build. In this colony everything in the "Temple" is very tawdry, but clean. The places are generally very dark and awe-inspiring. Many idols of brass, terra cotta, or painted by hand, fill the "Temple." The images that can stand it are washed morning and evening and decked with flowers. One of the images that the writer saw named Genesa, was a very ugly black dwarf with an extended stomach, four arms and an elephant's head. Another called Hanuman, was a representation of a monkey holding his tail, smeared over with vermilion. A third was a female, Kali by name. She also had four arms; with one hand she held a sword, with another a bleeding head, and on her neck she wore a necklace of skulls!

There was still another idol, but its indecent appearance was so disgusting as not to bear description.

A great many of the gods of the Hindus were very lascivious and committed the most awful crimes. But the Hindu says "to the powerful all things are lawful." And as far as one can gather, the more immoral a god has been the greater the evidence of his might. A Hindu will say, when twitted about the immoralities of his gods, "which mortal could commit what you call crimes such as Krishna committed?" Brahma, the chief of all the deities, was guilty of such heinous crimes that he was punished. He has hardly any worshippers. In India there is only one Temple dedicated to him, whilst to other deities thousands of temples and shrines are reared in their honour.

The Gods have not attributes of omniscience and omnipotency. As, for instance, we meet the God Ram wandering in a desert enquiring from passers-by where a certain individual lived. We find Krishna—one of the most powerful of their Gods—weeping bitterly because he had heard that his father was in gaol, which, however, was not the case, but merely a practical joke played on him! For a God to utter a falsehood to serve his ends is a very common thing.

There is another point that we must bear in mind. Man is an incarnation of God; a portion of godhead comes and dwells for a time in man. The devout Hindu yearns for the time when he may divest himself of this mortal coil and become absorbed into godhead. Man can never be lost eternally—his soul may pass from body to body until it is purified and considered fit to become part and parcel of God Himself.

2. *Caste.*—The Spanish and Portuguese conquerors of yore have enriched the English language with the word "Caste" to denote that wonderful system, which we would call "Class" or "Society," that has been growing up in India for centuries. If a Hindu who lived in ancient times were able to revisit his home he would hardly find any changes at all. The same rude plough used in his times is to be seen now. The meaning of the word "Progress" is unknown. All this is attributed to the power of caste. The motto of the Hindu is "What was good for my father is good for me." He is both unhistorical and uncritical. The Brahman, through religion, has a wonderful hold on the people. It is he, through the system of caste, that has kept the people from advancing, and has checked the march of civilisation. But the people are awaking from their drowsiness. It is only within the last few years that the missionary and the schoolmaster, the soldier and engineer, have made some little inroad into that vast and intricate system—caste—that sucks the very life-blood of India.

The word for caste in the old language of the Hindus is *Varna*—colour. When the ancestors of the Hindus crossed the Himalayas they had to battle against a dark race, the *Dasyas*. On ethnological grounds, therefore, an appellation was necessary to distinguish between the bright-coloured conquerors and the dark races they had conquered. Different languages and different religions strengthened the natural antipathies and became the germ for the future laws and regulations of caste. There are four different classes of men, who are said to have sprung from the mouth, the breast, the thighs, and the feet of Brahma. These were the Brahmans, the Kshatriyas, the Vaisyas, and the Sudras. Although scholars can prove that the following quotation is an interpolation, yet the passage we are about to quote is a very old one—proving the antiquity of caste. In the Rig Veda we find the question asked: "When they divided man, how many did they make him? What was his mouth? What his arms? What are called his thighs and feet?" Then a description such as we have already given follows. That in some way colour was the chief ingredient in the formation of caste is found in the Mahabharata where we are told that the first caste was white, the second red, the third yellow and the fourth black. The first three great castes are supposed to belong to the great Aryan family—the last to the Turanian. These four classes represent the Priests, the soldiers, the husbandmen, and the serfs. (Compare the state of European society in the middle ages.) But besides ethnological reasons, political considerations, the prejudice or jealousy of professions, fomented by guilds and societies, all these kept well in hand by the Brahmans, have tightened the meshes around Hindu society that it cannot get free. The Brahmans are those most interested in keeping up the regulations of caste. They are enriched by the rules of it. A Brahman would not give up his office for a king's diadem. A king is the servant of the Brahman. The following story will show how the Brahmans work the oracle. Once upon a time, a king, Saudasa by name, whilst hunting, met a Brahman on the road and ordered him to get out of his way—a thing contrary to the rules

of caste. The priest civilly declined to do so, whereupon the king struck the Brahman with his whip. The priest cursed him that he might become a cannibal. The curse took effect immediately. He devoured several persons. The curse, was, however, at last removed from him by the one who had uttered it. The case of Saudasa "is always quoted as an instance of a 'Kshatriya,' hostile to the Brahmans and punished for his hostility." It is remarkable that every Hindu is perfectly satisfied with his own caste, however low, nay he is proud of it, and anxious to retain it.

The four great castes above enumerated are again subdivided into thousands of minor ones. The subdivisions are most remarkable. Even the Brahmans do not and cannot intermarry or take food with some Brahmans. The Turas—a subdivision of the lowest class would throw away all his cooking utensils if a Brahman were to call upon him! The lowest class of Hindus would not defile himself with a European of the highest class. We do not know but that they would prefer to eat with hogs rather than with Europeans. From the above, we hope, it will be seen that the chief inconveniences of caste are that people cannot marry whom they please, cannot visit whom they choose, or dine with whom they like. There are, however, some observances of rather an unpleasant character. At one time the Pariah—a very low caste—was obliged to carry a bell to inform passers-by that he, the unclean, was approaching. And even a Sudra would shoot a Pariah if he were to come too close to him. The fear of losing caste is the greatest deterrent to the Hindu joining Christianity. He would have to lose all. Father—mother—wife—home! And then Europeans—and in this country even black people—are not ready to give the hand of fellowship to the Christian East Indian.

We may here mention that the Brahmans would willingly admit into a subdivision of the lower castes any individual who would acknowledge the Vedas as their inspired books and themselves as the priests.

We will conclude this difficult subject by mentioning one or two matters of interest. In India there are no washerwomen. The Hindu, however poor, never washes his own clothes. There is the Dhobi, the washerman, whose father, grandfather, and all his ancestors have done nothing else but washing. The barbers (naus) not only look after the hair of the people but are considered excellent newsmongers and capital "go-betweens" in match-making. The Kuli, commonly written "coolie" is a labourer and not a caste—so called from the daily wages (Kuli) that he receives.

Every coolie in this colony is an outcast, be he Brahman or be he Sudra. The moment the Hindu boards a ship or crosses the black waters (ocean) his caste is gone. Hence the recruiters of our immigrants find it so difficult a task to persuade Hindus to come to this country. For a consideration the Brahmans re-admit the coolies of their own castes, on their return to India. Caste will be the great friend to the Demerara colonist. The rules of it will cause a great many of our East Indians to return to this land of plenty, of freedom, of wealth, of equality.

EAST INDIANS IN BRITISH GUIANA.

By E. A. Luckhoo.

The history of the East Indians of British Guiana furnishes some interesting particulars. This history commences from the year 1838, when 406 immigrants arrived from India to supply the labour required on the sugar plantations. The colony to-day boasts of a total East Indian population of 130,000—nearly one-half of the population of the whole country. East Indian immigration has served the purpose of benefiting both the planters and the colony in general.

When freedom came to the African slaves, it was good-bye to the plantations and plantation labour. It was natural enough that these unfortunate creatures should flee from the scenes associated with bondage and the taskmaster; though some remained who, with the money they had saved during slavery and what they subsequently earned as free labourers, invested on estates which are the villages of the present day. Many planters were ruined as a result of emancipation; and those who survived found that if they were to continue the cultivation of their lands, they must obtain labourers elsewhere. Immigrants from various countries were thereafter introduced—Africans from Sierra Leone, Madeirans, Maltese, Chinese and East Indians. There also arrived a number of Barbadians, together with some Germans and people from the United States; and even a few English ploughmen found their way to these shores. The East Indians and the Chinese proved to be the best adapted to the agricultural work on the plantations. The Portuguese made very good labourers, but they did not evince much love for the soil, preferring to engage in trade, in which they excel. Chinese immigration, which commenced in 1853, ceased in 1878. The East Indians continue to flow through the channel of our admirably organized immigration system.

"The general result of East Indian immigration," says Mr. Rodway, a local historian, "has been good; the population of the colony has been increased from about 100,000 to close upon 300,000, and some estates are able to realise fair profits." Mr. Hewick, an erst-occupant of the Judicial Bench, thinks the East Indians have done much "towards keeping the colony from rushing down-hill." Mr. Duff, late Immigration Agent General, is of opinion that these members of our population, "with their love of land and fondness for agricultural and pastoral pursuits, will probably have a greater influence on the future of the colony than all the other races put together."

There are East Indians scattered all over many places; but it is doubtful whether they have better opportunities for material advancement and are allowed greater privileges than those in British Guiana. Even in some British colonies to which they have emigrated, they suffer under various disabilities which render their position uncomfortable. In one or

two of the Provinces of Canada, they are debarred from the franchise. In places that are not British, their position is worse. They are simply "not wanted" wherever their labour would militate against the interests of white labour; or wherever the policy, ulterior or avowed, is to keep the population white. One who had lived and moved for many years amongst the East Indians of the colony, and had ample opportunities for making comparisons (Rev. H. V. P. Bronkhurst) wrote: "I have no hesitation in saying that the coolies of this colony are quite as well off as a large portion of the labouring classes of England; certainly they are more comfortably situated and more prosperous than the peasantry of Ireland. In addition to all these comforts, they have the amplest means of redress should they consider themselves aggrieved; and their national customs and peculiar prejudices are not in the least interfered with. Indeed, they are, perhaps, allowed too much freedom in these matters."

On the sugar plantations, the East Indians, both indentured and free, are fairly well looked after. As regards the indentured people, things are different to what they were forty odd years ago, when Sir G. W. des Vœux despatched his sensational Memorial to the Secretary of State for the Colonies in which he charged the planters with ill-treating the labourers and adversely criticised the working of the immigration system. The allegations had a basis of fact, as found by a Commission of inquiry; but the planters were exonerated from "intuitional neglect or indifference to the well-being of the people,"—the "defects" of the system, as they were termed, being attributed to "errors of judgment, insufficiency of the law, or want of foresight."

Some necessary reforms and a re-organization of the Immigration Department followed the Commissioners' investigation, and the system has been working pretty smoothly since. The general treatment of the immigrant to-day hardly gives cause for complaint. Sometimes there are disputes over wages; but in these cases the intervention of the Immigration Agent of the district often leads to a settlement; and managers are willing to make reasonable concessions. The housing accommodation is good. Sick immigrants get attended to in well-appointed and well-ordered hospitals, under qualified sicknurses and dispensers, and are visited thrice a week by Government Medical Officers. Leave of absence is occasionally allowed, and a general holiday given. An industrious labourer often earns considerably more than what would be considered "a fair day's wage." The children of the immigrants are educated in English schools, which are State-aided. Even the free immigrants on the estates have reason to be satisfied with the treatment they receive. Mr. Duff stated that they are accorded "practically the same treatment" as the indentured people. Captain Gibson (Immigration Agent) who has served in India, remarked in a recent report: "On estates the conditions of the free immigrants are distinctly good. They are well housed, given free hospital, free wood, cheap pasturing for their cattle, and their rice lands are rented for from $3 to $8 per acre. Off

the estates their conditions do not appear so satisfactory at all." The facilities afforded these free immigrants for growing rice on estate lands undoubtedly serve as a strong inducement to them to remain on the estates. Of course, the object in having these free immigrants on the estates is to supplement the indentured labour. The system is a good one, and operates to the mutual benefit of planters and free immigrants. In this scheme, it may be pointed out, it is not a matter of the planters showing any special consideration for a particular race—as some people think—but of obtaining what from experience they regard as the best and most reliable labour.

Outside of the sugar plantation, East Indians are scattered all over the colony and are engaged in various pursuits. I will not go so far as to say that the mass of the future colonial population will consist entirely of East Indians. Indeed, I would not like to see a purely East Indian colony here. Other races are useful, each in its own way, and the exploitation of the vast hinterland, to which we are now turning our eyes, can only be achieved by people of hardier constitutions and greater strength of muscle,—such, for instance, as the negro race possesses. But East Indians are demonstrating more and more their work in the economic development of the country, and are asserting themselves more and more in the general life of the community. The country may not be quite a paradise for them, but it gives them a living, and in many a case a perfectly comfortable living—a far better living, indeed, than they can get in the Mother country; and, it is only to be hoped that no impediments will be put in the way of their further progress, but rather that they will be more and more encouraged in this direction, and to a permanent settlement on the land.

In agriculture, the greater part of the labouring class of our East Indian population are engaged. It is well that this is so for British Guiana is pre-eminently an agricultural country, and upon agriculture depends its growth and prosperity. The East Indians themselves are natural agriculturists, and take what Mill calls "an affectionate interest" in the land. To own land of their own is their great ambition, and to this end they labour hard and economise largely. To the provision-farmer or rice-grower, working under favourable weather conditions, comes not "the anxiety which chills and paralyses, the uncertainty of having food to eat," to which the less industrious classes are invariably subject. The want of rain or artificial watering in times of drought, or of drainage when floods prevail, is the supreme troubler of the peace of the peasantry. The rice industry is almost absorbing the time and energy of the East Indian agriculturists. Provision-growing, to which great attention used to be given, is now largely neglected for rice-growing. It is estimated that the area under rice cultivation in the colony is 36,000 acres, being an increase of some 4,000 acres over last year's acreage. In 1898 the area under rice was only 6,000 acres. So that in fourteen years it has increased by 30,000 acres—an acreage increase every year of 2,142 acres. Since 1907 the colony has been exporting its surplus rice.

Professor Harrison thinks that the enormous area in the colony suitable for rice cultivation should enable it to become the granary for the West Indian Islands To have built up the sugar industry, and upon their own magnificent initiative, to have been the pioneers of the rice industry—which is to-day a boon and a blessing to the colony—are achievements which speak eloquently for themselves as to the value of East Indians as colonists. It remains for the Government to give the latter industry every possible consideration so that it may rest upon a more stable and secure basis and expand still further. It is as much to the interest of the rice-growers as the interest of the colony that this should be. Rice is to the East Indians here what the potato crop is to the Irish people, and one can understand what any widespread failure of the crop, or a cessation of the industry, would mean. The great demand of the moment is a proper scheme of irrigation, whereby the industry would be completely assured against adverse weather conditions. And it should not be difficult for the Government to compass such an end. Our late Immigration Agent General has pointed out how the growers have placed their dependence "almost entirely on the rice industry; in its ultimate success or failure lies their future and continued prosperity." "It is very necessary therefore," he adds (referring to those who have settled down as rice cultivators on the coast-lands and up the rivers and creeks) "that well-considered schemes of drainage and irrigation and the opening up of means of communication should be undertaken, if the continued development and advancement of these communities are desired."

As owners of flocks and herds, East Indians figure prominently in the colony, some of them having vast possessions. Pastured on sugar plantations alone last year were 12,475 head of cattle owned by both indentured and free immigrants; and 3,178 sheep and goats. About two years ago was passed a very necessary Bill with a view of improving the breed of cattle.

As landed proprietors East Indians show up to advantage. During the year 1910–11 319 transports of property of the total value of $71,578 were passed in favour of 290 persons. In the previous year the value of the properties transported was $71,699. The value of properties assessed for local taxes in the towns and villages was $845,823. (*Vide* Immigration Agent General's Report). The thriftiness of the East Indians is proverbial. In 1910–11 they had $565,465 in the savings banks of the colony, the same year they were able to send away to friends and relatives in India the vast amount of $10,892, being $1,424 more than in the preceding year. It is well to state here also that the immigrants returning to India the same year took away with them $43,454 and jewellery valued at $7,243. In the year before return immigrants had in their possession $38,380 and jewellery of the value of $7,676. In trade and other money-making occupations East Indians find a large scope for their industry. According to excise returns, licences were issued last year for 514 provision shops, 9 retail spirit shops, 52 butcher shops, 52 drug shops, 84 stores, 28 cookshops, 1,293 donkey

carts (for hire), and 74 horse or mule carts. Licences were also applied for by 1,814 hucksters, 10 pawnbrokers and 2 balata collectors, and in respect of 1,159 bateaux, 120 carriages (for hire), and 320 horses and mules (for hire). Provision shops have been increased by 28, butcher shops by 36, and hucksters by 141. East Indians, or those of East Indian descent, are also largely employed in the colony as dispensers and bookkeepers for sugar estates, and as interpreters attached to the Immigration Department or to the Judicial Branch of the Government Service They can also hold their own as artisans or mechanics. In the Public Service two East Indians have risen to the position of Magistrates' Clerks—one of them being now on pension. Of three others one is a Marshal in the Judicial Establishment, one a clerk in the Official Receiver's Office, and a third a clerical assistant in a Magistrate's Clerk's Office. Professional life is becoming an irresistible attraction to the educated and aspiring young East Indian creoles. Time was when a father's highest ambition was to get his son qualified as a dispenser or bookkeeper. To-day we have in the colony three of these creoles who are doctors—one of them being in the Government Medical Service, two others are now practising in the legal profession, and three or four more will soon be added to their number. In the ministry are two East Indians connected with the Church of England missions. It may be added that the East Indian race here has also produced a Bachelor of Arts (Cantab), and a Fellow of Fowler's Phrenological Institute (London).

The political status of East Indians in British Guiana is precisely the same as that of any other race in the community. It is regrettable, however, to find so very few availing themselves of the franchise. As pointed out by Mr. Duff only 188 or 4.5 per cent. of the total number (4,104) of names recorded in the Official List published in May, 1911, were those of the East Indian race ; though I believe there has been a slight increase of the number since. The fact is, East Indians are not quite alive yet to their own political rights and interests. I join with our late Immigratiou Agent General in deploring the fact that these people are still unrepresented in the Legislature by any of their own nationality. He doubtless realised that the "Protector of the Immigrants" is not a sufficient representative in the Legislature of our East Indian population. He, at any rate, thought that their numbers and wealth entitle them to some representation in the Legislature—where, it is easy to see, their interests can be vitally injured or vitally promoted by any measure of legislation. It is important to point out here what Mr. Duff so properly pointed out last year in his annual report that though, under the Constitution Ordinance, inability to read or write English does not disqualify anyone as a voter, provided he can "read or write some language," East Indians who can read or write their own language are "disqualified by the fact that no provision exists in the Ordinance for the printing of the necessary papers in any other than English." There are hundreds of East Indians in the colony who have the necessary property qualifications as voters but who cannot read

English. Our legislators might give the matter their consideration. An important amendment of the Immigration Ordinance—based upon the principle of the liberty of the British subject—was effected last year, whereby all unindentured and colony-born East Indians, by making a statutory declaration, relinquishing "all the rights, benefits and privileges" of the Ordinance, would be entirely free thereafter from "all the disabilities which immigrants are at present subject to under the Ordinance." This amendment was made in response to a petition by a section of the East Indian community whose grievance substantially was that they could not leave the colony without passports or marry without certificates from the Immigration Department. For some time past intelligent and wide-awake East Indians had been discussing amongst themselves these objectionable features of the Ordinance as applied to those not under indenture, and they could not see why as free British subjects they should not be entitled to equal rights and privileges as free British subjects of other races in the colony. No advantage seems to have been taken yet of the exemplary provisions of the Ordinance, and many a one doubtless will declare: "I desire no future that will break the ties of the past." Nevertheless, the new Ordinance will remain on the Statute Book of the colony as the charter of the people's liberty, securing to them in every respect the rights of all free citizens.

Such has been the evolution of the East Indian race in British Guiana. At the one end—humble and illiterate, and even despised immigrants, come to make a living as tillers of the canefields; at the other end—property holders and cattle farmers, and shopkeepers, and doctors, and lawyers, and ministers, and a voice in the Government of the country and a hand in the shaping of its destinies. All true lovers of the race will wish for it a wider sphere of usefulness and a larger measure of happiness and prosperity.

I may, in concluding this hastily-written article, point to the necessity that exists in the colony for a newspaper or journal of some kind for the special benefit of East Indians. It may be printed partly in English and partly in Hindi. Such a paper cannot but still further advance the interests of the race, and by means of its Hindi columns serve as an admirable medium for disseminating useful information and inculcating sound advice amongst those conversant only with the Hindi language and who outnumber by far their English-speaking and English-reading brethren.

Let me also express the hope that as East Indian immigration is still a necessity, and is in every way desirable, thereby providing an outlet for India's surplus population and supplying builders for the economic fabric of the colony, nothing will be done to impair the harmonious relations which have so long existed between us and the Indian Government.

MORUCA.

By Rev. Father Lickert, S.J.

There has been talk of late of a steamship service to the Pomeroon. If this should be realised, the passenger, as the steamer heads straight for the Pomeroon mouth, will see a large bay on the right, the shore thickly wooded, mangrove as usual in front; behind bush. He would never suspect that a river was hidden away somewhere among that mass of vegetation. It is not a large one, it is true, compared with the larger rivers of British Guiana, but neither is it very small. Its mouth is obstructed by a delta formed of mangrove, thus giving the appearance of unbroken sea-shore. This is the Moruca River, one of the Colony's Indian Reservations. We are going to make a short visit to it which, it is hoped, will not be without interest.

Perhaps we have a rather rough passage over the some five miles of sea. The tide is rolling in and the wind is blowing hard out, so we feel somewhat relieved when we come well within reach of something firmer than water, even if it be only long mangrove roots stretching like claws into the waters, as though ready to aid us in case of need. Once we leave the Moruca delta behind us, we feel a pleasant sense of security and snugness. The waters are smooth, to right and left of us is bush protecting us from wind and wave. Indeed, Moruca is a river after the Indian's own heart, for he loves quiet and to be alone, especially away from "civilised" man.

Let us just take a rapid trip from mouth to source and see what there is to be seen. For considerably more than half the river's length both banks are covered with bush. At times it is a forest of trees that shows, rising out of the dark waters which stretch beyond the river banks till they reach the rising land or perhaps continues far behind in a dreary savannah. At other times the unsightly Mocca-Moccas thickly line the river side, forming a barrier to the view of the more picturesque bush behind it. Usually the river is comfortably broad throughout its entire length; at present, however, it is almost becoming closed up. Following on the heavy rains after the long drought long banks of floating grass line each side for a considerable distance, leaving just a broad boat-track between them. I presume it is the traffic that has kept this passage open, for the tide is too gentle in its movements to account for it. As if this were not enough, the Mocca-Moccas, as though weary of standing along the river side like a crowd awaiting some passing show, have broken loose and formed in some three or four places what the Indians call "stop-offs." At present they are very uncomfortable obstructions. The boat can just push through the narrow passage still left open. However, unless they be speedily cleared away they will simply become solid dams, for the mud and floating vegetation collect in

a wonderfully short time, forming a solid mass. These are trifles which do not trouble the Indian's peace of mind, for his corial can creep through a very small space and if even this is not found, then it is easily hauled over or round, for he tucks up his trousers, steps into the shallow water, and very soon pursues his easy course on the other side. But it is a matter of life and death for the passengers of larger craft, a tent-boat, for example ; the journey would simply come to an end, for if there is no possibility of getting through, neither is there any of getting over or round.

At the very mouth of the Moruca live the owners of two grants with their labourers. After leaving these behind we shall have to paddle for well over two hours during which we pass the Manawarima Creek connecting Moruca with the Pomeroon, before we come to human life again at Waramuri, a mission station under the care of the Church of England. This has rather a dismal outlook, for the little hill consists of a darkish sand which somehow always reminds me of ash dust. The Indians belonging to this mission live about this mission station and in the Haimoracabra Creek running just below it.

After leaving Waramuri again we have solitude for some two hours until we reach Holo Point. Holo Point is the beginning of the Santa Rosa Mission. From here, at irregular intervals, we pass by inhabited places, but we see very little of them, for they are in the bush, though generally near the river or savannah side. Here, at last, the bush gives place at the river-side to savannahs which stretch their weary wastes to right and left for a considerable distance before the bush is reached. However, it is a change from the rather monotonous bush. One hour more brings us to Santa Rosa itself, an oasis of beauty in a desert of dismal waste and weary monotony. I might here mention that the Santa Rosa part of Moruca consists of a number of islands. When the Savannahs are full the different places inhabited are really islands but in the "dry" season many become almost if not entirely a part of the mainland. Santa Rosa island is the only inhabited locality on our right as we go up. Beyond it and, indeed, practically all this bank of the Moruca river is savannah, relieved from time to time by islands of bush, till the sea is reached. When I spoke of Santa Rosa as an oasis of beauty in a desert of dismal waste and weary monotony, I only meant the actual Mission property, for the rest of the island behind is bush like all the rest of Moruca. While the bush, as seen from the river, is rather monotonous the view from some elevation, for example from the top of Santa Rosa hill, is often wonderfully beautiful.

When you come near Santa Rosa Mission the eye is relieved by and delighted with a forest of coconut palms. As you come opposite you are charmed with the sight before you: a hill of fair height, of red sand,

thickly planted with the stately coconut palm, their greyish stems and spreading branches, some green, some tinted with gold, and some all golden, making a most beautiful feast of colour, together with the other varieties of green scattered here and there in their midst. Through this wealth of colour peeps out and looks down to the waters below the pretty little Church of Santa Rosa, with its tower surmounted by a cross. Behind it stands the priest's house, out of sight, as is also the large school-building which stands on the opposite slope of the Santa Rosa hill, at the bottom of which is the building serving for the present as Convent for the Sisters of Mercy who have charge of the school. It is the old convent building of former days. The only other building in sight is a store almost at the water's edge. We pass on. The dreary savannah stretches to right and left. The inhabited parts now are few and distant from one another and always on our left; they cease long before we come to the Moruca source which is lost in the savannah beyond. The last inhabited locality is a short turn over the savannah on our left and is called Kamwatta; it is inhabited by a considerable number of Warraus received into the Catholic Church by the late Fr. S. Gillet, S.J., a few years ago.

We have seen little enough of life in our passage through, perhaps only the feathered inhabitants, always more or less in evidence, especially the ubiquitous Kiskadee. Not that there is no animal life in Moruca but, like the Indian there, the animals are timid and watch you, all unconscious of their presence, till distance "lends enchantment to the view." Once I had an excellent proof of this. I was passing through the Bara Bara Creek when a piece of wood, a few inches long, fell from one of the trees bordering the Creek. There was something in the way it fell that attracted my attention and aroused my curiosity. I told my two Indians to stop a moment and from our position some little distance past where the wood had fallen we looked back and up at the tree. Instantly was heard a shrieking and a whistling and a big blackish monkey started out of his leafy shelter and swung himself rigidly from tree to tree out of sight. His cries were evidently meant for the rest of the family, for they were instantly answered from deeper in the bush and then were seen some seven or eight other blackish creatures following swiftly after number one. It was a pleasant diversion only too short.

We will now go into the bush and search for its inhabitants that we may get to know them. But before we do so we had better learn something of the history of the peoples we are going to visit. After the Venezuelan War of Independence a number of immigrants came to Moruca. Had they stayed at Morawhanna or thereabouts they would, of course, have been under British protection, but doubtless they felt that was too near the Venezuelan frontier for safety, so they put the length of several rivers and finally broad savannahs between them and their old home and so came into the quiet of Moruca. These immigrants were of mixed Spanish and Indian blood. They settled among the Arawaks of Moruca with whom they intermarried. A few other settlers of British and Portuguese origin came to Moruca. These too inter-

married with those they found there. Besides these there were a certain number of Warraus generally in some more retired part of the river, and these have been considerably added to of late years from various sources. Therefore, Moruca, it will be seen, contains a very mixed race. The Venezuelan immigrants were Catholics, therefore was the Roman Catholic Mission of Santa Rosa started and the Church of Santa Rosa built. Their first priest was a Father Cullen, an Irishman, who laboured in and around Moruca for thirteen years. After him came the ever-famous Father Messini, S.J., who spent thirty years of his devoted life among the Indians of Moruca. There is no doubt about it, the acknowledged superiority of the Spanish Arawaks, as they are called, of Santa Rosa Mission over the other Indians of the colony is due to the self-sacrificing labours of these two devoted priests, although it may be admitted that the mixture of blood resulted in a somewhat more perfect piece of humanity than is usually found among the Aboriginal pure and simple. The difference between the descendants of the Spanish Arawaks, and, for example, the Warraus in their midst is very marked, even making allowance for the inferiority of race of the latter. While we are listening to their history we are gradually making our way through the bush to visit them. We soon come to one of their habitations. It is of the simplest construction but solid and lasting. A number of sturdy posts, the number varying according to the size of the building, planted firmly in the earth at regular intervals; yet more posts resting on and firmly fixed to the tops of these, some stretching across from side to side, from post to post, others forming a frame-work on which to rest the roof; this is usually very steep and thatched with troolie. Sometimes a corner is shut off by troolie walls, making a little room. From the cross-beams hang the hammocks. slung over them during the day if not needed. At one of the corners usually stands a construction, sometimes a piece of an old corial, which serves to hold the few kitchen utensils, such as the fan for fanning the fire, &c., and the cassava bread before and after the baking. Some of the more enterprising have a second and smaller building with wattles round for kitchen which is also used as a dwelling house in emergency. Here and there you will find a rough bench, rarely an Indian chair, a construction something after the form of a deck chair but wooden throughout; usually the hammock serves as bed and chair. Then, a cooking vessel or two, a few articles in the way of plates, mugs, spoons, &c., a gourd for holding water, an iron for baking cassava bread, a jar and a matapi, and you have exhausted the household furniture of most; some have less, some more. As the roof comes down fairly low and a little trench surrounds the building, the inmates are secure against the heaviest rain, even in times of high wind, for the thick bush, never far away, acts as a protecting wall. Generally a few coffee bushes and banana trees grow in the immediate neighbourhood; sometimes a coconut tree or two, an orange or tangerine or lime and other fruit trees, but these were all there, I am told, before the Indians came, for they do not seem very enterprising in this matter. Long ago the

Dutch visited this region and left behind them these and other signs of their stay. Many keep a few fowls.

The inmates of the house we are approaching are preparing to welcome us. We cannot help noticing the almost courtly manner with which we are received. We shall find they probably belong to the old stock with Spanish blood in their veins. While all are more or less friendly, the reception given by some would come fairly under the word "uncivilised" though it may be remarked even the manner of these is in no way inferior to that of many of their uneducated fellow beings of civilised lands. Moreover, the Indian never intends to be rude.

We do not stay long, for there is little enough to invite delay, and you are never offered hospitality. Occasionally I have been offered small gifts, a pine, a small measure of coffee, etc. Indeed they have little enough to offer you, usually, and rarely of their abundance. The benab of the Indian is indeed a desolate sight; partaking someway of the dreary and uninviting savannah around, they just seem a make-shift against the inclement weather of a family always on the move. The "home," as one knows it, is simply unthinkable in any way in connection with the Indian's benab. Uninviting as it always is, it becomes dreariness itself when the rain is pouring down for long spells; one almost prefers to be out in the deluge. Another reason why one does not wish to delay under their roof is that one cannot talk with the inmates. It seems rather wonderful that these primitive people have preserved the Spanish tongue which they brought into this region. All, young and old, speak Spanish, which, I have been told by one who knows that language, is good Spanish and has not degenerated into a dialect which might be well classed as a new language. Certainly one would have expected this in a perfectly uneducated people, for ignorance of letters and slovenly ways of speech are usually the progenitors of new dialects. Besides Spanish a certain number know Arawak, equally their native tongue. Spanish, however, is the prevailing language and the only one known by many; it is the one spoken at home and the language invariably used by the school children outside the schoolroom. This is just one of the difficulties of the school here; the children come simply to a foreign language with the result that progress is painfully slow till this has been somewhat learned, and, indeed, it is none too quick after. English is becoming known more and more since the institution of the school and many of the younger generation speak it, or rather a variety of it, fairly well. The Warrau portion of Santa Rosa Mission does not, with rare exceptions, speak Spanish. A certain number speak a variety of English but too many of them know only their own tongue. Thus it will be seen that Santa Rosa possesses not only a compound people but also a compound of tongues. It is a little Babel.

So we smile our farewell and plunge into the bush to seek yet other benabs for our instruction. We walk Indian file along the narrow pathway. Soon, very likely, we come to a side track, down which we see a

part of a troolie roof through the surrounding vegetation. This time, perhaps, a number of naked children scamper off into the bush as they catch sight of us. This performance usually means that we are approaching a family more wild than civilised, so that the sight of a stranger has somewhat the same effect it would have on the wild animals. Sometimes, too, it speaks of a bad conscience, for they know they ought to be at school. There are, unfortunately, not a few families that may be said to perpetuate uncivilisation, in that they are either always on the move or they are simply too indifferent to send their children to school. The parents, ignorant and stupid, simply harmless savages, never dream of trying to better their children and, of course, these latter quite endorse this attitude of their elders. It is a great pity some pressure is not brought to bear upon these, and, indeed, all Indians, in this matter of schooling, for it is as much for their good to send their children to school as it is to have a check put on their weakness for drink. The Indian, at best, is but a big child and needs a kind but firm guiding hand. It is useless to talk of the moral influence of the mission in this matter, for even supposing these people understood you, it is little better than a farce to put high motives before people whose ambitions do not rise higher than their stomachs. "Ought" frequently fails to influence, even with long civilised people, while "must" is easily understood by all.

Besides, there are no serious objections against such a measure. The bush is full of pathways thoroughly well known to every Indian child, while the water-journey is a thing of ease and pleasure to all Indians from the oldest to the youngest. The Indian child can "paddle his own canoe" almost as soon as he can stand on his own two little feet. They are thoroughly used to water-locomotion. Then, again, even if their elders should need their very doubtful services in the house or in the field, this is quite compatible with schooling. Many who come to school, stay off certain days to help weed, or hold the baby while the parents go "aback." Judging from my experience of their working powers the Indian child is better away from it. They are the veriest little chatterboxes to be found anywhere, but they have little desire, and, indeed, only too little strength, for hard work They are children of children. Their great delight is to play but their play must be of the simplest kind, for games requiring hard work, even of the lighest, soon wearies the majority of them. Their great delight is to chase one another, uttering the while little shrieks most musical and delightful to hear, for they speak of the keenest pleasure and enjoyment. I have tried several experiments to engage their attention to more serious pastimes. For example, I thought the picture-block game would be a success. There were pictures to look at, pictures bright with many colours. There was, of course, the labour of fitting the blocks into the picture. However, this seems too much for many. The boys show greater energy than the girls and are very fond of cricket. They also show greater aptitude and intelligence in the schoolroom. While their talking exercise may account somewhat for their greater mental activities,—the girls usually mope and talk.—I do not think it

accounts for all; the girls, I imagine, are oppressed with the idea that they are supposed to be a somewhat inferior being, rather meant to labour and take a very second place in life, for such they see is the case with their mothers and the Indian women generally. In my opinion, speaking generally, the women are superior to the men, more unselfish, of more generous disposition, more dutiful.

Just as they shrink from anything requiring labour, especially hard labour, so too does the Indian child shrink with extraordinary sensitiveness from pain. In fact they are most cowardly in this matter and will cry out long before they are hurt, the boys being as bad as the girls or rather worse. Perhaps as a consequence of this they are not truthful, for it requires courage to be truthful; of course, they are timid and if they are startled or frightened all the horses in the world cannot drag a word from their lips; they will stand before you like statues. I do not think they possess much affection or devotedness; at any rate they do not show the presence of these. In fact their little hearts seem to be as empty as their little heads. I speak of their affection for strangers, for they seem kind enough towards one another, especially kind to the little ones who are usually rather spoilt; on the other hand, a death in the family seems to cause little sorrow and seems to be forgotten soon; I say *seems*, for these people are so self-contained that the seeming cold exterior may all the time cloak a deeply sorrowing heart. Once they get to know you they readily come to chatter or play with you, and, there is no doubt, they are amusing little creatures. Little they are, wonderfully small. I imagine their poor feeding has something to do with it. I have often found them going through the day with just their morning meal and that consisted probably of a piece of cassava, none too large, and a cup of water. Still they are so wonderfully bright and cheery under it all. If you give them anything they are delighted; if you do not they are not less content and they go off and play none the less cheerily. They are used to short rations; they hardly mind it. None the less do they suffer from it and easily succumb to fever, and, most naturally, find any kind of labour hard. So used are they to little, not rarely to nothing, when they do get a "feed" it is amusing to see how little satisfies them; their stomachs are so accustomed to little they cannot take much but the little they can take is too little for healthy bodily growth and even for strengthening the little bodies they have, with the result, as I have said, they soon succumb to sickness. A most pleasing trait in our little Indian children is their unselfishness when they get anything, whatever this be. They may eat a little there and then after leaving you but they certainly will not eat all; often they will eat nothing till the food has been shared with their brothers and sisters or friends and they will carry it all the way home if these are not with them. Considering they are not rarely in want and that dainties are few and far between in their lives, this characteristic is remarkable. This has been a rather long digression, for we were just approaching the second Indian habitation on our ramble through the bush and from certain signs were led to suspect the inmates were none

too civilised. Probably we shall have a taste of "uncivilised" reception in this case. The man will probably sit there in his hammock, give you half a glance and grunt out certain inarticulate sounds in answer to your greeting. The benab, however, is just like the one we have just visited, excepting perhaps the little enclosed corner, which is usually a sign of an Arawak benab. However hearty or otherwise our reception is on the part of the Indians we are sure of a lively one from the dogs that growl or bark at our approach. Until one has got somewhat used to these, they cause no small trepidation as they sometimes come rushing out snarling and barking furiously the while, looking for all the world as if they were going to tear one to pieces. Bite they will, if you let them, but a quiet, firm attitude will usually make them decide that discretion is the better part of valour. Poor brutes! They look as if, like their owners, they had not too much to eat. Every family has at least one cassava field, its size depending on the energies or capabilities of the owner. Some have two or even more. Generally a few head of sugar-cane are grown if not for the sake of making drink from it, at least to serve as "toffee" for their little ones. Often maize is grown in a small way. For the rest he must depend on his skill or luck or the season for fish, or his gun or bow and arrow for game. During the crab season they will bring back several baskets of these crustaceans and for a too brief period a frugal plenty brightens their homes They have a method of obtaining fish called "chopping." Armed with a cutlass in one hand and holding a lamp in the other, they wade through the shallow waters at the river's side, lifting up the large "duck weed" leaves as they call the lily under which the fish often shelter and slumber. Once seen, the cutlass soon gives them a slash. The aim is rarely at fault and the fish, large or small, floats and is taken possession of. Game is not abundant in the immediate neighbourhood owing to the number of human beings about and also to the vast savannah wastes. However, when an animal does visit Santa Rosa locality it usually comes to stay but as a rule the huntsman must go far "aback" to come across them. Sometimes the Indian has frugal plenty, often he has nothing to spare, and not rarely he is in want. They are wonderfully patient in their poverty, perhaps I should say stoic.

They simply "grin and bear it." I think I am correct in saying that many are more often in want than in even frugal plenty. They live on what may be called half rations a good part of the year, do many of them. No wonder then they so easily succumb under hard work and fall a prey especially to fever, for they have little staying power and, also, the food they have, cassava if nothing else, is unappetising to a sick stomach, so it is not touched and sickness and starvation soon carry them off. There is abundant illustration of this at the present moment For several months now Malaria has been raging throughout Moruca. Many have been prostrated for months and seem no nearer recovery than at the beginning; the wonder is they are alive. Several times I found absolutely nothing in the house to eat, and all down with the fever, so that

nobody could gather and prepare cassava or catch fish. And even when they had cassava the sick would not touch it, "could not" I ought to say, for it must be repelling to a sick stomach, yet they had nothing else to attract the appetite, with the result that they either die or hang on for months. There have been several deaths, chiefly among young married women, and all close together so that there is almost a panic among the the survivors. It is pitiful to see the number of emaciated faces, victims of fever and starvation. "Wise" people will say: "The Indians are lazy and foolish, why don't they put aside for the rainy day? Why don't they take advice? Why don't they do this, that and the other?" It is always easy to criticise, equally easy to give advice, but often neither is worth much. Granting they are lazy and also foolish, let these "wise" critics put themselves in the place of the Aboriginal and see if they can still fairly call him hard names, or think hardly of him. To begin with, his knowledge is sadly limited, and with that also his chances of bettering himself. Born and reared in the bush ; with nature alone as his teacher, prodigal sometimes in its gifts, sometimes sparing ; living from hand to mouth, now having frugal plenty, now being in want ; his house open to man, beast and the elements, especially when he is away, be it for work or pleasure ; the Indian gets an education of a kind that must be largely a mystery to his "civilised" fellow-beings of town bringing up. And considering that many of these are, and doubtless will consider themselves superior to their Red brethren in all matters, they cannot show thier superiority better than by a large and generous judgment on their less fortunate fellow-creatures. Again, with very limited horticultural tools and other means the labour of preparing a field becomes a giant's task even if he can easily find a suitable and fertile spot and one as near as possible to his house. Then besides the prolific needs whose name is legion, he has to suffer the ravages of the accouchi ants, for these swarm in the Moruca and they are enormously destructive. One meets gigantic nests, high as an average man above ground, while there is no telling how far they extend beneath. He is helpless before them. The remedies, more or less successfully used by his civilized and better-provided fellow-creatures, are simply beyond his powers. Moreover, as I have said, not rarely are they on half rations, a state of body not conducive to work, least of all to hard work. He goes out to work but frequently returns sick and poor. His pocketful of dollars has become much lightened if not by downright dishonesty, at least by the questionable method of flaunting attractive articles before his admiring eyes, knowing the Indian is a big child who cannot easily say "nay" to himself. Not rarely they return with nothing, never having received their due. These are some of the difficulties before which even his better equipped and long civilised brother would give in, and be content with little, nor would he consider it just or kind to be called lazy, etc.

The Red Man is of a most timid and retiring disposition. He feels his weakness and indeed helplessness befors his "civilised" fellow-man, so he will tamely submit to be wronged with exasperating meekness nor

does he seem to cherish rancour in his heart against those who have wronged him. In a word, the Aboriginal is a child that needs the protecting and strong arm of a father to defend him against his "civilised" brethren of the human race as well as against himself. As a rule, the Indian can make many useful articles, such as baskets, matapi, paddles, &c., &c., but there is little encouragement for him to do so on any large scale; he finds he gets so little for his work. As a workman, he is excellent in cutting down and clearing bush land, none better in the colony. Many prefer him to others as a hand on their grants; he is quiet and works if not at high pressure at least fairly satisfactorily. But he cannot be depended on for long. Soon he must have a rest or visit his friends or some such other excuse which all come to the same thing: he wants a change and to be his own master again. It is in the blood. As boatman, however, the Indian is perhaps seen at his best. He will paddle for long spells with wonderful perseverance as long as he gets his food and his rest. Judging from this, one would conclude they had remarkable staying powers, but, as a matter of fact, paddling is a comparatively easy form of work while their rythmical and varied method makes it easier still, just as marching in step makes long walking easier. A pleasing feature is their quietness; they will chat and laugh and joke while they are paddling but all is done without noise or disturbance. Added to all these good points comes his docility. One need never fear a "row." If the Indian sees trouble coming he determines either to bear it, or slips away and so evades it.

Of course, in what I have written I am speaking of the Moruca Indians and those belonging to the Santa Rosa Mission, for of them alone do I know anything. From what has been just said it will be seen that among the Indians pre-eminently is that saying true, viz., "that the child is the father of the man." What was said of the little Indian children may be also said with slight modifications and additions of the adult. Indeed the latter are largely grown-up children. They are, indeed, very kind to the little ones, too kind in fact, so that these get a great deal too much of their own way: if they do not like a thing, to go to school to-day or to-morrow for example, or to take medicine, etc., they get their own way; this is, I believe, the reason why they, boys as well as girls, are so soft and rather babyish.

I can imagine readers of this article saying that the Indians of Santa Rosa Mission seem to have no or few faults. I would not like to say that. I have spoken of these rather from their own standpoint, taking them in their concrete surroundings: to take them out of these and then judge them is well enough if you want to find out how they compare with ideal humanity, but not otherwise. They have their faults like everybody else and less than some of their "civilised" fellow beings. Their weakness for drink is too well known to need being dwelt on here, but they get only too much encouragement from the bad example of the superior white man in this matter. They may seem selfish and stingy, but who would be lavish or generous who

has little enough for himself and family. They seem lazy, and so are all under-fed beings. They are unwisely independent in that they refuse offers of work just because it does not suit at the time and yet they would be glad of the money and perhaps are much in need of it. "Beggars can't be choosers" is a saying that they do not seem to have heard of, and they are far too short-sighted to see it for themselves, with the result that they often offend their best friends. On the other hand his cleanly habits of body and dress would shame many of his "civilised" superiors as would his dignified deportment and self-control. Many of the defects of the Red Man are what I may call "natural," for example, his weakness for drink ; it would be wonderful were they totally absent, even where religious influence has been brought to bear on his life. His worst defects, however, are the result of his contact with "civilised" man. The "civilised" savage is the Red Man's greatest curse. He is not merely a bad and scandalous example but sometimes a veritable devil, deliberately trying to ruin the Red Man.

THE INDIANS OF THE NORTH WESTERN DISTRICT.

By Rev. Father Cooksey, S.J.

General.—The immense area, larger than that of the ancient colony and County of Demerara, of the North Western District of the County of Essequibo makes it difficult for one man to write with any amount of intimate knowledge of the Aboriginal inhabitants, of five different races spread in isolated settlements all over eight thousand square miles of hill and flood and forest. For each tribe, and to a certain extent, each community, must be known for some time before their confidence can be won and their character approximately understood. Of course it is possible for tourists (the most prolific writers on these subjects) in a few days to form impressions of the shy, timid, sad-faced, decadent Indian, the last representative of a dying race, forced out of existence by the triumphant march of civilisation and such like nonsense; but on better acquaintance they will find that he is cautious and cunning rather than shy and timid and that though he undoubtedly suffers much from the barbarous pioneers of civilisation when true civilisation reaches him he flourishes and increases and multiplies.

The Indians of the North Western District are of both classes. The Akawois and true Caribs of the southern hill country to the Cuyuni watershed, which forms about two-thirds of our area, are out of contact, except of a very passing nature, with missionary or protector or doctor; and civilisation comes to them disguised as the gold-digger and the balata-bleeder and the gold-fields' grocery and its clerks. In the northern swamps and isolated hills we have a few Akawois and Chaimas and many Arawaks and Warraus, living in touch with more civilised conditions, regularly paid wages, effective protection and reasonable prices, and they are multiplying in direct proportion to their appreciation of these benefits.

For these reasons I confine my remarks to the swamp tribes and will leave the particulars of the hill tribes to the pen of another whose more intimate association with these people will enable him to write from first-hand information of the Caribs and Akawois.

The Swamp Tribes.—The Warraus, Arawaks and Chaimas are for the most part immigrants, and now are gradually leaving their swamps for the insular hills between the Aruka and Amakura. With regard to these, in general it may be said that they are advancing slowly but perceptibly from the wild Indian life of the past to be a people of peasant labourers, and that they have already reached a pitch of civilisation well in advance of many citizens of Georgetown and its suburbs, and I can testify from my three years' experience of one and five

years of the other that their high birth-rate and low death-rate are an index of a very satisfactory general condition, and that not only are regular marriages much more numerous than formerly but that their fidelity to their marriage vow is at least as good as that of any other class of our population. On better acquaintance they prove to be strangely different from that uniformity of feature and demeanour which is a stranger's first impression. The jovial reunion at dusk in each house is one of the most startling of these disillusionments.

The evening meal is finished and every hammock is slung; the fire smokes slowly and your tobacco is shared by men and women alike. Your arrival, appearance and treatment of the sick is discussed with the various events of the day, and each point is repeated by the audience with comments and laughter open and full-throated, stories are told translated and written down and various questions are asked and answered with no reserve or shyness or convention, but with a simple politeness and respect which is quite charming and delightful. Soon one recognises that in feature and in personal character and disposition they have their individuating notes and that you have to deal with the honest man and the cheat, the sober matron and her antithesis and even with the shrew, the drunkard and the idler and the strong and willing worker and the faithful servant; the last will never become insolent or presuming but still may be treated as a trusted friend. They make up a society complex here as elsewhere but with a net result which if wanting in some of the conventions of civilization is not so deprived of its essentials as are districts I have known in Lombard street, in Charlestown, and in Liverpool.

They are acute judges of character and a new-comer in authority is carefully inspected and discussed, his tendencies are at once marked and he falls at once into his place in the economy of the district. The single man will be tempted in the wilderness, and to their honour be it said that some have not been found wanting and have earned the respect of the Indian by their justice and fair dealing and have attracted to themselves the willing worker and the strong arm; and such men have found the Indian friendly and faithful. But once one placed in authority shows in himself thriftlessness or weakness of character, or a tendency to stray from the paths of sobriety or virtue, the true man will retire and another class will appear, opportunities will be deliberately placed in the poor fellow's way. He will be welcomed at dances and drinking sprees at which half-bred members of other races will be participants. These will gradually enclose him in a ring-fence of sycophants and cheats; his crops will be stolen and even his pockets picked; advances will be claimed and never redeemed by work and he will be reported by his tempters themselves to Protector and Missionary and his accomplices will pose as injured innocents, and though he will escape police court proceedings for his breaches of law on account of the unreliable character and shifty evidence of his accusers, his employers will find in his neglected work and dissipated stores and funds an

excuse for turning him adrift or degrading him if he retains him in his employment. The coming to the district of married people in leading positions accompanied by their wives has had a marvellous effect upon the people and where anarchy once reigned in regard to the labour-supply, order and fidelity now rule. The mistress, all honour to her, like the master is watched, served and imitated with devotion. Her children are especially cared for and great broad-shouldered men deem it an honour to take baby for a Sunday afternoon ramble and to begin his education as a swimmer as soon as he can walk. This contrast in masters accounts for the anomaly we find in bushmen, one denouncing the Indian as a worthless labourer and another maintaining that, though he has his limitations, the Indian properly and masterfully handled, living in touch with his wife, family and farm, is the most satisfactory workman obtainable in the district. But apart from his wife and farm the Indian is not much good. In the gold-fields and the rubber and balata bush or as a boathand however well paid, he spends all he gets and sends nothing or little home, and the too well-paid Indian seldom survives the ordeal of the monthly pay-day with sobriety or without a breach of the peace. Once a boathand always a boathand seems to be the order, and they drift around in a vicious circle from one employer to another after each outbreak; indeed when the employees of two persons join forces, on such an occasion the masters perforce only exchange workmen as soon as their mutual dismissals have become effective. When working in company with negroes, as is well known, many evils are the result; not the least, in my opinion, being that the healthy negro apparently can be the host of malarial germs so virulent that they infect, with frequently fatal effect, his Indian comrades. I am afraid that repeated experiences have made this generalization as certain as it can be without a bacteriological investigation.

With regard to the drinking customs of the Indians who live on Crown lands, I have heard of but little disorder, so little indeed that, compared with civilised society, it is a negligible quantity. The drunkard is a marked man. One who was quite friendly when sober, though he was aware that I knew his habits to be irregular, used to propose to shoot me whenever he was drunk. A careful watch was therefore kept on him by the men on such occasions and the women held themselves in readiness to come and warn me if he broke loose. Indeed on one occasion when I was away from home, the warning was actually delivered at my house, and it was by this means that it came to my knowledge. Such men are rare and are not welcomed effusively though the rules of hospitality forbids their exclusion. But the drinking sprees that take place on homesteads and grants are of quite another nature. Strong ale is present to aid to the disorder with not infrequently bush-rum smuggled from Venezuela, and whisky for the higher class guests who are so foolish as to frequent these orgies. Men, women and children of all races and classes get helplessly drunk and innumerable abuses follow.

I am of opinion that the Indian Drink Ordinance should be repealed and a more general law take its place, prohibiting the making and distribution locally of all fermented liquors (paiwarri alone is partially legislated for at present) on all grants and homesteads or in villages; unless a Commissary's licence for seven specified continuous days be previously issued at a price of not less than $2 40. On ungranted Crown lands the Indian custom might be permitted as at present, provided that the existing law forbidding the presence of non-Indians be enforced. My experience is that this prohibition will be welcomed by the Indian if he finds that he has the support of the Executive, as a conviction already secured has proved.

In matters of superfluous dress the coast Indians have been greatly misjudged. On market days and Sundays they usually appear in Morawhanna dressed in their poor best. But at home in their camps, in their corials on the river, and even in Morawhanna on off days, they are content with much simpler attire. The men are often content with but an old pair of trousers and some even with a lap and the women with the single petticoat braced over one shoulder,—a costume recorded by our first explorers in their pictures of the Amazon on the maps of the Courantyne and New Rivers, which may be seen in the Society's library in Georgetown. Tuberculosis is of very rare occurrence and I have observed it only in those who have worked in contact with East Indians. A large number of the latter are homesteaders in the district and their relations with the Indians are very friendly. Owing to the dearth of East Indian women there has been a certain amount of intermarriage which has produced a very satisfactory half-breed, more intelligent than the Aboriginal and more robust than the East Indian born in the colony. As one Hindoo summed up the case, the coolie girl is afraid to travel in a corial and does not know and will not learn how to prepare cassava. Hence he says that when he marries he intends to marry an Aboriginal. Indeed he promised marriage to a coolie if she behaved herself, but the poor girl has not fulfilled the condition laid down. It is probable, as a friend has pointed out to me, that when access to the savannahs has been facilitated the East Indians will flock there and take to cattle-breeding, and then intermarriage will take place extensively and a race of cattle-farmers suited in every way to their employment and environment will result.

The East Indian here, however, has his weak side and it is for him that the contraband trade in Venezuelan bush rum is principally carried on.

The Warraus.— It is fashionable to place this ancient race at the bottom of the scale of humanity in the colony, and their study has been greatly neglected or carried on through the medium of hostile Arawak or Carib interpreters. The few specimens of broken Warrau in travellers' tales are mutilated by their interpreters (*e.g.*, ikung for hikuno: fire, Isorora for Ho Sororo: falling water, Morawhanna for Mora-ho-whanna: the water passage of the Mora trees, and Bakramani

for Bakéra-hanna: Peccary Creek) and moreover the language itself deteriorates for reasons stated below as it spreads eastwards. The statement that it consists of but 300 words is incorrect, as Mr. Thulin, of Lund University, Sweden, in two days succeeded in collecting more than that number, excluding names of birds, beasts and fishes and trees, and restricting himself to a vocabulary which should be common to all races.

The principal home of the Warraus for centuries has been the delta islands of the Orinocco (Warrau: Wirrinoko, the place of strenuous paddling) and the Ité swamps up the greater creeks of the North Western District and Amakura and the higher tributaries of the Orinoco.

All formerly lived on fish and Ité starch and the Venezuelan Indians are still commonly called in consequence "Ité bucks." The presence of large communities of Akawois on the Mabaruma or Aruka Hills drove many Warraus to take refuge in remote spots and creeks like the Morebo Itabu and its branches, and isolated them from one another. As a consequence in-breeding and isolation reduced their numbers and led to physical degeneracy and inferior speech: and thus those who came first into contact with travellers from Georgetown were judged to be inferior to other races.

The true Ité buck is however a very different man: in youth and middle age he is a cheerful and remarkably fat personage; in old age he becomes very withered and at apparently about 60 years of age is quite grotesquely ugly. On the extermination of most of the Aruka Akawois (probably by the Waini Arawaks) and the withdrawal of the remnant to the Kaituma an influx of Warraus took place from the Amakura over the Yarakita portage and the Wauno-Itokonabo trail and by corial up the Barima. Cassava then took the place of Ité starch and the separation of the two classes caused a partition which has led to slight differences of speech already, and a partial disregard of the duty of saying "Sé" or "thank you" for a gift or a visit; a nicety of civilisation rarely found in any other Indian tongue but the old Warrau. The visitor when going says "Marian dian": (I am going now) and his host responds "Sé" or thank you, the gratitude expressed being for the visit and not ironically for the impending departure, as it might be suspected to mean in a higher social scale. With their change of "habitat" they are becoming less retiring and may be seen as labourers all about the district.

Many Arawaks came amongst the British Warraus, and intermarriage with a new stock increased and improved their children. The Warraus and Warrau-speaking Arawaks may now be found up the Waini to Barama mouth and at Waibra or Waida, and on the large and beautiful settlement at Warrapoko Anglican Mission, at Santa Maria and Kumanubali creeks on the upper Waini, and at Kanubali and other creek all along the greater Waini and at Assacotta of the Baramanni river. The remnant of the degenerates of the Morebo are scattered in the creeks of the Barima near Mount Everard and are more shy and unreliable than any other Indians.

At Mabaruma a somewhat degenerate family and its dependents reside amongst the Arawaks, and on the main Aruka they appear principally in the rôle of indentured labourers on the numerous grants and homesteads, but their principal stronghold is up the Koriabo creek (a branch of the Aruka) and its tributary, the Waunó (Crane) creek, and its branches Akawabi and Aimrakura.

When the District Commissioners visited Gonzaga Mission, Akawabi, Waunó, last year no fewer than 90 men, women and children assembled to welcome him out of a population of nearly 200.

The Venezuelan Warrau or Ité buck comes freely into the district at certain periods, and takes his part in its development by indenturing himself to the older settlers, especially the Chinese and Chinese half-breeds, but only for a short period. They are the most expert fishers, and especially successful with the wary moracot. They seem to be essentially nomadic but have a sort of headquarters on the outer islands of the Orinocco delta. One family from Nuina Island comes regularly to Morawhanna and seems to range a long way northward, as they recently brought a child to be baptised which had been born in a creek off the Gulf of Paria only 15 days before. The Warraus of the Amakura, though living on British territory in part, are Venezuelan in their trade, labour, kindred and habits and have but little dealing with British subjects. Here polygamy has its utmost extension, Waika (or Ignacio) the piaiman having no fewer than six wives before his dramatic exit from His Majesty's dominions. In the Wauno district the older men seldom exceed the possession of two wives whilst the younger ones seem to be content with one, even when their connection with Christianity is merely nominal or non-existent. Many pagans like Waika have Christian names given them by the civil authorities in Venezuela.

The quasi-religious legends versified by the Rev. Mr. Brett are known to the older people and I hope in time to be able to communicate a prose translation to the Society. In sickness of any sort the Warrau is isolated in a small benab about ten yards from the patriarchal dwelling; he is attended, if a man, by his wife, if a youth, by his unmarried sister. Women are attended by their mothers or mothers-in-law. The Levitical and Asiatic ideas of uncleanliness are observed and they are isolated for four days in the hospital and enjoy complete rest from the work of the house and no one enters their benab even the smallest infants in their play avoiding it. This isolation of the sick was of great service in a case of tuberculosis. When the case was first reported to me I impressed upon the boy's mother that his *sputum* was infected and charged her to see that it was burned or buried. On visiting the case a short time after I found that the patient was isolated in a new well-built logie. His sister alone attended him and a large heap of wood ashes was placed by his hammock on two plantain leaves for him to spit upon, these were daily replaced and the old ones buried. The youth has now been dead nearly two years but no fresh cases have appeared in the place.

Employers of labour who have tried Warraus say that they are the best and most constant workers and require less supervision than others. They seldom attempt original thinking with its usual disastrous results, for with the tropical labourer one has to be content with mere obedience, if it can be got; and if he understands what he is wanted to do, the Warrau can be relied upon to do no more thinking than W. S. Gilbert's exemplary party politician.

The origins and early history of the Warrau must be sought elsewhere, for his oldest legends are of high mountains and caves and rabbits all far from the delta. But the fact that he has named the whole swamp and part of the hill country near Morawhanna as Wauno (the Crane) and Mabaruma (my grater) shows that he has been a visitor at least for a considerable period, probably about as long as the Spaniard, as Embostero and Tronconal and Sangetal are names evidently given by Spanish sloop captains who have been visiting and getting into difficulties on the coast for about three centuries.

The Chaima-Arawak.— The so-called Spanish Arawaks of Santa Rosa and the Morucca have migrated in considerable numbers from their savannahs and islands since the Indian Reservation was erected there. The expulsion of the half-breeds led to their discovery of the great North West and the existence of less grandmotherly restrictions on the part of the Government and the total absence of his old enemies, the Carib and the Akawoi, from the lowlands. The half-breed married the Indian and the Powers, like Kipling's wise sergeant, "Arst no questions but winked the other eye" and their three-quarter breed offspring went "back in the aboriginal army again," and the evil effects of misguided zeal were neutralized, for the man on the spot was wiser in his generation than the man on the office stool. But the full-blooded mothers and brothers and sisters of the half-breed were penned up in the Reservation where there was no employer of labour, no purchaser of products of the forest or industry, and were left to starve in times of scarcity. They heard of the district where such times could be tided over by employment on grants, where a weekly steamer caused a weekly market for hammocks, cassareeps, starch, skins and baskets, where the sea was of easy access and fish and crabs were to be had in due season, of hills and hill farms and springs of fresh water, of employers who paid regularly and respected their wives and daughters, of resident surgeons and efficient and a centrally-situated hospital; and so they came little by little. At first the men came singly and married Warraus, or even the married ones settled with their families amongst Warraus and their children grew up speaking neither Arawak nor Spanish but only Warrau.

Still the influx continues and various causes amongst which the failure in England of the more mismanaged rubber companies led to a centralization of the Chaima-Arawak on the Government Experimental Rubber Station called by the Department, Isorora, and by the Warraus,

Ho Sororo, or falling water, from the beautiful cascade which intersects it. They also extend to and beyond the adjoining Lourdes Mission to Crown lands and southward to the Consolidated Rubber & Balata Estates at Koriabo mouth.

From these people and from the true Chaima patriarch, Pasqual Moreno, who lives beside the cascade, I have learnt some particulars of the origin of their tribe.

The Chaima tribe is a Carib-speaking race living on the banks of the Caroni River which rises on Roraima and flows into the Orinocco near Bolivar. The Spanish Capuchin Franciscan friars had a large and flourishing mission (see Father Strickland's collection of Vatican documents relating to the Venezuelan border dispute) extending throughout the Chaima country to the Venamu or Wenamu and Akarabisci branches of the Kuyuwini or Cuyuni River until the outbreaks of the revolutionary wars, when the Friars were driven out and the tribe raided to provide soldiers for the various conflicting parties of those troubled times. Under the leadership of some Spanish laymen many Chaima men fled to Trinidad, where some of the Indians claimed relationship to Morucca people a few years ago, and to Morucca which was not then administered as British territory. Here they were several times raided by Venezuelans until they united with the Pomeroon Caribs, with whom they were usually at feud and on two occasions are said to have massacred their invaders, once at Assacotta and once at Morucca mouth. Portions of the raided raider-sloop are said to be still in the Assacotta creek.

But in times of peace the Chaimas seem to have fraternized with their Arawak neighbours and taken Arawak wives and when Mr. Hillhouse discovered them he found them, as he thought, Spanish Arawaks and Catholics, but as far as I can ascertain no Arawaks came from Venezuela; indeed there do not seem to have been any to come. Mr. Hillhouse's representations to the Government of the illtreatment of the Indians led to the erection of the Santa Rosa Mission and the appointment of Father Cullen as Missionary Protector before the Catholic Emancipation Bill had purged the law of Great Britain and Ireland of its old persecuting enactments.

The Chaimas have continued to come all through the intervening periods and Pasqual Moreno, who came in Father Cullen's time, was followed by a soldier half-breed in the days of Father Messini and Jose Leon; a young man who works on the Rubber Station is the latest comer. So the connection with the Caroni remains unbroken and the memory of the Capuchins is kept up by the numerous boys and girls who are named after the poor man of Assisi. Investigation of the family tradition of those bearing Spanish surnames almost always reveals Chaima ancestors or parents.

These people work on either side of the border, unless they are wanted by the authorities on one side or the other, and seem to be quite

content with the Venezuelan labour conditions and especially with the absence of special restrictions on liquor over there, and their knowledge of Spanish, English, and Warrau makes them useful to their Venezuelan employers. They vary in individual character, but like the little girl they can be both very very good or quite horrid occasionally. Indeed like all Indians and half-breeds, they seem to have times when they are seized with an irresistible temptation to relapse into barbarism. Any attempt to resist this on the part of others is practically useless, as it is inordinately resented and delays the return to sanity which usually follows, and the prodigal will return to his more regular pursuits like a respectable citizen from a holiday, and will expect bygones to be forgiven and forgotten as soon as possible.

The swamp tribes generally seem to be advancing; some have well-cultivated and drained farms like their neighbours and have already arrived at peasant proprietorship and the authorities are to be congratulated on their recognition of the general state of affairs and are co-operating with wisdom and forbearance.

With regard to special laws, it must be remembered that the Indian cannot be restrained by mere legislation when temptation and opportunity are both at his door, and the power which alone makes laws effective is far away. This is most evident in the freedom from restraint that exists on the sale of wine and malt liquors, and of a peculiar stout manufactured in the colony from imported stout and many and mysterious augmentations. As new legislation with regard to alcohol are contemplated, it would be well to consider whether a general law, which would not seem to apply so directly to the Indian in particular, could not be devised. All retail trade in alcohol in country districts should be confined to specially licensed stores from which all other goods would be excluded and the proprietor of which would be held responsible for their compliance with regulations, which should include a total prohibition of trade with Indians, and agents acting for Indians should be severely dealt with. This would put a stop to back door trade as the loss of a licence would make such trade unprofitable, and the Indian could not excuse his presence at the front door by the purchase of a cake of soap or by other such like tricks. But, though the Indian has a right to his use of Crown lands and to other favourable enactments—as the original lord of the soil,—and likewise to his share in just labour laws, it must be borne in mind that he is a practical and enthusiastic lover of liberty, and rightly resents special laws of the "Thou shalt not" order made in restriction of his liberty where others are free, and he is quite right in his resentment. Being in possession of his liberty in the pathless forest, he cannot be expected to obey laws which it is physically impossible to enforce. The reform of the liquor laws is required not merely for the well-being of the Indian but for all the community, and for the labour law the Indian is the only member of the community whose laws do not confessedly require amendment.

VILLAGE ADMINISTRATION AND LOCAL GOVERNMENT IN BRITISH GUIANA.

By The Hon Dr. J. E. Godfrey. M.B., C.M., (Ed.),
Surgeon General.

The history of the formation of village communities and their administration in this colony is exceedingly interesting and instructive. The object of this paper is to trace their formation from the beginning, dating from the Act of Emancipation, and their slow development through seventy odd years to the present day.

It will be seen the many vicissitudes through which they have passed. Firstly, the uttter failure of the people to successfully manage and control their own affairs: then the intervention of the Government who have, from time to time, passed legislative Acts for providing the machinery necessary for efficient administration.

Prior to emancipation, the blacks had no lands of their own, but as slaves resided on the property of their masters. The late Sheriff Brumell, in his "Village Law," says that "previous to 1838 and even to a later date, a traveller might have passed from one end of the country to another, without seeing a single house or an acre of land which did not belong to the proprietor of the estate through which the highway ran."

In 1834, the system of Apprenticeship, created by the Act of the Imperial Parliament of Great Britain and Ireland, entitled "An Act for the abolition of slavery throughout the British Colonies, for promoting the industry of the manumitted slaves, and for compensating the persons hitherto entitled to the services of such slaves" came into operation. This created a great change in the feudal relations of master and man; the latter were no longer slaves. This partial freedom did not, however, satisfy them. They desired to be absolutely freed, and gave much trouble to their employers.

Four years later, *i.e.*, on the 1st August, 1838 (Emancipation Day), by virtue of Ordinance No. 23, entitled "An Ordinance to terminate the apprenticeship of prædial labourers of British Guiana," all prædial labourers became absolutely freed and discharged of and from the then remaining term of their apprenticeship. These freed men, who had, during their apprenticeship, and after, accumulated considerable sums of money, banded themselves together and purchased abandoned plantations from their former masters. Brumell, in his "Village Law," says "the way in which these purchases were conducted showed great union among the people and great confidence in each other. The negotiations were usually carried on by two or three headmen selected in some instances from two or three hundred shareholders or persons who had

subscribed money towards the general undertaking. When the terms were concluded no credit was asked, the money was paid down, sometimes in bags of silver, wheeled in wheel-barrows to the office of the seller. The transport of the property was then passed in the name of these men, making them legally the sole owners of the estate, and leaving the subscribers, some of whose names were not even on record, without the slightest legal claim to the property they had paid for."

In 1842, *i.e.*, four years after emancipation, it is estimated that no less than 15,000 acres of land, for which upward of $250,000 was paid, were owned by the freed labourers, and on these lands no less than 15,000 persons were settled. It is interesting to note that one of the first estates purchased was that on which the village of Plaisance was established. It was then a cotton estate consisting of 300 acres for which $39,000 was paid.

This system of purchasing in community did not prove successful, chiefly on account of the want of proper control and supervision and there being no combination of labour to work the places, and lastly, to the fact that in purchasing the several estates which were formed into these village communities, the villagers expended the whole of their capital in effecting the purchases and denuded themselves of all their ready money, thus leaving nothing with which to improve or carry on their properties. The point of this last fact will be more readily appreciated when I state that between 1839 and 1854 the emancipated slaves purchased seventeen properties which are now the Village Districts of Plaisance, Buxton and Friendship, Beterverwagting, Victoria, Golden Grove and Nabaclis, Ann's Grove and Two Friends, Good Intent and Sisters, Bagotville, Stanleytown, Den Amstel and Fellowship, Queenstown, and Danielstown for the large amount of $332,900 cash. The smallest amounts, viz. $2,000, each were paid for Nabaclis and Fellowship and the highest amount $80,000 for Friendship. The late Sir A. M. Ashmore—a former Government Secretary of this colony—in his memorandum on "Village Administration" says "at the outset the inhabitants found themseives face to face with three principal difficulties—the difficulty of drainage, the difficulty of title, attendant on their having bought in common, estates which they desired to hold in severalty, and the difficulty of fulfilling the obligation which rested on owners of plantations to maintain the public road through their properties." While some of the villagers were willing to do their share, others would not, and unless the whole system of drainage was kept up, it was impossible for the villagers to successfully cultivate their lands. The consequence was, that the estates which were well drained when purchased, suffered from neglect of the upkeep of the dams and the drainage. It was evident that the people were unable to look after themselves and exercise that control over one another essential to the establishment of prosperous and well-ordered communities.

In 1844, Mr. Joseph Hanfield, reporting on abandoned estates and villages, recommended "the establishment of an appropriate Code of

Municipal Regulations by which each of the proprietors should be bound to perform certain duties and otherwise contribute to the general good under some magisterial authority and control". The roads through the villages were in a deplorable condition and in many cases, impassable. Each estate was liable for its maintenance, and their omission to repair the road created a very awkward position, as it was obviously impossible for the Government to sell off old communities. In 1845, in order to meet this difficulty, an Ordinance was passed for the maintenance of the road through Queenstown in Essequibo, by means of an assessment of a rate to be prepared by elected Commissioners, and levied upon the villagers. In 1849 an Ordinance with reference to the roads through the village of Plaisance was passed; this Ordinance provided for the appointment of proprietary Commissioners, the assessing of the proprietors "to contribute to the making up and keeping in repair the line of public road and bridges running or passing through or over the lands of the said plantation, Plaisance, and other dams and kokers necessary for the preservation thereof." Other Ordinances of a similiar nature were passed, but complaints of the state of the main road still continued, and even as late as 1872, Canon Stevenson, late Rector of St. Paul's at Plaisance, stated that the road leading to the Railway Station was so bad that the loss of a shoe was a common occurrence, and remarks that "happy was he who had a spare pair of boots at the Railway Station, and, I think, happier was he who went barefooted." Sir A. M. Ashmore, in his memorandum, says that "the election of these Commissioners was the first legislative attempt to provide a village organisation." In 1850, an Ordinance was passed dealing with the establishment of a general administration for sanitary purposes throughout the colony. This appears to have been the first attempt to deal with this aspect of the question. This Ordinance established two Central Boards of Health, one for Demerara and Essequibo, and one for Berbice; also local Boards of Health composed of the Vestries of the Parishes, and the medical men residing therein This Ordinance was in operation for a very short time, and was repealed by Ordinance No. 10 of 1852. This was a much more elaborate measure. It established a Central Board at Georgetown in place of two Boards in the 1850 Ordinance; the Parish Vestries were made local Boards of Health for the rural districts with power to establish general systems of drainage for their districts, and to make and enforce sanitary regulations. Power was also taken to declare new villages so as to bring them under the operations of the regulations.

In 1851, in order to deal with the difficulty in the matter of titles, Ordinance No. 4 was passed: it was amended in the following year by Ordinance No. 10. It provided for the appointment of Commissioners, to divide the lands of villages among, and pass transports to, the individual proprietors.

In 1856, Ordinance No. 33, entitled "An Ordinance for the better management and regulation of villages and estates held in undivided

shares in this colony" was passed. This was the first general Ordinance dealing with all the villages.

The late Sir A M. Ashmore, in his memorandum, remarks that this "is the germ out of which the existing more elaborate system has grown." It provided :—

(a.) That the Governor and Court of Policy may, by Resolution, bring under its provisions all estates which, having been purchased in community, had been divided, or should in future be divided in severalty among the proprietors, and also the means of division for the future..

(b.) For the election and payment of an Overseer.

(c.) For the election of two Commissioners for each village.

(d.) For the assessing of rates.

(e.) That all moneys received were to be deposited in the local banks, and drawn out by cheque signed by the Overseer and the Commissioners.

(f.) That the Overseer may require the shareholders to perform what work was necessary to be done and in default to cause the work to be done at the expense of the proprietors.

The great defect in this measure was that it did not provide for any central administration.

This measure, however, failed to carry out what it was intended for, and this failure the late Sir A. M. Ashmore attributes to the following reasons : "the lack of a system of provincial administration by means of which the Central Government could supervise its working, and influence the people to co-operate for their own good ; and a reluctance on the part of the Government to use compulsion to make the recalcitrant minority, always to be found in every community, discharge their share of the common obligations."

In 1862, the Combined Court voted as a loan from borrowed money the sum of $60,000 for the purpose of improving the drainage and works of a like nature in order to ameliorate the deplorable condition of many of the villages. This loan was never repaid.

In 1864, a Committee consisting of the Government Secretary (Mr. Walker), a member of the Court of Policy (Mr. Ludovico Porter), the Sheriff of Demerara (Mr. Brumell), the Inspector General of Police (Mr. N. Cox), and Mr. N. J. Jeffrey, was appointed to "enquire and report, among other matters, upon the condition and deficiencies of existing villages, and to consider whether by any improvement in the legal constitution or regulations thereof or in their management they, *i.e.*, the legal constitution and regulations, can be adopted to improve the condition of the present villages."

The Committee sent in their report in May, 1865. They found the villages generally in a most unsatisfactory state, and, in some instances,

in a deplorable condition; the houses in the latter case, in ruin and disrepair; and the lands attatched to them, undrained, uncultivated, and neglected; the means of internal communication most defective, and the uttermost disregard for all sanitary considerations.

The result was that an ordinance was passed in 1866, providing for

(*a.*) A Central Board of Villages composed of the Governor and Court of Policy, and such other persons as may be appointed from time to time by the Governor.

(*b.*) Local Boards of Superintendence appointed by the Governor, one for each village, or one for a number of villages combined.

This Ordinance proved unworkable, due in a great measure, as Sir John Carrington, a former Attorney General of this colony, says, "because the Governor and Court of Policy had got enough to do in other respects without attending to such matters of detail as village administration".

In 1872, another Commission consisting of Mr. J. Brumell, the Revs F. J. Wyatt, W. J. Webber, J. Kinnison, W. G. G. Austin, J. Dalgliesh, and E. A. Wallbridge, and Messrs. H. C. Huggins, Benon Maxwell, N. Cox, P. C Barlow, James Craigen, J. G. Gray, Andrew Hunter, and R. J. Kelly, was appointed to go into the whole question again. The result of this was the passing of Ordinance No. 10 of 1873. This Ordinance provided for: –

(*a*) A Central Board of Villages.
(*b.*) Village Councils, composed of three persons elected in each village.

(*c.*) The District Commissary, or some person appointed in his stead, as superintendent of all villages in his district, and chairman of each village Council.

(*d.*) The appointment of an Inspector of Villages.

(*e.*) The borrowing of money by the Central Board on behalf of the villages.

Under this Ordinance the following 18 incorporated villages were administered:—

Ann's Grove	Beterverwagting	Bagotville.
Two Friends	Plaisance	Stanleytown.
Nabaclis	Den Amstel	Craig.
Golden Grove	Fellowship	Queenstown.
Friendship	Sisters	Danielstown.
Buxton	Good Intent	Agricola.

All endeavour to work the smaller un-incorporated villages was abandoned.

This Ordinance suffered the fate of its predecessors, proving unworkable, due to the want of money in carrying on the villages.

In 1878, an elaborate Ordinance No. 3 was passed to provide for the sanitary administration of the colony. It divided the whole colony into :—

(*a.*) Town Sanitary Districts, *i.e.*, Georgetown and New Amsterdam.

(*b.*) Village Sanitary Districts, *i.e.*, the incorporated villages.

(*c.*) Country Sanitary Districts, *i.e.*, those portions not included in (*a*) and (*b*).

Those Sanitary Districts created under (*a*) and (*b*) were administered by the Authorities already provided for them, and those under (*c*) by Sanitary Authorities.

This Ordinance created a Central Board of Health to supervise and direct the machinery and this Board remained in force until the passing of Ordinance No. 13 of 1907, when it was called the Local Government Board.

By 1881 and 1882, the condition of most of the incorporated villages was described as lamentable owing to the restricted powers given to the chairmen of the villages under the governing Ordinance which precluded their getting any real work done ; the poor rate collection ; the heavy burdens for road upkeep ; and several other minor causes, all of which contributed to dishearten the industrious villager, and make even more careless the thriftless property owner. This state of things culminated in 1883, when, owing to the general discontent and dissatisfaction at the administration and the deplorable conditions existing, the whole system was changed by Governor Irving. Ordinance No. 4 of 1883 was passed : by it the whole of the machinery for incorporated village management was swept away and the administration placed under the Public Works Department and the Inspector of Villages as the Sanitary Authority under the 1878 Ordinance ; all village property vested in the Board of Villages was transferred to the Colonial Civil Engineer. Funds were provided by a two per centum rate levied on the villages, which rate was collected by the Inspector of Villages, and any deficiency made up from Public Funds voted by the Combined Court.

Under this Ordinance the affairs of 15 incorporated villages (14 in Demerara and 1 in Essequibo) passed into the hands of the Public Works Department, the number next year being increased by the addition of five newly-incorporated villages, one situate in Demerara, three in Berbice, and one in Essequibo. On the Department assuming charge it found a large amount of work to be executed both of an extraordinary and recurrent character, and in the first two years of their charge we find a record of much good work accomplished and a claim put forward to mark progress having been attained in both the sanitary and drainage conditions of the villages under the Department's charge. In 1883 the population of the 15 incorporated villages was estimated at 23,142, and an expenditure of $45,058.72, or at the rate of $1.94 per head of the

population, is stated to have been spent on improvements. In 1884, $43,355.01 was expended on improvement account in the 18, out of the 20 incorporated villages that were dealt with by the Public Works Department during this year, this working out at the rate of $1.63 per head of the population which was estimated at 26,667. By way of comparison it might be stated that during 1884, Georgetown with an estimated population of 48,272, expended on maintenance and improvements a sum of $213,729.74 or at the rate of $4.42 per head of its population. For the Town of New Amsterdam the expenditure in the same year for maintenance and improvements was $34,560, or at the rate of $3.81 per head of the population which was estimated at 9,053.

But although the Department had to face difficulties it was not left without means being placed at its disposal to overcome them. To meet the large expenditure which would have to be incurred the Combined Court, with the generosity it has always shown to the villages, relieved the situation by, in 1883, voting an amount of $25,000 as a grant-in-aid to be expended in effecting improvements in the villages. In 1884 this amount was increased to $32,000 and in subsequent years up to and including 1888 an amount of $25,000 was annually voted for the same purpose. In 1889-90 the grant was reduced to $15,000 and in 1890-91 it was further reduced to $10,000, this amount being voted each year up to 1892-93 when the villages ceased to be administered by the Public Works Department. During the period 1883 to 1892-93 when the villages were administered by the Public Works Department it expended on maintenance and improvements in the 18 incorporated villages under its charge—$381,656.49 made up of $202,000 grant-in-aid from the Government and $179,656.49 contributed by the villagers in the form of rates. This total of 18 separately included Ann's Grove, Two Friends, Buxton, Friendship, Den Amstel, Fellowship, Golden Grove, Nabaclis, Good Intent, and Sisters which as worked now only count as five villages instead of 10 at that period.

During the administrative régime of the Public Works Department many works of a lasting character were accomplished which were paid for out of the sum I just mentioned as having been expended, among these being the linking up of all the East Coast villages, with the exception of Victoria, with the East Demerara Water Supply Conservancy, and of Den Amstel and Fellowship on the West Coast Demerara with the Boerasirie Water Scheme; the construction of the sea defences of Queenstown Village, Essequibo; the almost complete renewal of the machinery of the Beterverwagting-Triumph draining engine and the erection of a new chimney; extensive renewals of the machinery of the draining engines of Plaisance and Buxton-Friendship.

When the Government proposed the vote of $25,000 for rural improvements in 1883, it was contemplated that this sum with the rates collected that year, viz., 2 on the property valuation, would suffice to put the 18 villages then being worked in such order that in future years

the rates themselves would be sufficient to pay expenses, and the $25,000 would then be used in improving the sanitary condition of the other villages throughout the colony; but this was never carried out, and year after year, until 1892–93, when the grant ceased, we find the whole amount of the grant was expended on the same lot of villages to the exclusion of all others in the colony. Perhaps the original ideas were conserved on too sanguine lines, roseate hopes and insufficiency of data. But what ever the reason for the failure of the carriage of the scheme as originally mapped out, the result was that a few fortunate villages for over nine years got the most liberal help from the Government towards their upkeep, maintenance and improvement.

The year 1883 was in other respects a notable one for the villages on account of their being relieved of any share in the maintenance and upkeep of any of the public roads. The late Sir A. M. Ashmore states the matter so plainly in his memorandum that I cannot do better than quote his remarks: "In the same year (1883) the maintenance of the trunk roads, other than those passing through sugar plantations or through Georgetown or New Amsterdam, was assumed by the Government, and the villages finally relieved of one burden on their poor resources. $150,000 was represented to be outstanding and uncollected on account of the maintenance of these roads: not of course only or principally on account of villages. But the problem of village indebtedness was not, as it should have been, grappled with. Fifteen villages, most of them incorporated, at that time owed in round figures $94,000. It was recognised that they could not manage their own affairs and also pay their way. Their property and the responsibility for their future was on that account taken out of their own hands and assumed by the Government, in return for a fixed rate of annual taxation, the general revenue providing for the deficiency, but their several debts to the Government were retained on the colony's books."

In 1892, a new Village Law, No. 6, was passed. This Ordinance which owes its existence to Sir John Carrington, the Attorney General at that time, was a well-thought-out act. It changed the whole system of village administration. It removed the villages from the control of the Public Works Department and placed them under the control of the Central Board of Health, created by the 1878 Ordinance, and made the Inspector of Villages an officer of the Board. The main object of the Ordinance was to give to the villages a large measure of local self-government and the management of their affairs by the formation of elected Village Councils acting under the Central controlling body:—"The Central Board of Health"—sitting in Georgetown and charged with the central administration and control of the villages. The Central Board of Health was given very large powers of supervision and control as will be seen from section 3 of the Ordinance, which reads as follows: —"Subject to the provisions of the Ordinance and the Regulations, the Central Board of Health shall have the superintendence of all villages in the

colony, and shall have and exercise generally the power of supervision, inspection, and control over the several Village Councils and the officers and servants thereof."

We have seen that in 1883 when the villages were taken over by the Government and placed under the Public Works Department, they were relieved of any share in the maintenance of the public roads, but their several debts to the Government were retained on the colony's books.

From 1860 to 1892 the amount borrowed by the villages totalled a sum of $136,127. Of this amount the villages had repaid $65,665.

In 1892, by the authority of the Combined Court, all the smaller debts amounting to $6,136 were written off, but the liabilities of Beterverwagting, Plaisance and Buxton amounting to $74,706 were retained as assets of the colony. No reason appears to have been given in 1892 for treating the two sets of debts in different ways, but Sir A. M. Ashmore remarks in his memorandum, that "it can only be surmised that the Government was reluctant to admit that so considerable a sum of money had been totally lost. That it had been for a long period before 1883 hopelessly irrecoverable, an inspection of the account shows clearly".

It was not until 1901–02 that the Government decided to close the account, and at the second Special Session of the Combined Court obtained permission to write off $56,147, made up as follows —

Beterverwagting ...	$21,182
Plaisance	28,391
Buxton	6,574
	$56,147

The amounts owing by Plaisance and Beterverwagting were written off in full, but $8,125 of the Buxton debt, which was specially secured, was retained as an asset of the colony; this debt has nearly all been since paid off.

It might be asked how these villages became so heavily involved with the Government; the answer is easily supplied. The debt of Buxton-Friendship was incurred between 1862 and 1876 and the money borrowed was used to purchase the existing draining engine and empolder some of the back lands. In the latter year the debt was $55,873 but this was slowly reduced year by year until in 1901-02 it stood at $16,955.

The debt of Beterverwagting was incurred between 1862 and 1884, at which date it stood at $21,233.

The debt of Plaisance was incurred between 1866 and 1883 at which date it stood at $29,508.

The money for these two places was spent on the purchase of draining engines and on sea defences.

It is interesting to note that the only village which made any attempt to repay its indebtedness was Buxton and Friendship, as from 1876 to 1901-02 it had repaid the comparatively large sum of $38,918. Whereas Beterverwagting and Plaisance, from 1884 repaid the comparatively insignificant sums of $51 and $1,117, respectively.

The progress of the villages during the first few years of their administration under the Ordinance of 1892, which granted to the villages themselves a large share of self-government, was slow, the Councils being faced with difficulties at every turn.

Nineteen incorporated villages passed from the administration of the Public Works Department to that of the Councils and Central Board of Health but in many cases the villages were evidently handed over in far from the best condition, as an extract from the report of the Inspector of Villages for the year 1892-93 shows. This Officer writes :—"I think it a pity that when the villages were about to be handed back to the villagers, they were not put in thorough order while the annual votes for Rural Improvements existed. The Central Board of Health, recognising this fact, decided at a meeting held on the 23rd January last, to make application to the Government for a special vote of $25,000 to be expended on works pointed out by the Colonial Civil Engineer as necessary to be performed. The application was made accordingly, but the amount was not granted."

One can appreciate and sympathise with the position of the new administration hampered as it was on all sides. The Councils found themselves with a large programme of works to be carried out and much to do to put their villages in order.

At Plaisance they had to face the expenditure incurred on the recently re-built sea defences, and, added to this, their drainage was defective and the draining engine boiler required re-tubing.

Buxton and Friendship had to provide a new boiler for the draining engine ; Golden Grove and Nabaclis had to put in a new sluice ; Ann's Grove and Two Friends were suffering from absence of drainage ; and Queenstown was also forced to put in a new sluice. These were some of the major works the new Councils had to face, practically immediately on assuming office and are enumerated in order to give some idea of the position of affairs at this period. Matters would not have been so difficult for the administration if they had only had to face the execution of urgent works. But to make their position more unenviable, the substantial Government grant-in-aid was no longer available, and the work of the different Councils had to be carried on almost entirely out of the rates collected in their respective villages. With rate collections poor and uncertainly received, it will be readily seen what difficult tasks lay before the

respective Councils. But this was not all as regards the villages on the East Coast, and the East Bank of the Demerara River as these places had also to face the repayment of their shares of the East Demerara Water Supply loans which amounted to $31,906, and $3,341 arrears of instalments and interest on these loans. This last mentioned amount was paid, however, at the request of the Government out of the amount of $10,000 voted for the services of the Central Board of Health.

The reports of the Inspector of Villages during these first few years make gloomy reading, recording as they do the difficulties of the administration, the poor rate collection, and the non-accomplishment of many much-required works.

On the 12th March, 1894, we find that the first Conference of Village Councils was held at Plaisance Village at which a resolution was adopted "praying that the Combined Court would grant the villages the sum of $20,000 to assist them in carrying out various necessary works."

A petition embodying this resolution was presented at the meeting of the Combined Court on the 13th March, 1894, by the late Hon. E. C. Luard, and supported by most of the members, but nothing came of it, except that the Governor was asked to allow the unexpended portion of the vote of $10,000 to the Central Board of Health to be spent on urgent works in the villages. Help in this form was granted and amounted to a sum of $4,238, each village being allotted an amount equal to 30% of the rates they had collected that year. This help was most timely and enabled some of the villages to pay amounts for works undertaken, but not paid for in 1893, which amounts owing to lack of funds could not be included in their estimates for 1894.

To facilitate the work of the Board when dealing with village matters, in May, 1893, under Section 4 of the Village Ordinance, the Board recommended to the Governor-in-Council the appointment of a Committee from among its members to be styled: "The Villages Committee of the Central Board of Health." This recommendation was approved by the Governor-in-Council and the following members of the Board were, in July, 1893, appointed to form the first Committee, viz: Henry Kirke, being the then Chairman of the Board, the Honourable A. Weber, the Honourable W. Craigen, the Colonial Civil Engineer and the Mayor of Georgetown. Out of this Committee has grown what is now known under the existing administration as the Districts Committee of the Board.

In 1894, we find the Villages Committee of the Central Board of Health dealing with the question of the repayment of the amounts due the Government by the various villages on the East Coast and East Bank, Demerara River on Water Supply Loans. The position was represented to the Government and it was made clear that enforcement of repayment of the instalments of loans and interest meant practical bankruptcy for the villages concerned.

In September, 1894, as a result of these representations His Excellency the then Governor appointed a commission to enquire into the whole matter and on its recommendation the Combined Court at a meeting held on the 13th March, 1895, by resolution decided to forego the Government claims amounting to $31,906.53. This was most generous and timely help which the villagers most gratefully appreciated, and it did much to lighten the difficulties of both the Village Councils and the central administration.

In 1896 Regulations under Section 6 of the Village Ordinance regulating the working of the Village Councils were framed by the Board and confirmed by the Court of Policy. These regulations were the beginnings of what have now developed into the District By-Laws which play such an important part in the smooth and efficient working of the village and Country Districts.

We also find at the close of this financial year the Combined Court, on the motion of the Hon. A. Weber, continuing to extend help, as in the previous two years, to the villages in the shape of the division among them of the unexpended balance of the vote of $10,000 allocated to the use of the Board for the year 1895–1896 which balance amounted to $6,617 and enabled each village to receive a grant-in-aid at the rate of 29% of the collected rates.

This was the last year when help was extended in the form just indicated. The Councils were now getting a better grasp of affairs and their financial position showed some improvement. The villagers also had awakened to the new conditions and are, in 1897, reported "to be gradually acquiring habits of self-reliance, and learning the lesson of self-government."

In most of the villages a marked improvement was also recorded in the condition of the streets and drainage.

From this period onward we find the Councils settling more and more into their work and making slow but distinct progress. Small difficulties arose, from time to time, not least among them being dissensions in some of the Councils. But in all cases these were cleared away and yielded to tactful handling. The Central Board also treated with sympathy any village whose administration was faced with sudden financial difficulties which were the results of misfortune, and extended to it a helping hand to enable it to tide over the period of difficulty.

It may be as well to pause here and consider the then condition of affairs as regards the administration and sanitary provision for the colony generally. The Village Law, as I have pointed out, placed the administration of the Villages in the hands of the Village Councils, but this law dealt solely with administration and not sanitation, but each Village was made a Sanitary District under the Public Health Ordinance of 1878 and the Village Council was the Village Sanitary Authority. The Country

Sanitary Districts created under the 1878 Ordinance looked after the other parts of the colony. Thus it will observed that outside Georgetown and New Amsterdam there were two systems.—

(*a.*) The Villages working under the Village Ordinance of 1892 and the Public Health Ordinance of 1878, and

(*b.*) The Country Districts working under the Public Health Ordinance.

These laws continued in force until 1907, when Ordinance No. 13, the Local Government Ordinance, was passed; this Ordinance consolidated the Village Ordinance of 1892 and the Public Health Ordinance of 1878 into one comprehensive act. The gradual development of the 1892 Act showed that it was necessary to apply some of the administrative enactments of the Village Ordinance to the Country Districts.

The Central Authority also found that working the administrative side of the Incorporated Villages under one Ordinance and the sanitary side under another was cumbersome and non-progressive, and the want of a consolidated Ordinance dealing comprehensively with both subjects became an absolute necessity. The Country Districts between 1892 and 1907 had also made great strides and the need of more liberal administrative machinery than the Public Health Act provided them, was being almost daily felt.

The task of consolidating the two Ordinances was, in the first instance, undertaken by the then Colonial Civil Engineer, Mr. A. G. Bell and myself, after which the Ordinance in embryo was passed on to the Government and following some necessary revision and alterations by the Attorney General was then passed by the Court of Policy in 1907, becoming Ordinance No. 13 of that year. By this Act the Local Government Board was created.

At this point it may be well if I shortly give an epitome of the Local Government Ordinance which, on its becoming law, in my opinion, has marked another big step forward in the history of all phases of village administration.

Previous to 1907 the functions of the Board were performed by the Central Board of Health, acting as already stated under the Public Health Ordinance No. 3 of 1878 and the Village Ordinance No. 6 of 1892. Our Public Health Act of 1878 was modelled on the English Public Health Act of 1875, most of its sections, being lifted without alteration, from the English Act and enacted in our Local Act of 1878.

In framing our Local Government Ordinance which is, as already pointed out, a consolidation of the Public Health Act of 1878 and the Village Ordinance of 1892, a large number of the sections of the first mentioned Act were re-enacted in the consolidated Act and are similar in every respect with sections of the English Public Health Act of 1875,

which Act is still in legal force in England. In consequence of this, a large number of the English decisions interpreting different sections of the English Public Health Act apply with equal force to the like sections of the local Act, and this greatly helps the British Guiana Board when interpreting or applying any of these sections.

For the purposes of the Ordinance the colony is divided into districts called respectively :—

(*a.*) Urban Sanitary (Georgetown and New Amsterdam) ;

(*b.*) Village ; (*c.*) Country ; and (*d.*) Rural Sanitary.

These Districts are subject to the jurisdiction of Local Authorities called respectively :—

(*a.*) Urban Authorities ; (*b.*) Village Councils ;

(*c.*) Country Authorities ; (*d.*) Rural Sanitary Authorities.

The city of Georgetown and the town of New Amsterdam are the only Urban Sanitary Districts and the Mayor and Town Council of each are the Urban Authority. These are created by Ordinance and the Board has no power of creating new ones ; this can only be done by special enactment of the Legislature. The Board can, with the approval of the Governor-in-Council, by a notice in the "Official Gazette" declare any portion of the colony not comprised within the limits of the City of Georgetown and the Town of New Amsterdam, to be a Village or a Country District. The notice shall set forth the boundaries of each district. The Board may also, at any time, by a like notice, and with the like approval, declare that any Village or Country District shall cease to be a District, and may alter the boundaries of any such District. Each Fiscal District established under the Commissaries Ordinance of 1873, exclusive of such portions as form Urban Sanitary Village or Country Districts, and also all plantations are by the Ordinance created Rural Sanitary Districts and the Board is the Rural Authority.

The Local Government Board, called the Board, consists of not less than eight members appointed by the Governor, and each member holds office during the Governor's pleasure. The Governor also appoints one of the members to the Chairman and another as Deputy Chairman. At all meetings of the Board four members form a quorum, and in case of an equality of votes the Chairman has a casting vote. The chief executive officer is the Secretary and Inspector of Districts ; he is provided with an office and clerks paid out of funds voted by the Combined Court. The Board may appoint one or more Committees of its own body for the transaction of business. The Chairman and Deputy Chairman are *ex officio* members of all Committees.

At present there is one Committee called the Districts Committee which is comprised of four members of the Board along with the Chairman and Deputy Chairman, and which deals with questions referring to Villages, Country and Rural Districts.

Under the powers conferred by Section 18, sub-sections (1) and (2) and Section 19, sub-sections (a) and (b) the Board, subject to the provisions of the Ordinance and of the By-Laws, has the superintendence of all Village and Country Districts, and the powers of supervision, inspection and control over the several Local Authorities. In the exercise of such general powers the Board may in respect of Village and Country District

(1.) Review and declare invalid the order or decision of the Council or Authority or a Committee thereof or of any such Chairman and substitute any order or decision they may deem proper.

(2.) For good cause remove from Office any Chairman of such Council or Authority or any member of a Country Authority or any Overseer or other Officer of such Council or Authority and in his room appoint a Chairman, member, Overseer or other Officer.

(3.) Make By-Laws with respect to the definition and regulation of rights and liabilities of parties interested in Company Canals or dams between Villages and Country Districts or between such Districts and any adjoining plantation or land.

(4.) Make By-Laws with respect to the definition and regulation of powers and duties of such Councils and Authorities and of the Officers thereof, and with respect to the management and administration of such districts and to the quorum, proceedings and place of meetings of Committees of such Local Authorities, and for any purpose for which a Local Authority is authorised to make By-Laws to have effect in such districts.

The Board have made By-Laws dealing with a variety of matters coming within the purview of the Ordinance.

The Board may also:

(*a.*) Exercise in any Village or Country District any or all of the powers of a Local Authority whenever it appears expedient to do so.

(*b.*) Subject to Sections 34 and 35 of the Ordinance which deal with the constitution of Village Councils and Country Districts order that any vacancy in any Village Council or Country District shall not be filled.

(*c.*) Declare works of special magnitude as "special works" to be carried out under the procedure prescribed in Section 312 of the Ordinance to be followed preparatory to the execution of special works.

(*d.*) Make By-Laws with respect to the Sanitary care of the ports of the colony, of all seamen and other persons belonging to any vessel therein or in any of the rivers or creeks of the colony or in the territorial waters thereof.

(*e.*) Borrow money for execution of any of the purposes of the Ordinance and mortgage any rate for the payment thereof.

(*f.*) Purchase at execution sale any property sold for non-payment of any rate or tax.

(*g.*) Cause to be made such inquiries as are directed by Ordinance or such as they may see fit in relation to any matters concerning the public health in any place, or any matters for which their consent, sanction or approval is required by the Ordinance.

(*h.*) Have power to regulate land laid out for building purposes.

(*i.*) Enforce the obligations of a Local Authority who have made default in providing their district with sufficient main drains, or in the maintenance of existing main drains, or in providing their district with a supply of water in cases where danger arises to the health of the inhabitants from the insufficiency or unwholesomeness of the existing supply or who have made default in enforcing any of the provisions of the Ordinance.

In addition to these powers the Board, with respect to each Rural Sanitary District

(*a.*) Possess the powers conferred on a Local Authority of any Village or Country District including the power to levy a rate and to enforce payment thereof: but the Board exercising the powers of such Authority shall not be bound to perform any act required by the Ordinance to be performed by such Authority, which it appears inexpedient to them to perform.

(*b.*) Have and may exercise in any Village or Country District any or all of the powers of a Local Authority whenever it appears to the Board expedient to do so, and may exercise any or all of such powers in any district, whether there is or is not a Local Authority of such District.

With respect to the Urban Sanitary Districts of Georgetown and New Amsterdam, the Board have the powers of supervision, inspection and control over the work done or to be done and acts performed or about to be performed by the respective Town Councils in matters affecting the general sanitation of the Towns, and in certain matters of local administration.

With regard to the other districts it will be seen that the Board have very extensive powers and in fact directly superintend all of their works.

Village Districts are administered by Village Councils. These consist of such number, not less than four, as the Board may from time to time determine. The Councillors may all be elected by the voters or all appointed by the Board, or some be elected and others appointed as the Board may decide. The general rule is that the Councils consist of both elected and appointed Councillors.

Country Districts are administered by Country Authorities which consist of not less than three members, all of whom are appointed by the Board. The Board may add to or diminish the number of the members. The Board apppoint the Chairman of all Village Councils and Country Authorities.

The Board's Ordinance also deals with the general sanitary provisions for the Colony grouped as shown below :—

Drainage.

Water Supply.

Water Closets and Privies.

Scavenging and Cleansing and to Offensive Drains, Trenches, and to Collection of Matter.

Common Lodging Houses and Houses let in Rooms, and Offensive Trades.

The inspection of meat, foodstuffs and vegetables exposed for sale is provided for and penalties can be recovered against any person contravening the sections.

Powers are also given the Board to deal with Infectious and Epidemic Diseases, and other kindred subjects.

The history of village administration in all its phases since 1892, shows distinct signs of progress, and though it may be regarded as slow, still progress has been forward and the conditions to-day existing are infinitely better than those which prevailed twenty years ago. The villagers have been taught to keep their obligations and meet their assessments, and, with improvement under these heads, the financial position and credit of the several Village and Country Districts have vastly improved. With improvement of credit the various Local Authorities of the different Village and Country Districts are able from time to time to approach the Central Authority and obtain money on loans which is expended on a variety of works of improvement. Each application for a loan has to be submitted to the Central Authority and the loan is only made by the Governor-in-Council on its recommendation. Full advantage has been taken of this benefit and from 1902 to date the various Local Authorities have borrowed sums amounting to $93,597, all of which has been expended in carrying out works of improvement in the Districts borrowing the money indicated. Provision is in every case made for repayment of the loan in annual instalments with interest at the rate of 4 , and these instalments are duly met on their becoming due. The sums repaid to date amount to $19,004. The sum due to the colony on loan at date is $74,592 : of which total $23,000 was borrowed during this financial year as Drought and Ordinary Loans.

Prior to 1902 the loans made by the Government to the villages do not appear to have carried any interest nor was any provision made for the regular repayment of the loans.

Between 1904 and 1907 an exceeding heavy wash set in at Buxton and Friendship and as a result the Village Council had to spend a sum of over $20,000 in fighting the sea. To assist the villagers the Combined Court, by resolution in 1907, remitted the payment of $6,542.21 part of the sum of $20,000 : which the Government had advanced the Village Council to carry out the necessary Sea Defence work.

Drainage is closely watched by the Executive officers of the Central Authority and every opportunity which presents itself for improving it, is taken advantage of.

The Combined Court votes annually a sum of $4,000 for the purpose of assisting in the shape of Grants, Village and Country Districts in carrying out important works, more especially in connection with sanitation and drainage, which cannot be provided for out of current revenue. These grants are authorised by the Governor on the recommendation of the Board.

In sanitary matters, progress is, unfortunately, slow. The Central Authority and the Village Councils meet with little co-operation from the villagers and what is accomplished is only the outcome of constant effort, threats, notices and prosecutions. With the greater interest now taken by everyone in the colony in Health and Sanitary matters: the publicity and prominence given to the subjects by the Press; and the gradual education of villagers to the necessity for a strict observance of sanitary measures in their daily life, the future should be one productive of greater sanitary results in all the Villages and Country Districts of the colony.

Within recent years a feature has been the development of the Country Districts administered under the Board's Ordinance. These have rapidly increased in number and importance and yearly continue to make real progress and take rank in economic importance. This is a class of District that twenty years ago was practically unheard of and was absolutely neglected.

With the creation of the Local Government Board, with the comprehensive Ordinance under which it works a further impetus was given to all classes of villages.

To-day the condition of the Village and Country Districts of the Colony is distinctly hopeful and their futures give promise of prosperity.

The days of irresponsible debt contracting and the happy-go-lucky disregard of contracted obligations are past. The Board insists on the regard of strict business principles by all the Village Councils and Country Districts, and on the different districts being run on business lines. This policy is having its effect and must in future bring good results.

A review of the administration of the villages would not be complete without the mention of the work of the Village Councils. Any unbiased judge is forced to admit that the measure of self-government given to villagers in 1892 has, judged by the results, been fully justified. The Councils have done, unostentatiously, an amount of real solid good work, to which is due a measure of praise, and I have no hesitation in saying that I am convinced that with the experience already gained the Councils will in future play a more prominent part in the successful development of the villages of the colony.

During the present year an important step has been taken by the Local Government Board in the cause of Sanitation, which should have far-reaching results on the future health of the villages and the general death rate of the colony. The Board under the section 17 of the Local Government Ordinance have appointed Drs. Wise and Minett, the Government Bacteriologist and Assistant Government Bacteriologist, as Medical Officers of Health to the Board. To further strengthen the staff of the Board on the sanitary side a new appointment has been made in the shape of a Sanitary Inspector, and the officer to fill it is to be appointed from England. This officer will be under the direct control of the Medical Officers of Health. The Board is satisfied that with the co-operation of two such highly qualified and enthusiastic Medical Officers of Health as it now possesses, further aided by a zealous Sanitary Inspector, its programme of sanitary work and reform in the Village and Country Districts stands an excellent chance of being successfully carried out.

To give an idea of the vast improvement which has been effected in the Village Districts, and is fast being attained in the Country Districts, I do not think I can do better than illustrate the fact by quoting a few figures.

During the period 1883 to 1892 when 18 Villages paid rates, the rates collected averaged only about 75 % per annum.

For the period 1892 to 1900–1901, the same number of villages being dealt with, the collection, taken as a whole over the period named, never exceeded 80 %, and for four of the years the record was 70 to 75 %.

In the financial year 1901 02, a marked improvement set in, the average collection going up from 75 % in the previous year to 81 %. From this date onward every successive year has shown an improvement, and even with the number of Village Districts increased from 18 to 22 the improvement has continued, last year the collection having reached the excellent average of 99.1 %.

I think the present position is one which must give universal satisfaction, showing as it does an average improvement of 21 % in twelve years. I do not think I will be accused of being over sanguine when I state that I feel satisfied that when such a vast improvement can take place in such an important branch of village administration in such a comparatively short period it should inspire those entrusted with the conduct of village affairs with the determination to accomplish (and it is possible to accomplish) the same results in other departments of village administration.

SOME OLD GRAVES OF THE COLONY.

By Michael McTurk, C.M.G.

In the course of my journeying and in pursuit of evidence of previous Dutch occupation to be laid before the Arbitral Tribunal for the delimitation of the boundary between this Colony and the United States of Venezuela, beside coming across many undoubted and prominent remains and listening to the recollections by old residents, I took the following verbatim copies of inscriptions on some of the graves I discovered or which were pointed out to me. These are all from the left bank of the Essequebo river or the islands in that river. I have seen and known of the existence of many others in other parts of the Essequebo, but I confined my quest for information to the left bank of that river and the islands adjacent, or as in the case of Fort Island, where indisputable evidence of former Dutch occupation existed.

In nearly every instance the graves had been dug up by persons hoping to find money, the idea then, and which is still, prevalent being that the Dutch buried money in their graves; and this incited to their desecration.

The direct descendants of several of those named are still resident in the colony.

It may be interesting here to mention that the oldest person from whom I derived information was a member of the Militia and was drilled by Lieut. Colonel Hislop on his visit to Essequebo in 1797. This man died about ten years ago. I also had information from the man who acted as pilot to the schooner in which Lieut. Col. Hislop travelled. He predeceased the former mentioned by several years.

Begraaf Plaats
Van Der Heer
Bastian Christiasen

Arrawarri Creek, Left Bank, Essequebo River.

5th May 1896.

Begraaf Plaats
Van Mejufvrouw
Moeder Van Den Heer
Bastian Christiansen

Arrawarri Creek, Left Bank, Essequebo River

5th May 1896.

(Arms)

Hier Legt Begraven
Lauwrens Gerhardus Lodewyck Backer
Geboren Te Rio Essequebo
Den 2 November 1767
En Overleden Den 1 September
1768

Fort Island Essequebo River

1st May 1896.

(Arms)

Hier Legt Begraven
Den Heere Anthony Thierens
In Desseles Leven President
Kieser, En Capiten Der
Respective Burgery etc., etc.
Geboren in Essequebo
Den 8 November 1733 En
Overleden den 26 November 1785

Plantation Arthurville, Wakenaam Island

Essequebo River May 15th 1896.

Hier Legt Begraven
Meiuffrouw
Elisabeth Hollander
Geboren in Deeze Colonie
Den 15 July 1698
Eerst Wedue Van De Ed. Achtb Heer
Hendrik Spoors
Oud Raad En Secretarie
En Laast Van De Ed. Achtb Heer
Cornelis Boter
Overleden Op Haar Ed. Plantagie
Nieuw Vredenburg
Den 18 October 1769

Groote Creek, Left Bank Essequebo River May 4th 1896.

(Arms)

Hier Legt Begraven
De Edele Achtbaare Heer
Cornelis Boter
Oud Raad Van Civiele
En Crimineele Justitie
Geboren In Middelburg
Den 4 September 1698
Overleden Op Zea Plantagie
Nieuw Vredenburg
Den 18 September 1764

Groote Creek Left Bank Essequebo River

May 4th 1896.

(Arms)

Hier Legt Begraven
Anthony Thierens
Geboren
In Rio Essequebo
Den 2 August 1763
En Overleden
Den 9 July 1792

Plantation Arthurville, Wakenaam Island,
Essequebo River May 15th 1896.

(Arms)

Hier Lett Absalom Zeagers Junor
Geboren En 20 September 1752
Overleid Den 10 August 1770
Oud 17 Jaaren 10 Maanden En 20 Daagen
Den Doode Spreekt———

(Remainder not Legible)

Weri-wery, Cooro Creek, Left Bank, Essequebo River.
May 5th 1896.

(Arms)

Hier Legt Begraven
Johannes Lambertus Teschemaker
Geboren
In Essequebo
Den 24 January 1793
En Overleden
Den 20 January 1799

Plantation Arthurville, Wakenaam Island,
Essequebo River, May 15th 1896.

(*Arms*)

Hier Legt Begraven
Den Heere
Abraham Adolphus Van Der Kay
In Zyn Edele Leyen Kieser
Van Den Edele Achtbaren Raad
En Capitein Der Respective
Borgerye Dezer Colonie &c., &c.
Geboren in Essequebo
Den 31 January 1750
En Overleden
Den 29 December 1789

Plantation Arthurville, Wakenaam Island,
Essequebo River, May 15th, 1896.

De Gedagtenisse
Des Regt Veerdigen
Sal Tot Segeninge Syn
Proverbia 10 Vers 7

(*Arms*)

Hier Legt Begraven
Den Heer Abraham Van Doorn
Oud Raad Dezer Colonie
Geboren Den 4 Desember 1695
En Overleden Den 17 Juny 1764
Des Namiddags Cira Drie Uuren
Dus Oud Agjen Sestig Iaaren
Ses Maanden En Dertien Dagen

Acaracooroo Creek, Left Bank Essequebo River
May 8th 1896

(*Arms*)

Hier Legt Begraven
Margaret Wiltsent
Wed Pieter Lusses
Geboren Te Middelburg In Zealand
In Den Jare 1708 Op Den 30 December
En Overleden In Rio Essequebo
Op Den 26 January 1775
In Den Onderdom Van 66 Jaaren
En 27 Dagen

Great Troolie Island Essequebo River
May 14th 1896.

Sacred To The Memory
Of
Captain Joseph Waldron
Of Rhode Island North America
Who Departed This Life
February 7th 1792
Aged 29 Years.

Fort Island Essequebo River

May 1st 1896.

Hier Legt Begraven Cornelia van Doorn
Geboren 8 October 1728
Overleden 15 September 1735
Dus Oud 6 Iaren xi Maanden en 8 Dagen

Acaracooroo Creek, Left Bank Essequebo River

May 8th 1896.

(*Arms*)

Hier Legt Begraven
Joan Teschemaker
Geboren
In Essequebo
Den 19 April 1798

(*Remainder not legible*)

Plantation Arthurville, Wakenaam Island,

Essequebo River May 15th 1896.

De Gedagtenisse Des Regtveerdigen
Sal Tot Segeninge Zyn Prov x Vers 7*

(*Arms*)

Hier Legt Begraven Josina van Sweert
Huys Vrouw Van Abraham van Doorn
Raad Deser Colonie
Geboren 13 May 1705
Overleden 11 May 1753 Smorgens Om 3 Uren
Dus Oud 48 Iaren Min 3 Dagen

Acaracooroo Creek, Left Bank Essequebo River,

May 8th 1896.

* The memory of the just is blessed, but the name of the wicked shall rot.

(*Arms*)

Hier Legt Begraven
Vrouwe Alida Ester Thierens
Geboren Mennes
Te Bergen op den Zoon Geboren
In Den Jare 1734 En
Overleden den 19 Juny 1770

Plantation Arthurville, Wakenaam Island, Essequebo River May 15th 1896.

(*Arms*)

Hier Legt Begraven
Den Wel Eede Le Gestrenge Heer
Johannes Backer Commandant
En Capityn Luyenant
Den Militie Benevens Raad
Der Brijde Collegien
Over de Colonie Essequebo
Cum Annexis
Overleeden Den 19 February 1772
Gebooren In Doorniek
In Den Jaare 1737

Fort Island Essequebo River 1st May 1896.

(*Arms*)

De Gedagtenisse Des
Regtvaerdigen Salt Tot
Zeegeningen Syn,
Hier Legt Begraven
Michael Roth
Geboren In Neurenburg
Op Den 18th February 1732
Overleden In Rio Essequebo
Op Den 15th November 1770
In Syne Leven Geweest
Chirurcyn In Dienst Deir
Edelle Geoctroyeerde
West Indische Compagnie
Ter Caamer Zeeland

Fort Island 1st May 1896.

(*Arms*)

Ter
Gedaghtenis
Va Mejuffrouw
Iacomina Van Der Kruysse
Egt Genoote
Van Der Heer
Samuel Zeagers
Wanger Overleden
Rio Essequebo
15 Augustus 1768
Oder Don Van 26 Iaaren
Maanden En 8 Dagen
Aar Een Wyl By Dit Gestleen
T Kille Kout Gebeent
Zwangre Sta

On another Piece of same stone

De Boody
L Beklagen
Edrage

Wevi-wery. Cooro Creek. Left Bank Essequebo River.
May 5th 1896.

De Regt Veerdige
Sal Ineeuwige
Gedagtenisse Zyn
Psalm 119 Vers 6

(*Arms*)

Hier Legt Begraven
Jacomina Cornelia Lussis
Huys Vrouw Van
Hendrik Van Doorn
Geboren Den 2 May 1742 En
Overleden Den 10 May 1763
Des Morgen Somduuren
Dus Oud 21 Iaaren
1 Maanden 5 Daagen

Acuracooroo Creek. Left Bank Essequebo River
May 8th 1896.

TO PARADISE.

Notes from An Explorer's Diary.

By R. P. Stewart.

"The life of man is a journey: a journey that must be travelled, however bad the roads or the accommodation."—(The Citizen of the World).

July, 1912, Monday.—Start by Berbice River steamer at 7.03 a.m. There is no road to Paradise—accommodation to be afforded (appropriately enough) by district Missionary—tide all in favour and weather fine but sultry—so sultry (as is usual in July) that this might be called "From Hell"—a name frequent on the lips of the steamer boys. Three together, the Parson, the Commissary and myself; for the doctor—almost necessary to complete the expedition—is only a temporary item of it, withal filled with sage counsel and cheerful references to a new *post mortem* knife, which he seems to hint will be kept bright against the return of the exploration party whole or fragmentary.

Arrive Sugar Pln. "Friends" 7.50. Emotional farewell with the Doctor at this point. "Lucy, Lucy" in sight, marked by a group of cabbage palms, as we pass "Highbury" at 8.20. "Highbury" is distinguished by a house with a tower, from which the Manager in sugar days proposed to keep an eye on his people. It is now out of sugar cultivation. *Verb. Sap.* perhaps. But a whiff of the hospitable old plantation days still comes pleasantly across the water as one observes the "rule of the river" and quaffs the rosy "pink stuff" in little glasses, with a wee thought of old time while the failing old tower blinks hopes for the morrow.

The public road ends at Highbury; but it is proposed to make up the old road again to Mara, some 16 miles onwards and inwards.

The "Ranch" at 8.40. A cattle farm, started a few years ago—85 shares now up to $35–$40—"Hurrah for the men that work."

Meet sugar estate "Mara" launch at 9.25 on its puffy noisy way to town.

Schepmoed Magistrate's Court and Police Station (4 men) at 10. Field of ripe corn fills the clearing. The weather has been propitious for corn,

> "and the fields of (corn) that were springing
> "Green from the ground when (last we came), now
> waving above (us)
> "Lifted their slender shafts, with leaves interlacing, and forming
> "Cloisters for mendicant crows and granaries
> pillaged by (Mypouries)."

This was all the doing of Mrs. Welcome—Queen, Koh-i-nur of Rest-house-keepers—who could make even the depressing atmosphere of "Mara" almost pleasant by her cheerful attendance and welcoming smile of ivory set in ebony.

10.07. Sugar estate "Mara"—a pebble left on the beach by the retiring tide of sugar—the only sugar estate left surviving so far" up river."

10.30. Breakfast. An interval in observing quite essential even to the most ardent explorer. Note that "pepper pot" and "matrimony" harmonise well with such occasions.

12.30. "Vigilante." Sawmill of Mr. Mitchell Here the scene is made gay by 5 bateaux. This is a pleasant change. The river has been lonely and keeps lonely except when we stop at some point, when a few corials or bateaux paddle out to us. The "Mara" launch was an event. We see one raft of logs of timber drearily floating down stream. No life on the river: and ashore, an occasional hut by the waterside—always the dismal pimpler bush and Mocca-Mocca made gloomier still by the unmusical cry of the "Canje Pheasant" bewailing his habitat.

BUT——

1.10 p.m. Bartica Downs FIRST RISING GROUND. "Turning Water" 1.40 p.m. So called from the numerous eddies that dimple the now clearer and darker waters of the river here. "Enchanted eddies," if the legend be true, that here sank, under fire from Fort Nassau, some buccaneering vessels, some hundreds of years ago, the souls of whose turbulent crews still vex the dark quietude of the stream that engulphed them.

Fort Nassau 1.45 p.m. marked by high cabbage palms. Says Hartsinck: "In year 1666 a certain Captain or Owl of the Arrawacks, named Kakabaretje, who lived in the Abary, had arrived accidentally at Fort Nassau with some of his people for the purpose of trading, when a few English Privateers attacked the Fort in a barque of 10 guns. The Indians took refuge in the forest, but the Captain, to show his courage, remained with the whites. Being frightened, however, by the roaring of the guns, he crept into an empty sugar boiler which was lying in the store. Returning afterwards to his Indians, he reproached them for their cowardice, and boasted that he had saved the Fort in a great measure, by his valour."

Here saith the historian Rodway:—

"Above the mouth of the Wieronje stood Plu. Peereboom, the property of the Patroon, while below the same creek was built a block-house called the house of Van Peere, not necessarily because any of the Patroons lived there, but that it represented the Colony House and was fitted for defence as a wooden Fort, against Indian raids. Fort Nassau

was intended as a protection against enemies from without, and there were few, if any, plantations between it and the mouth of the river. The Canje had not yet been occupied, so that there were no posts required in that direction, and with the long stretch of unoccupied territory on either hand, there was no question of boundaries. There being no town, in case of emergency, the planters were collected at either the block house of Van Peere, or Fort Nassau, according as circumstances required."

2.10. A baboon (*Mycetes sp.*) howls from the bank—herald of the forests we long to penetrate.

2.45. "Sandhills"—the Missionary's home.

4 p.m. Arakali Creek on right bank—field of corn on left. Half-an-hour after we get light showers of welcome rain, and at 4.45, we arrive at Hollandia, where there is a school and Mission house. In this neighbourhood the Gladstone family, of which the great William Ewart Gladstone was a scion, at one time held estates.

5.20. Pass derelict canoe—custom of river people to borrow a neighbour's boat and return it by setting adrift on return tide.

6.10. Veruni (Wieronie ?) Creek fairly big. Abode of Rev. Taylor (Protector of 'Bucks') Ebene Point? Here a shoal of corials enlivened the monotony.

8.14 p.m. PARADISE! Evidently we have taken Paradise by surprise—no one is ready for us—and where is the climate?—all is dark, disagreeable and hot—even the man with the accounts says to-morrow will do. Some one, looking in the lurid flicker of a Dietz lamp infernally like a fiend, appears and consults in whispers with one of our party. An exasperating interval, language repressed, for we have a tank of petrol near by, then we get into our launch and make hot foot back to Kumaka and dinner.

We have arrived at our sleeping (?) place and time now concerns us nothing.

The cooking fires blaze merrily. We sling hammocks in the open rest-house (and an Indian—with a Dutch name, who plays a large part in this record appears). Excellent dinner, topped off with liqueurs; and we feel like Tartarin Quixote "Oh for the double-barrelled rifles, daggers, lassoes, and mocassins." And so to hammock—but not to sleep. How wonderful are the sandflies in their universality and activity! One thinks of Tartarin Sancho "Oh for . . . . all my comforts." Yet one of us sleeps—his snores lacerate the souls of the wakeful.

Tuesday, 7.45 a.m. Back to Paradise, passing the house on the Hill, high up among the tree-tops. Find that the steamer has just wriggled itself round for its return voyage. The river being compara-

tively narrow at this point, this feat is performed by paddling a little up river, then backing into the Wikki Creek (which joins the Berbice here), then forward again and quick turn to starboard. During the recent drought this had become a most difficult and exasperating manœuvre.

The itinerary of the Monday–Wednesday steamer, it appeared, is this :—Leaving New Amsterdam at 7 a.m. on Monday it arrives under the most favourable conditions at Paradise after dark at 8 p.m. Leaves as soon as possible after dawn on Tuesday. Goes no further than Mara on that day, and gets under way at 7 a.m. on Wednesday for New Amsterdam. So that the three-day voyager to Paradise is somewhat worse off than was Moses in respect of the Promised Land. Are we up-to-date ? The scenery here, with its hills and the rolling Downs of Kumaka, its creeks and Itabos, is charming, and provoked the question —why is a day wasted at Mara (to which nobody wants to go and everybody is glad to leave) and a delightful day in fairy land denied to the jaded dwellers of the coast ? The answer was, that the steamer picks up cattle all the long Tuesday, as she goes—the method being to drive the animals into the river, swim them to the steamer's side where they are hauled on board, somehow ; and that the process is slow. A passenger steamer for cows irresistibly recalls Drayton's grave description of The Flood—

> " And now the beasts are walking from the wood.
> " As well of ravine as that chew the cud,
> . . . . . .
> " The bull for his beloved mate doth low,
> " And to the Ark brings on the fair-eyed cow.

The Flood ! worse and worse ! We are not up-to-date. But we are now embarked on our launch ; and vain questionings are left behind as we enter the Wikki Creek 8.35 a.m.

A small green humming-bird inquisitively follows a short way. On the banks an occasional Bastard Cocoa tree, while numerous Mora trees relieve the green with the beauty of their young foliage—russet, chocolate, pink. The Mora Bucquiya of the mid bush has a red trunk and three-seeded pod—flowers white in catkins—its wood is harder than that of the riverside variety. White Martins flit about the stream and a Caligo butterfly with bright blue splashes on its front wings lollops across our bow.

10.10. Amuri Itabo. 20 miles up. Here are markedly high trees with fine foliage from which the sun's rays falling at their present angle conjure wonders of tint and chiaroscuro.

10.05. Manarehbo.

10.07. Other end of Amuri Itabo.

10.10. Ororehbo.

10.23. Kam (ar ?) akata Itabo. A bright blue Morpho butterfly, just out of reach, mocks the entomologist, and flirts into the bush.

10.30. "Small Creek." Urania day moth at this time very plentiful all over the colony, flits by.

10.30. Yowarano Creek—biggish—the Itabo that joins it is called Yowarani. A troop of green and black dragonflies and some yellow butterflies dance a fairy measure; but bodily wants to discount ethereal joys.

10.35. Land for breakfast, and while it is preparing we PLUNGE INTO THE FOREST. We have guns of course (and butterfly nets); Tartarin Quixote: "Cover yourself with glory" Tartarin Sancho (very calm): "Tartarin cover yourself with (mosquito net)." Tartarin Quixote (very excited): "An axe, somebody give me an axe." Tartarin Sancho (very hungry): "Jeanette, my breakfast."

After climbing a mountainous ant's nest, nearly as big as the dome of St. Paul's—hush! we see a Maam (a bird that runs along the high branches of trees like a squirrel); it is at the top of the tree, at the foot of which we stand. Silence falls. The marksman takes aim. His is not

"The rifle of Master Gervai
"Always loaded, always loaded.
"The rifle of Master Gervai,
"Always loaded, never goes off."

On the contrary the gun goes off too soon—the bird flies away—the sportsman seems stunned—he is unable to speak—*En effet*, it is not the gun of Master Gervai, it has gone off and given him a mule's kick on the bridge of the nose. The Maam, you understand, is a difficult bird to shoot.

In our walk we find Karimanni gum, the "Buck" substitute for cobblers' wax, and the Bukaroona bush rope, a somewhat elastic vine, with a Morocco leather-like smell; and the Sada pimplas or, rather, squat thorns, used to prevent over-development of mammæ in young girls. Here we found, too, the Wadaduri (Monkey pot)—*Lecythis sp.*—with its bark deeply furrowed like broom; and one of the "Kama-a-dan," a plant with pouch-like fruit, the leaves of which are much appreciated by the Maipuri or Tapir.

Breakfast ended at 1.15 hurried by heavy shower of rain. Our chef's cooking was somewhat defective and his method of serving complicated—violent struggle for supremacy going all the while between the smells of the Morocco leather bush rope (which, from being novel and agreeable, had become nauseating from its insidious persistence), somebody's French drill trousers, and petrol.

1.35 p.m. Start again after photograph with background of "Buckeens"; this should have been an effective and striking picture, as the principals were armed to the teeth with butterfly nets, fishing rods, guns, knives and other bristly weapons—but it was too much for the camera. This camera had failed us before (as we found afterwards) on the steamer, when we had been at much pains to make ourselves picturesque and Wide-World-Magazineish—it played another scurvy trick on the "rolling downs of Kumaka"; it will be, therefore, merely charitable not to advertise it; and no charge, accordingly, will be made for this reference: but it is not easy to get on and keep on for three separate prolonged periods, an artless Empire-building expression; and in effect, a sense of injury and lostness comes now ever stealing into our meditative moments as we think of the camera.

At starting, the lead is heaved—two fathoms depth.

1.45. Yowarani Itabo—other end.

Arooeoory Creek.

1.55. Notoro (Cooroowa?) Itabo (left bank).

2.05. Kokorite Creek (right bank).

2.20. Hiblooa Itabo.

2.25. Lake Ikarua and Boodoodah Creek (big) Eta swamp with the usual Macaws.

2.30 p.m. Opening into swamp left bank.

3 p.m. Contrebisci Creek appears—Wikki goes to right. Savannah and broad swamp.

3 p.m. Turn back taking depth at Seban Creek—3 fathoms. Test soil at creek side—loose clay—good, says our guide, for yams, pines, ground nuts, &c. Yellow on top—at 1½ feet down whiter—signs of iron about 8 feet below.

Home again at Missionary's Rest House at Kumaka. We endeavour to dine off very tough chicken, price 1 shilling, cooking, 2 shillings—no wonder—this is the doing of our guide's wife—evidently she has been or should be a Bayswater lodging house-keeper—she is a "Buckeen"—it is obvious that the Missionary has not been idle.

Wednesday.—Alack! How times flies!

6 a.m. Swim in river, then fish for half-an-hour, do not even catch a cold. Then off for a delightful ramble. First we scramble up (panting a little) to The House on the Hill, then joyously over the downs enamelled with flowers of various hues and low growth. We find the Sandpaper bush, and the garlic smelling vine for the fever bath, the Kabadula bush rope that gives drinking water to the thirsty bushman; "Kamaratuka"

too we are shown—a very tall tree. Another Kam-a-dam broad leathery leaf. O hardy Maipuri! Home again, down hill this time, and almost as breathless to the mud-flatter—and breakfast.

Our headquarters are, as you have divined, Kumaka, where there are—a little church whose foundations are of the little Dutch bricks of the old estate; the remains of the brick tiled floor for drying the cocoa pods; and an ancient little churchyard with antique graves,

"Mouldering and moss-grown through the lapse of years."

Thinking with Shelley,

"Forget the dead, the past? O yet
"There are ghosts that may take revenge for it,"

we walk reverently among these old tombs and copy the old inscriptions.

"Hier Leyt Begraven De Heer David Balk
Raat, en Mester Planter OP de Plantagie
Markay Is Gebooren Den 15 November, 1692
en Gestorven Den 8 November, 1734."

Next is the grave of

"Monsieur Cornelis
"Rassche Insyn Leeven Raat de ser
"Colonie Mester Planter op Markay
"(born) 17.11.'68 (?)
". . . . . 15 May, 1726 . . . . .
. . . . . .
"Syn sister Eliesabeth Rasche born 19.6.94.

also

"John Rasschen born 1692
"died 1696 (overlenden)."

"Catharina Hellinck Hays Vrouw Van
"Monsieur Nicolaes Rassche
"Died 6 Maert 1699
H. . . . . Naest L. . . . .
Monsieur Nicolaes Rassche
born 1649
died 12 Feb. 1722.

Other tombs there are; but their inscriptions are undecipherable.

Meanwhile our estimable guide has brought round his corial and at 2 p.m. we embark for a paddle in the Ituni Creek which flows into the Berbice on the left side opposite to the Wikki.

Our guide deserves a special article all to himself—he is an encyclopædia of river and forest lore but a little of which we have managed to preserve in these pages. We pass on our right banks of Kaolin showing white and on closer inspection dotted with purplish spots, exposed by the fall at this place of the green mantle of verdure. Visit Calcuni, the "Buck" village situated at the junction of the Wikki with the Berbice river.

As usual on the approach of strangers, the village is deserted; but our saunter through is rewarded by the discovery of some ancient Dutch stone vessels of a rather graceful shape, and by an interview, on our return, with the oldest inhabitant, Captain Caple, an Indian of 69 summers, who speaks of himself as the sole survivor of his generation. Would seem that the Buck is not a long-lived race. Then we paddle over to the Ituui across the river, and enter by way of its Itabo (a short cut or supplementary mouth) returning by way of the main stream after cutting through the trunk of tree—an Ituri Wallaba—fortunately a small one—that had fallen across the creek. Then to headquarters early, as we propose to strike camp to-morrow.

Thursday, 8.40. Homeward bound. Sounded the Berbice at Kumaka 150 miles from its mouth, 38 feet deep. Weather fine but not hot.

9 a.m. "Ida Sabina" (dispensary).

Tide slack (with tide our launch does 12 miles an hour).

9.15. First and only "Coolie" seen above Mara, but there are many Coolie "homesteads"—five acre grants—for at least 20 miles above that point.

9.25. "Forresters' Home." (Rumshop).

9.45. Maria Henrietta.—School and Court House—Church (Lutheran) very picturesque with tracery window and tower or belfry.

10.50. Verumi (Wieronie—Place of the dove) Creek.

Here we find examples of a prevalent custom—roofs erected on four posts over graves, for the quiet repose of the dead.

We pass Hollandia at 2.25 p.m., and arrive at Schepmoed and the end of our holiday, tired and sleepy, at

MIDNIGHT.

ST. GEORGE'S CATHEDRAL.

By Rev. E. Sloman, M.A.

The history of English Cathedrals is a summary of English history and with many of them the fabric represents in stone the formation of the British nation, the simple primitive Briton, the stubborn Anglo-Saxon, the strong-willed Norman, the virile Dane, the gradual fusing of all these nationalities in early English and Gothic. One century did not demolish what their predecessors had built but merely added to it in their own style. And so we see Norman, early English and the various developments of Gothic architecture in the same buildings. And some of them were built in most unlikely places and on most unsuitable sites. Winchester Cathedral, for instance, was built on a peat bog and over £100,000 has lately been spent in squirting liquid cement into the peat bog and thus converting it into a solid foundation. Doubtless it was built there because at all costs the monks built their monasteries near rivers and so of necessity in low-lying places. And thus we see that from foundation to completion many hundred years elapsed, each century adding something to meet growing needs and even now, as in the case of Winchester Cathedral, probably more money has been spent on it in this generation than in any previous generation.

And in tracing the history of St. George's Cathedral, as it now stands, we shall find that since the colony became English, each generation has accepted the burden of providing for its own needs and thus paving the way for the erection of the present building, which, we hope, will serve not only the present but several future generations. I propose then shortly to narrative the history of St. George's Cathedral.

Almost immediately after the cession of this colony to England we read that the Rev. F. McMahon, Garrison Chaplain, was in the habit of conducting service in the Court House, Stabroek, about 1807 and on June 8, 1808, the Rev. W. G. Straghan held a meeting with the object of building an English Church in Georgetown and land was given for this purpose by R. B. Daly, Esq., and the heirs of Joseph Bourda. The building was commenced in 1811 and completed in 1812. It held about 300 and stood on the spot where St. George's school now stands. The system of concurrent Endowment seems to have been in force as early as 1820, when the English Church received *f* 5,000, and the Scotch and Dutch *f* 3,800 each. On May 1, 1824, two English clergymen arrived, the Rev. J. Lugar, the first rector of St. George's, and Rev. B. F. Nurse. In 1826 the Counties of Demerara and Essequibo were divided into Parishes and it appears that Parishes were constituted as English or Scotch by the vote of the principal inhabitants. Thus we see that early as 1826 there was a Parish of St. George and a rector paid by Government. In the same year Bishop Coleridge was appointed Bishop of

Barbados, including Guiana. In 1831 William Piercy Austin landed in the colony and was for a short time curate of St. George's. In 1835 he returned to the colony and acted for Mr. Lugar. In 1836 he was appointed Rural Dean of Essequibo and in 1838 Archdeacon of Guiana. In the meantime in 1836, the Rev. J. Lugar and Vestry obtained permission from the Court of Policy to raise 50,000 guilders to build a new Church: the foundation stone was laid on a site 40 feet west of the first Church, in 1838, completed in 1842 and consecrated by Bishop Austin, shortly after his own consecration, on December 1 in the same year, as the first Cathedral. (The first Church was sold to the Vestry of St. Matthew's Parish and was erected on Pln. Peter's Hall as the Parish Church and there it still stands.) But this Church had a short and unfortunate career: the building was built on bad foundations and as Archdeacon Jones said, it began its life with a broken back: at last it became dangerous: on one occasion tradition reports that a large piece of plaster almost brought to an untimely end the life of the father of our present acting Government Secretary and with it the day's offertory which he was then presenting. Consequently a Church which should have lasted a century was condemned in less than thirty years and was taken down in 1878 by Archdeacon Wyatt who at the same time erected the Pro-Cathedral.

As early as 1872 a public meeting was called by Archdeacon Jones to consider the question of a new Cathedral. The meeting was enthusiastic: the colony was flourishing: men's hearts were generous and the meeting was a success in promises and performances. As an outcome of this meeting in 1875 negotiations were entered into with Mr. Cockerell, a London architect, but when matters were far advanced he died. Then Sir A. Blomfield was asked to submit plans and very beautiful was his proposed edifice but much too heavy: consequently they had to be reconsidered and new plans, based on principles of lightness and economy, with due regard to ecclesiastical art, were submitted and accepted, and Sprostons undertook to build the foundations for $20,000, there being then in hand only $48,000.

About this period in 1885 the Bishop took another step forward in Diocesan organization by instituting by mandate a Dean and Chapter as follows:—

Dean: F. H. Austin. Precentor: W. G. G. Austin.

Canons.—Stall of St. Augustine, H. J. May Stall of St. Andrew, D. Smith

,, ,, St. George, W. T. Veness ,, ,, St. David, H. T. S. Castell

,, ,, St. Alban, T. Farrar ,, ,, St Patrick, G. H. Butt

and they took a leading part in collecting the necessary funds for building the Cathedral.

The foundation stone was laid on November 21, 1889 and from the *Daily Chronicle* we learn that "streaming banners and National flags marked the site of the ceremony. From a raised platform almost shaded by the gracefully hanging branches of an ancient tree the Bishop (Austin) conducted the ceremony. A detachment of the 1st West Indian Regiment was present. Among those present were the Governor (Lord Gormanston), the Lieutenant Governor (Sir C. Bruce), the Chief Justice (Sir D. Chalmers), the Inspector General of Police (Col. Cotton), the Mayor (Mr. Drysdale), Archdeacons Wyatt and Farrar, and some 10,000 people." Archdeacon Austin (the Dean) said in the course of his speech: "This is the usual course in building large Churches and Cathedrals, a long time in preparation, and more or less long pauses before the completion. Laus Deo, praise be to God for this beginning, small though it be, compared with what remains to be done [how true these words have proved to be]: May we not hope that the general good spirit exhibited by everyone is an omen of future success and that before long we may see a Cathedral Church, noble in its size and beautiful in its proportions, of which materially and spiritually we may say "Hic Domus Dei est et Porta Cœli!"

The Bishop, before laying the foundation stone, said, amongst other things:—"Since the day when 47 years ago I consecrated the first Cathedral many have come and gone and I know of none at this present hour with whom in those earlier days I had any relationship or acquaintance. I appear to myself as one stranded and yet I am not alone, as I believe that the gathering to-day is a sign of the sympathy which is not always experienced by those who have lived for others rather than themselves. The spot on which we stand to-day I have always looked upon as holy ground. It is the spot on which the banner of the Cross was first publicly unfurled by the Church of England just eighty years ago." By this time the oval which now exists had been formed by filling up a Canal and dividing the road round the building, giving to the Cathedral a splendid site, with roads from North, South, East and West meeting in the oval.

Soon after this Archdeacon Austin resigned and Canon May succeeded him, and during the period 1890–2 the new Dean worked with that stubborn force of will and indomitable energy that characterised all his ministry. And this brings us to the consecration of the new Cathedral on the fiftieth Anniversary of the consecration of our revered Bishop, S. Bartholomew's Day, August 24, 1892. The following is a description of the building:—"The edifice is cruciform resting on a massive concrete wall of a nearly uniform height of 6′ 9″, except at the East end, where the basement walls and crypt are higher. The finest and most durable greenheart, supplied by Mr. Bugle, has been used. The dimensions are: length 180′, width 150′. The nave and transept roofs are supported by iron columns plain Gothic in style, in keeping with the character of the building. The walls are of greenheart filled in with

plaster (imitation granite) panels, the interior being treated in a similar manner, but these panels are smooth and white, with a view to decoration."

His Excellency Lord Cormanston was present, the acting Chief Justice (N. Atkinson), the Sheriff (H. Kirke), the Mayor (J. A. Mudoch), and all the other leading members of the community. The Bishop, now aged 86, was able to be present, but he was so unwell that his son, the Rev. W. G. G. Austin, had to read his address, which was full of pathos and love. Very apposite was the sentences in which reference was made to the Apostle of love, who in his last days could say little but reiterate "Little Children, love one another." It was a plea for Christian Unity uttered by one who in the calm evening of his life is able to grasp the importance of oneness in Christian effort.

The Bishop then consecrated the building, and, finally supported by his son and Canon Heard, gave the blessing, the last words spoken by him in the Cathedral, for he died in November of the same year.

Neither did Dean May long survive his Chief; in 1893, worn out with his tremendous exertions, he died, up to which time $120,000 had been spent on the Cathedral.

Since then two great efforts have been made to complete the Cathedral during the Incumbency of Dean Caswell: in 1896 when $10,000 was raised and in 1906, $5,000; and much useful work was done in strengthening the foundations, buildings, concrete steps at the West end and the North and South transepts and concrete pavements and clapboarding the East end. Its completion is now being carried out by clapboarding the whole exterior and completing the interior, as far as possible according to the original designs, including Choir stalls and Altar-rails, bringing the total spent on it to about $160,000 (£33,000) and it is intended, if possible, to commemorate its completion on the 21st anniversary of its consecration, St. Bartholomew's Day, August 24, 1913.

BRITISH GUIANESE PROGRESS AND LIMITATIONS.

By A. A. Thorne, M.A.

At the request of its worthy Editor, I am again making a contribution to the valuable columns of *Timehri*, and crave some indulgence from readers for my attempt to handle, as a sequel to the article on Education, so difficult a subject as "British Guianese Progress and Limitations." Civilisation through all the ages having had Education as its hand-maid, what could be more natural than for any enquirer in our midst, after getting the history of local Education, to endeavour to see its effect on the lives of our inhabitants? The distant reader must at once be told that British Guiana is a century old as a British colony, and that by the terms of its surrender by the Dutch it was to retain its laws and constitution unless they were altered by its inhabitants. So that British Guiana presents to us the picture of the transformation of a Dutch colony into a British by the slow process of self-development. Dutch laws and customs have permeated the entire social fabric, and it would be unfair for the critic to judge Guianese progress by the same standard as he would West Indian,—of Jamaica, Trinidad, or Barbados,—where British responsibility has been greater, and where the policy of *laissez faire* could have no treaty sanction. Thus then it will be seen that British Guiana with its peculiar Dutch constitution, stands quite apart from the various West Indian colonies in its methods, and merits distinct treatment. And further, its colonial history has to be divided into two separate periods, the one ending with the change of its Political Constitution in 1891, and the other beginning from that date.

When British Guiana finally passed from Dutch to British rule in 1814, what was its condition? The population consisted of slave-owners and slaves, estate proprietors and their human chattels to till those estates. The London Missionary Society had begun its humane work of teaching Christian landlords in these parts the common brotherhood of man; it was facing with Christian fortitude the severe tests of persecution. It was the first beacon light of hope; it first brought consolation to the benighted African slaves. According to western ideas therefore, the first civilisation carried by Europeans among the Guianese inhabitants in the first two decades of the nineteenth century was distinctly religious; and it was productive of much good, for we find that on the East Coast of Demerara, where these missionaries began their operations, the emancipated slaves were thrifty, united, and so God-fearing that in their combination to purchase estates for their common holding, they did not omit to erect their houses of worship as we see them in their elegant simplicity to-day in the villages of Victoria, Beterverwagting, Buxton, &c. And as first impressions are always greatest on the human mind, so the

first contact for good between the European and the African inhabitants of our colony coming through Christianity, it can be easily understood how docile the emancipated blacks were, how devoted to their Christian instructors, how ready to regard them as ideals in everything. This largely accounts for the fact that the negro descendants attach the importance they do to church-going, neglecting domestic welfare now-a-days to the often empty display of church attendance during the busy days of the week for the other sections of our heterogeneous population. As the emancipated slaves were uneducated and unsophisticated, the knowledge they would most largely imbibe came from the fountain of preachers of the Gospel, and some of the inertia and thriftlessness of the present generation is certainly the result of their early Christian instructions. Misapplied quotations from the Bible flow all too readily from our creole negroes, and tend to weaken the influences of real Christianity on the rising generation, surrounded as it is by hordes of non-Christian East Indians, whose worldly progress strikes their attention all the time. How often is not the extravagance of the present generation of the black and coloured population defended with such a quotation as "Cast thy bread upon the waters, and after many days thou shalt find it?" If the Christian precepts given negroes of a generation or two ago had been accompanied by numerous concrete illustrations of Christian conduct and character among European inhabitants; if moral turpitude had brought any punishment on the ruling classes; if the leading men in the community had more generally established families in the orthodox manner, there would be far less unfavourable criticism of our people than there is. The Dutch system of legitimising offspring certainly does seem most in accordance with the spirit of Christianity than the ostracism of them, and to that system is due the fact that many of the well-to-do and influential families of the colony in the post-Emancipation generations have been coloured. But also the institution of marriage was shaken by it, for negresses found it more profitable and advantageous to be mothers of children who stood a chance of recognition and receiving an heritage from the well-to-do sires than to be married to their own equals. Customs die hard; therefore, while the British successors to the Dutch do not so thoughtfully legitimise such offspring, yet they naturally give a preference to the coloured, creating a dangerous problem for unborn generations to solve. I would, however, that this subject could have been treated without regard and reference to such delicate matters. But enough: it has been shown how the negroes came under the kindly influences of Christian Missionaries, and how too they were not assisted to develop a robust Christian character.

Having now got beyond the early days of Emancipation, let us see along what lines the negroes marched upward. The teachers in the schools of the colony had to be imported, and they had to share with the ministers of religion in moulding the character, and, to a great extent, the destinies of the masses. It must be remembered that these were times antecedent to 1870 and the revolutionising of Elementary Education in

England by the Forster Act. We observed in the article on Education that there was not much real progress made locally in scholastic matters, and that the prevalent spirit of rivalry among the Christian denominations did not help on the cause of Education placed in their hands by a short-sighted Government. Estranged from the sugar estates because of unpleasant reminiscences of their slave condition on these plantations, as well as through the substitution of indentured labour of the cheaper and more similar supply to slave labour, the emancipated negroes lived as farmers, and made their sons artisans and teachers as the next stage in their economic evolution. Scientific farming is hardly known even now in our colony, so that the men of that generation cannot be wholly blamed for not increasing their lands and begetting a generation of independent and progressive landed proprietors. The physical features of the lowlands on which the freedmen had expended all their savings to buy common property had militated against the establishment and ownership of numerous small farms by the trained overseers of the sugar estates, and with that ever patent fact no unprejudiced observer can harshly criticise the conduct of the negroes in not "sticking" to the soil. Had there been profitable markets for their produce, had their lands been insured against flood and drought, had they been guided by the Government, the Churches, and the ruling class while they possessed savings, the negroes of this colony would undoubtedly have developed into a strong body of peasant proprietors, and the colony would have gone far ahead in its development ere this. That everything was inimical to the establishment of profitable small farms in this community has been well set out by the West India Royal Commission of 1898, and needs no labouring here. Lands were only alienated by the Crown in parcels of one hundred acres or more, with survey fees and conditions attached placing them quite out of the reach of tillers of the soil. And these conditions obtained up to 1891, so that the pitiable plight of the negroes as agriculturists, their withdrawal when possible from that mode of life, have largely been forced upon them by circumstances quite beyond their control.

Much praise is due to Mr. N. Darnell Davis, C.M.G., who, as a liberal-minded Government official, took the initiative in getting the land laws modified, so that willing farmers could get less than one hundred acres from the Government, and on better conditions than were hitherto imposed. But had there not been a change of Constitution through the liberal policy of Viscount Gormanston with the able advice of the then Attorney General, Dr. (now Sir John) Carrington, the people of this colony would not have had direct representation and been able to have in the Legislature to carry through such reforms as a change in the land laws such useful legislators as the late Honourables E. C. Luard and Patrick Dargan, Mr. B. Howell Jones, C.M.G., and Hon. D. M. Hutson, K.C., who yet serves on the Executive Council. And if the change of Constitution preceded liberalised land laws, as undoubtedly has been the case, it would be manifestly unfair to omit the names of those primarily

responsible for this great Reform movement,—Mr. W. H. Hinds, Editor—proprietor of the *Echo*, Mr. (now Dr.) D. T. Straghn of the *Liberal*, Captain E. T. White, and the late Mr. Jacob Conrad. Having come down to the period when lands were made somewhat accessible to the more thrifty individuals of the masses, let us see what was their ability then to go in for farming more generally.

The sugar estates had fallen upon evil days and had passed through a very severe crisis in 1885, necessitating relief and greater assistance from their paternal Government. There were no funds available, and no disposition under the old regime to make labourers become farmers and colonists. The industrious East Indian was repatriated at the end of his term of indenture, and not induced to remain with his savings and become a peasent farmer. The able-bodied negroes, who hitherto got work in seasons on sugar estates, found even those limited markets for their labours being rapidly lessened by the cropping and abandonment of some sugar estates, and by the amalgamation, labour-saving appliances, and curtailed expenditure on others. Luckily for these, gold was discovered in the hinterland, and despite the dangers of travelling, the privations and hardships of reaching and working in the interior, the negroes, who could and should have previously been made farmers, willingly, and, with stout hearts, flocked thither, and, by their endurance and steady labour, made gold in very truth a subsidiary industry, giving direct revenue by the royalty levied on it to a Government that made no effort to render it the least assistance. The negroes now became direct contributors to the colony's Exchequer, while through indirect taxation on the necessaries of life they continued to contribute the greater portion of the revenues of the colony. Even at this point our rulers were too short-sighted to inaugurate a worth land policy, and inhabitants who made savings had no reasonable inducement to go in for farming. The Portuguese and Chinese immigrants found their chances in trading, the negroes who made savings had no option but to become professionals, being unable to hold their own in any other direction under the peculiar circumstances obtaining. The only fault attachable to the professionals has been their remissness in combination with the masses of their own race for the ameliorating of conditions on a bolder programme than that from 1891 up to the present time. And may not there be the excuse that men, who by dint of industry and, in many cases, herculean effort, have climbed the ladder between races, found it inconvenient to make personal losses and enemies for a general cause, however patriotic? The State has not encouraged patriotism and self-sacrifice in this colony, either by emoluments of office or distribution of honours to public-spirited colonists who have served this colony well. The late Wm. Russell received no recognition from the Imperial Government for his great water schemes; Mr. Benjamin Howell Jones has been the recipient of a long merited C.M.G. on the eve only of retirement from active life! What incentive is there to able men in our midst to devote themselves to general usefulness rather than be absorbed in a

policy of self-interest and selfishness? In every sphere in which the negroes have been engaged in our colony have they made real progress; on the sugar estates they have furnished such skilled planters as the late Pretty Gordon, in the factories they stand supreme, and are sought for sugar boiling in far distant Africa as well as in Brazil, and throughout the West Indies. As mechanics, as artisans, as building contractors, they hold the premier place. In Medicine and Law, they have had and still have able representatives. As ministers and teachers they have done as well as limitations would allow. In the mercantile arena they are without experience, without much opportunity, and they will long remain so because of combinations. Conditions are altering, times are changing. The colony has had but one enlightened administration—the Swettenham-Ashmore—for a brief few years since the change of its Constitution. Still there has been progress in Village administration and development. The Chairman of the Local Government Board, the Honourable Dr. Godfrey, is ably making the Village Law Scheme of Gormanston-Carrington bear abundant good fruit, and is showing the power of negroes to administer their own affairs satisfactorily under proper guidance and genuine sympathy. The Board of Agriculture, though far behind in this race with its much later start, is doing good work as a complement to self-government in the Villages, and there are healthy signs of progress all around. With an able and experienced administrator now at the head of our affairs, there is almost human certainty that this colony will have a strong peasant proprietary body as its backbone within the next decade, for the means of locomotion and transport are receiving immediate attention, and undoubtedly we shall early have proper schemes of irrigation and drainage, and profitable employment for our masses who will thus get the necessary capital to develop lands, and produce from them marketable articles for exportation in addition to supplying local needs as in the past. Just demonstrate to the West Indies the possibilities for our labourer to earn wages that will do more than enable him to eke out an existence, and we shall get an influx of profitable population from that source. Let a colonisation scheme take the place of the present indenture system for East Indians, and we shall get a better class of them for the good of the colony. Let the farmer's life become alluring in our country, and we shall draw desirable colonists from many quarters. Let communication with other countries become easy and cheap for our inhabitants, and they will outgrow their narrow prejudices which are worse than insular to-day. There is room in this country for all, if an enlightened policy be pursued steadily by the Government; and our population should grow by leaps and bounds into millions. The British Government cannot afford to neglect its masses, its negroes, now that the United States has come so near with quite a different policy as regard its coloured citizens. British statesmen must feel their apathy whenever they are told of a Booker Washington, whenever they review the strides made by Negroes in the United States, and the exalted positions they have attained to in its Federal Government. We are a moving world, and British Guiana will grow yet to some British greatness,

The Secretary of State for the Colonies has become impressed with the needs of this colony; he has sent us a tried and able administrator in the present Governor, who is rapidly making himself acquainted at first hand with our conditions and our masses. The opening up of the Panama Canal is bringing these British possessions once more into prominence and dangerous fossils in these parts are being clearly seen in the bright light now pentrating the thick darkness that has so long veiled us. Many promising sons of Guiana have been forced by circumstances to go abroad to more enlightened spheres of labour, and their communications with those whom they leave behind are rousing them up to greater activity and greater determination to better their condition. This is in itself a great stimulus to the rulers of the land to move forward to check the exodus of the flower of its small population. A healthy rivalry is growing between the East Indian settlers and the coloured inhabitants of our conntry. All are standing to-day on the tip-toe of expectancy for the great move forward under the lead of Sir Walter Egerton, whose task is no mean one, calling for the most thorough grasp of local conditions and great farsightedness. But he can be assured of loyal co-operation from the masses, who regard this as their day of salvation and will not lose this golden opportunity, remembering that

> There is a tide in the affairs of men
> Which, taken at the flood, leads on to fortune;
> Neglected, all the voyage of our lives
> Is bound in shallows and in miseries.

THE EARLY POSTAGE STAMPS OF BRITISH GUIANA.

By A. D. Ferguson.

British Guiana issued its first stamps on July 1st, 1850. A notice in the *Official Gazette* of June 15th, 1850 states that postage stamps of the respective values of 4c., 8c., and 12c. were being printed, and would be ready for sale on or before 24th instant.

Ten years earlier Great Britain had introduced the first adhesive stamp for the prepayment of postage. The date fixed by a Treasury Minute was May 6th, 1840, although the distribution took place several days before the time appointed for its use. *viz.*, on May 1st, 1840, *vide* History of the Penny Post by Rowland Hill.

This was the outcome of Rowland Hill's postal reform schemes propounded in 1837, recommended by the House of Commons Committee appointed in November, 1837, and resulting in the passing of the Penny Post Act on August 17th, 1839; the main points of which were (*a*) cheap postage; (*b*) a uniform rate, irrespective of distance; (*c*) prepayment by means of adhesive stamps.

Rowland Hill's principle, that the cost of carriage was an inappreciable element in the expenditure of the Post Office, obtained some recognition in Great Britain at the time of the introduction of the penny stamp. Previously to this, postage in the United Kingdom varied according to distance, from 4d. to 16d.

This principle was not acknowledged in the internal postal arrangements of other stamp-issuing countries at the outset. In the case of British Guiana, not until 1853. And it took 60 years before the agitation, which commenced in Britain, was universally accepted by the Colonies and consummated by the inauguration of the Intercolonial Ocean Penny Postage Scheme on Christmas Day, 1898.

Three years elapsed before any other country followed in the footsteps of Great Britain, and that country was our neighbour, Brazil; followed within the succeeding two years by several locals issued in Switzerland (Geneva, Basle, etc.) and the United States (Postmaster's Locals) culminating in 1847 by the regular general issue of the United States of America. On the 21st September of this same year appeared two of the world's most famous rarities; the "Post Office" Mauritius stamps.

In 1849, Bavaria, Belgium, and France adopted the adhesive stamps. Nine years had then intervened, during which period Great Britain had enjoyed the advantages of cheap postage and prepayment by means of adhesive stamps, before any European country moved in the matter.

During the next year, 1850, many other European States joined the ranks of stamp-issuing countries, including Victoria and New South Wales. It will thus be seen that British Guiana, sparsely peopled and unknown as it then was, kept abreast of the times in at least one respect—the adoption of the adhesive stamp.

THE 1850 ISSUE OF BRITISH GUIANA.

This issue consists of four values, printed in black, on course coloured paper, varying considerably in texture. Paper of different colours were utilized, in order to more easily differentiate between the four values.

The values and colours were :—

2c.,	black,	on	pale rose paper
4c.,	,,	,,	yellow paper (shades)
8c.,	,,	,,	green paper
12c.,	,,	,,	blue paper (shades)

The paper on which these stamps were printed, was of the description used for large placard advertisements. The work was done at the "*Demerara and Essequebo Gazette* Office" whose Proprietor was Mr Henry Mackay, the printing being supervised by Mr. Devonish.

The "*die*" or "*form*" of the stamp was made up as follows :—Irregular brass circles were made by bending pieces of thin "rule" into the requisite shape and soldering the ends together. Printers' type of Roman capitals making up the words BRITISH GUIANA, were arranged to follow the inner curve of the circle; the words reading in sequence. In a straight line across the circle forming the diameter, the words *cents* in italics with numerals denoting value was arranged, the whole being then wedged in with quad or chewed paper. The required number of these *forms* which have been surmised to be twelve, were then imposed in a chase and the sheets printed off in one of the old-fashioned hand-printing presses; possibly two or more impressions being taken on one sheet of paper.

It has been established that the same *form* was used for all four values, and that the numeral denoting the value was the only part altered in order to make the different values. That this was clumsily done is evident from the number of letters that are askew in the existing specimens of these stamps—notably the letters R and I. Whatever number of these *forms* or "circles" were used, it is clear that no two were identically alike; nor, was the arrangement of these *forms* in the chase in the same sequence for all the different printings that were made. We have consequently a number of minor varieties :—

(*a*) Varieties of the thickness of the outer line.

(*b*) Varieties of the arrangement of the internal type.

Of these 1 variety is common to all 4 values.
3 varieties is common to 3 values.
3 varieties is peculiar to the 8c. only.
1 variety is peculiar to the 12c. only.

(*c*) Variety of the 12c., with large figure 2 with straight foot, instead of the normal curved 2.

(*d*) There are also varieties of the texture of the paper employed—The 4c. yellow is shown on a thin transparent paper known as "pelure."

The diameter of the circles used were roughly one inch ; they vary, however, by very small fractions of an inch.

The *raison d'être* of these values was the prepayment of postage by distance, the rates of postage being as follows :—

To Plaisance, Beterverwagting, Buxton, Victoria, and Mahaica, on the East Coast, Demerara, and to Hague, Pln. Edinburgh, Boerasirie and Vergenoegen on the West Coast, Demerara :— ... 4c. per oz.
To De Kinderen, Mahaicony, Belladrum, Fort Wellington, Ferry, Leguan, Wakenaam, ... 8c. per oz.
To New Amsterdam, Spring Garden, Zorg, Williams' Town, Henrietta ... ... 12c. per oz.

The famous rarity, the 2c. rose, was not issued until 1st March, 1851. Some twenty-six years elapsed before philatelists knew of the existence of this stamp. The first copy was chronicled in England in 1877 ; and it was not until about forty years after issue that the purport of its existence became known. This is best explained by quoting the notice in the "Official Gazette" of 22nd February, 1851, first unearthed by Mr. James Rodway, F.L.S. :—

NOTICE.

"By order of His Excellency the Governor, and upon the request of several of the Merchants of Georgetown, it is proposed to establish delivery of Letters twice each day through the principal streets of this city, viz ;—Water St., Main St., their intermediate Streets, and the Brick Dam, as far as the Roman Catholic Chapel.

"The following gentlemen have consented to receive Letters for delivery at their respective stores, that is to say—Mr. Carpenter and Mr. Richardson in Water St. ; Mr. B. L. Watson and Mr. F. H. Stewart in Main St. ; Mr. Torres in Brick Dam.

"Each letter must bear a stamp, for which two cents will be charged, or it will not be delivered, and when called for will be subject to the usual postage of eight cents.

"The deliveries will take place at 10 a.m. and 2 p.m. every lawful day.

"Stamps may be obtained at the Post Office or at any of the receiving offices.

"This delivery to commence on 1st March, 1851.

(Signed) E. T. E. Dalton.

Post Office, Georgetown, 22nd February 1851.

The delivery of letters in Georgetown was discontinued shortly after the service was initiated, which no doubt accounts, in some measure, for its great rarity. Possibly the small stock of these stamps on hand at the Post Office were used to prepay the higher rates of postage as pairs are known, also a copy postmarked as late as October, 1851.

The stamps of this issue were initialled by one of the Post Office officials in black, blue, violet, or red inks and occasionally in black pencil, before being issued to the public, obviously as a safeguard against frauds. Copies are also known without initials, due to an oversight on the part of the postal official who issued them.

The initials found on these stamps are :—

E. T. E. D.	the initials of	E. T. E Dalton, Colonial Postmaster.
E. D. W.	,,	E. D. Wight, clerk in P. O.
J. B. S.	,,	J. B. Smith. do.
H. A. K.	,,	H. A. Killikelly, Postmaster of Georgetown.
W. H. L.	,,	W. H. Lorimer, clerk in P.O.

The stamps of the 1850 issue, which were in use up to the end of 1851, have always attracted collectors on account of their scarcity, especially in fine condition cut square. Up to the year 1877 they were little known in England and less so on the Continent, only some twelve copies being then in existence.

Large finds were made by Mr. G. Wyatt and Mr. Daly in Georgetown during the years 1877 and 1878, chiefly the values 8c. and 12c. These stamps were sold in England, when most, if not all, of them were examined by Judge (then Mr.) Philbrick. Writing on this issue, he refers to having examined upwards of 100 . . . . of all values of this issue, critically, besides many others more or less imperfect and refers to them as coming over "in number."

The only one priced in S. Gibbons & Co. and Pemberton, Wilson & Co.'s catalogues for 1882 is the twelve cents blue, used, at 40 shillings. The values affixed by S. Gibbons, Ltd., catalogue, 23rd Ed. for 1912–13 are :

		□ used	○ used
4c.,	orange	...	£30
4c.,	lemon yellow	...	...
8c.,	green	£70	£30
12c.,	blue	£30	£15
12c.,	indigo	£40	£15

The 2c. stamp and 4c. on pelure not being priced.

The great rarity of this issue, —the 2c. printed in black on rose coloured paper, is one of the world's rarest stamps, under a dozen copies being known. A history of the rise in value of this rarity is interesting.

The first recorded price paid for a copy, the second one discovered, was £20, purchased by the late Judge Philbrick, one of the pioneers of philately in its earlier days and a household name where early Guianas are mentioned, he having specialized and written extensively in the late sixties and seventies on the issues of this colony. The first discovered copy found in 1877 changed hands in 1878 at £25 ; in 1883 it sold for £30 and in 1877 for £75. In 1893 a copy of this stamp realized £210.

Only three pairs of this rarity are in existence, the first discovered pair passing into the collection of Baron von Ferrary of Paris.

The first recorded price fetched for a pair of these stamps was £175 in 1890. In 1896 the third historic pair was discovered by Archdeacon F. P. L. Josa, who tells the following tale :—On Easter Monday of 1896, Archdeacon Josa, then Vicar of Christ Church, went to thank Miss Preston for the gift of two British Guiana Stamps of 1852, which had been presented by her to the Church. Whilst there, he enquired if she had any more old stamps, the lady replied, she had given all away but brought out a basket filled with old papers and allowed the Vicar to search, when he was rewarded by discovering an envelope addressed.

Miss Rose,

Blankenburg.

On it were two of the 2c. rose stamps of 1850, an unsevered pair, cut to shape. The lady to whom the letter was addressed was in the room at the time and presented this valuable envelope as an Easter offering to the Church.

The pair was sold in the colony for $1,005 to Mr. E. C. Luard who resold it shortly afterwards to Messrs. S. Gibbons, Ltd. for £600. From this firm it passed into the hands of a well-known philatelist in London, in whose wonderful British Guiana collection it now rests.

The system of charging postage on letters by distance did not meet with approval, and a uniform rate on letters and newspapers forwarded to all parts of the colony was introduced on 1st January, 1852, viz :—

On	lettters	under ½ oz.	4 cents.
,,	,,	exceeding ½ oz. under 1 oz.	8 ,,
,,	,,	,, 1 oz. and under 2 oz.	12 ,,

and four cents for each additional ounce

and each newspaper 1 cent.

Newspapers had been allowed to pass through the post, free, previous to this new postal rate. This charge was not enforced long, for in the *Official Gazette* of 3rd April, 1852, there appears a further notice allowing newspapers to be forwarded free of charge, pending the passing of the Inter-Colonial Postage Ordinance.

THE 1852 ISSUE.

This issue consists of two values. Designed and manufactured by Waterlow & Sons, Ltd., of London. Engraved on copper and reproduced by lithography. Black impressions on surface coloured wove paper, without watermark and unperforated.

1c.,	black,	on	Magenta	(shades).
4c.,	black,	on	blue	(shades).

The design of these stamps which are of a large upright rectangular shape is :—A single black-lined rectangular frame with a plain shield in the centre containing a ship sailing to the right ; on the left background is a fort and on the right background another ship in the distance. Above the shield the value in numerals and block letters, below the motto of the colony " Damus Patimusque Vicissim " in small block letters. On the left of the shield is the word " BRITISH " reading upwards, on the right the word " GUIANA " reading downwards.

Two impressions of the design were engraved for each of these two values, and these two varieties occurring side by side were reproduced by making transfers on a lithographic stone.

These two engraved designs are easily distinguishable from each other—in the " One Cent " by the absence of the period after GUIANA in one design ; and in both values, by the shading of the waves and slight differences in the details of the fort.

A peculiarity about the engraved motto is, that the word " Petimusque " is erroneously engraved as " Patimusque " in both dies, which must be attributed to the workman's ignorance.

A comparison of the catalogued value of these two stamps in 1882 and by S. Gibbons' latest catalogue is appended.

	1882	1912-3
1c., black on Magenta	20/-	£10
4c., black and blue	30/-	£12

Reprints of both these values were made about 1864 by Messrs. Waterlow & Sons, Ltd. on brighter coloured and thicker paper, perforated 12½. These reprints were never issued for postal purposes nor is it certain that they were ever intended for postal use, as the following extract from a letter of Mr. E. T. E. Dalton, Colonial Postmaster, dated 5th December, 1864, points to another intent :

" I do not believe it possible to obtain any of our first issue ; they were in use only a few months, and were struck off from time to time to meet the wants of the office. The second issue was the " Patimus " lot ; we have to thank the engravers in England for the mistake. You can have a few of these if you wish. Having been applied to by most of the

Colonial Governments for complete sets of all stamps issued by the colony, I have had a few sheets struck off of those old stamps from the original dies to enable me to comply with their request. I can therefore spare a few to collectors at their actual value ; viz., the amount they represent respectively. As they are not to be used for the service of the Post Office, and can only be obtained in small numbers from this Head Office, they will be rare, although, of course, not so rare as they have been."

The above was written to Judge Philbrick in reply to his enquiries on the subject. The stamps sent by Mr. E. T. E. Dalton were the *reprints.*

THE 1853 ISSUE.

The somewhat primative and no doubt hurriedly produced issue of the preceding year, was followed by a more compact and attractive design, better representing the high class lithographic work of the well-known firm of Waterlow & Sons, Ltd., of London.

The design represents a full rigged ship sailing to the left within an oval white band, around which the Colony's Motto "Damus Petimusque Vicissim" in small coloured block capitals is inscribed. The whole being enclosed in a rectangular frame of four straight labels, bearing the word "British" on the right, "Guiana" on the left, "Postage" at the top, and the value at the bottom ; these being all in white roman capitals with serifs, on a coloured background. At each corner a single figure reading collectively 1853. The parts of the labels not occupied with the inscriptions being filled up with a rough network in colour. The spandrels between the oval band and the labels are filled up with solid colour in concentric circles.

The design of this issue is fully described ; as it was the first executed and accepted design for the postage stamps of this Colony, the main characteristics of which have appeared in every subsequent issue, except the pictorial series issued to commemorate the Jubilee of Queen Victoria's reign. And these stamps are only excelled in beauty of design and fine printing by the issue of 1863.

This issue consisted of only two values, viz : 1c. in shades of vermilion, brown-red ; and reddish brown and 4c. in shades of blue. The stamps were produced by lithography and printed on white wove paper varying in substance ; and unperforated. The accepted theory up to quite recently was, that both values were produced from a single die engraved on copper, the bottom labels of value being separately engraved. Impressions from the parent die sufficient to make up the required number of stamps for the sheet (supposed to be 100) were reproduced on transfer paper ; these transfers were pasted on another

sheet with regular intervals between; a number of labels of the value required, similar in quantity to the number of stamps on the sheet, were then printed, cut out with scissors, pasted on the bottom of each impression and the whole then transferred at one operation to the lithographic stone. The white line above the value of these stamps was accounted for by the imperfect juxtaposition of the two portions of the specimen, caused by the workman not pasting the label high enough to touch the upper portion of the design. This issue has been the subject of an able paper written by Mr. M. P. Castle, M.V.O., dealing lengthily with the subject. The outcome of Mr. Castle's researches has been to modify the theory of the double dies. The theory now advanced is, that the first parent die was a complete engraved design of the 1c. stamp, including the value. In support of this we have the remarkable fact that none of the 1 cent stamps of the vermilion shade: which was the first colour in use as is established by the numerous postmarked specimens in existence, has the slightest trace of a white line, or any other mark which would betray a process of construction of this shade. While the 1 cent value in the red-brown shades, the earliest postmark of which is 30th March, 1857, and the 4c. blues, all show in a more or less marked degree that process of construction which has been described above. The want of precision and hurried workmanship in putting on the value labels, are in many instances, flagrant.

In the printing from the original 1c. die in the vermilion shade, no varieties have been found. In the later printings in the redish brown shades four distinct varieties of the value label "one cent" has been discovered. These for convenience of description are lettered as follows :—

(*a*) the vermilion shade with regular lettering.

(*b*) O of cent Elongated; *nt* slant slightly.

(*c*) O small and slanting, *t* bold.

(*d*) O narrow but upright, *t*, thin, serifs thin prolong to left and away from *t*.

(*e*) One Narrow, Measuring, 3 mm.

These varieties, and the signs of composite construction of this stamp, indicate that the original complete die was not utilised, and it is surmised that an order for a fresh supply of these stamps having been received by Messrs. Waterlow & Sons, late in 1856; recourse was made to the complete lithographic stone of the 4c. value, presumably because the complete stone of the 1c. may have been destroyed and the original die misplaced.

No Official Notice of the date of issue of these two stamps has been unearthed; our only record being dated specimens: the earliest known being the 4c. dated October 18th, 1853, and the 1c. vermilion dated September 1st 1855, no doubt they were in use at earlier dates, which we hope may be forthcoming.

It may be of interest, as indicating the rise in value of this issue to give the catalogued value at the present day and 30 years ago. They are for used specimens.

		1882	1912/3
1c.,	vermilion	7/6	100/-
1c.,	dull red		75/-
1c.,	red brown		75/-
4c.,	blue (shades)	5/6	30 to 35/-

In 1860 the 4c. value appeared printed from a fresh die; the main difference being that the figures indicating the year 1853 wer enclosed with a white frame in each corner. There are no variations of colour. This supply must have been a small one, as the stamp is very scarce, catalogued—in 1912 at £3.

THE 1856 ISSUE.

The next issue and fourth in point of order, was the provisionally produced stamps of 1856; printed by Messrs. Baum & Dallas at the Royal Gazette Office, 23, High and Church Streets.

The printers, in making up the design of this provisional stamp, no doubt desired to emulate the productions of Messrs. Waterlow & Sons, in their first efforts in supplying stamps to this Colony: by producing two stamps, similar to the 1852 issue, in value and in the colour of paper employed.

While Messrs. Waterlow & Sons were enabled to produce the 1852 issue from two engraved dies on copper reproduced by lithography, our local printers were constrained to resort to ordinary printers' type, to make up the design from which the stamps were printed.

The chief features of the design are:—A "ship" such as was used for the heading of the shipping column of the *Royal Gazette*, occupying the centre; above this the words "*Damus petimus*" and below "*que Vicissim*" in small type, enclosed in a frame formed of printers' rule. Outside of this frame are the words BRITISH at top, GUIANA at bottom; POSTAGE (reading upwards) on left and FOUR CENTS (also reading up) on the right in roman capitals.

The number of stamps, each of which varied slightly in the relative position and spacing of the inscriptions, which went to make up a sheet; is unknown. And they have always been too scarce for any one to attempt plating. Pairs are practically unknown.

The accepted catalogued varieties of this issue are as follows :—

On surface coloured paper (couché)

1 cent black, on Magenta
4 ,, ,, ,, do
4 ,, ,, ,, blue

On paper coloured throughout

4 cents black, on dark blue.

These stamps were initialled before being issued, as was the custom with the 1850 issue. The recorded initials are :—E.T.E.D. ; E.D.W. ; W.H.L. ; named under the 1850 issue and in addition C.A.W. the initials of a letter carrier named Watson.

Of the ONE CENT value, there is only one specimen known, which is in the collection of the distinguished philatelist Baron Von Ferrary of Paris. The history of this find is interesting. Mr. L. V. Vaughan in searching through some family papers in 1873 came across this stamp, a poor faded copy cut octagionally, which found a place in his collection. It was shortly afterwards sold to Mr. N. McKinnon for 6/-, in whose collection it remained for some years when he parted with it for £25.

Mr. E. L. Pemberton, the well-known dealer of the Seventies, in a letter to Judge Philbrick in 1878, stated that this stamp was offered to him together with four of the circulars for £110, but he neglected to close with the offer until too late ; and it was eventually sold with the four circulars in a small collection, for £120, to a Liverpool Merchant.

The next change of ownership was to Baron Von Ferrary at a price which has never been made public.

It seems rather remarkable that no other copy of this value is known, while numbers of the 4 cent value on the same magenta coloured paper, although itself a rarity, are in existence. It has been conjectured that the ONE CENT was a printer's error in one of the stamps on the FOUR CENT sheet which was discovered early and immediately corrected.

Although Judge Philbrick communicated with the local printers personally, for particulars about these stamps, no information was forthcoming to lift the veil of mystery that shrouds this issue even up to the present day.

Various estimates of value have been assigned to this unique specimen varying from £2,000 to £5,000 ; but as it has never been on the market, these estimates are only imaginary. It is quite safe to assert, however, that a record price would be obtained should this specimen ever be put up to auction.

The FOUR CENTS.—Next in the rarity comes the "four cents" printed on deep blue paper coloured throughout—another of the world's great stamp rarities—the value of which runs into several hundred Pounds Sterling. The "Four Cents" on surface blue coloured paper, though not by any means as rare, is at the present day valued at £150.

The first recorded copy of the "Four Cents" on blue paper, was the specimen shown by Rev. F. J. Stainforth at a meeting of philatelists held in the old Mark Lane rectory in 1864. This specimen he purchased from the then leading dealer and cataloguer, Mr. Mount Brown, for £3.

The FOUR CENTS on Magenta Surface Coloured paper, though not in the run with the above described varieties, is a scarce stamp which is priced at the present time at £25.

The sequence of the issue of these varieties has only, so far, been settled hypothetically; by a comparison of dated copies with the following result:—

4c. Magenta	earliest date known	27 February,	1856
1c.	do.	do.	1 April, 185 (6?)
4c. blue (blue throughout)	do.	15 August,	1856
4c. blue (surface coloured)	do.	November	1856.

It is remarkable that although the colour scheme then, was red for the 1c. value, and blue for the 4c. value, we find that in these provisionals the 4c. is printed on both colours of paper and that the magenta coloured paper (for the 1c. value) should have been more largely used. Possibly the stock of red paper became exhausted and recourse was made to a blue paper, but why the blue was not used at first is a mystery.

The period during which these stamps were used was about ten months. It is not, however, to be supposed that there was a continuous deficiency during that period, but rather that the Post Office used up the stock of provisionals which were requisitioned by the deficiency early in 1856, in conjunction with the fresh consignment of the normal issue of 1853 which had been supplied by Waterlow & Sons in 1856.

The catalogues of the early seventies included a 1c. and a 4c. on yellow paper, also a 4c. red brown; the existence of which stamps are now acknowledged to be mythical.

The Year 1860 saw the transfer of the control of the British Guiana Post Office from the Imperial Post Office of Great Britain to the British Guiana Government; as the result of Mr. Anthony Trollope's visit to this colony to report on the desirability of the change. With this alteration of control came a new issue of stamps of the values 1c., 2c., 4c, 8c., 12c., and 24c. which were available for use not only in this colony but for England and other countries. Previous to 1860 all correspondence to England and abroad was prepaid by English stamps of the values of 1s.,

6d., 4d. and 1d. which were supplied by the British Post Office to the deputy in this colony. These English stamps used in this colony may be distinguished by their postmarks which were AO3 and AO4.

This epoch of a decade, is the most interesting in the philatelic history of British Guiana. A period full of rarities of the first order, whose rise in value in the philatelic markets of the world is a good indication of their scarcity. Stamps, in many instances so crude and unattractive in appearance, that the wonder is, so many have survived. And this is to be attributed to the methodical and accumulative habits of those who lived over a generation ago, carefully putting away correspondence with the covers attached, which has been discovered by others who have come after them.

At this point my remarks on the early issues of British Guiana may conveniently end.

LIME-GROWING ON CLAY SOILS.

By Edgar Beckett.

All agriculturists are agreed on the difficulty that exists in growing a crop of any kind on a soil that is altogether unsuitable. A good example is ever before us of what can be done where skill and care are combined, by the really wonderful results that were obtained by the late G. S. Jenman, under whose loving hands has arisen from the infertile, heavy clays that obtain in our Gardens, a flower garden and park land which for beauty and the crowning effect of a display of palms, can rival many gardens in the world.

Citrus plants delight in this colony either in the red lateritic soils that are found more or less inland, the light sandy loam of Essequebo and other portions of the colony, and the poor sandy soils which are met with in various districts throughout the three counties—if distant from the sea. When one grows such a member of the citrus family as the lime on heavy clays, then it is one realises that the idea, so commonly believed in throughout the colony, that limes will grow and thrive anywhere, is a monstrous myth.

No one who has not had practical experience with some of our heavy clays can realise their nature. In the dry season they crack and gape and are responsible for many a workman's broken fork ; in the wet weather they retain such an excessive amount of moisture and are so absolutely unworkable, that the truth is borne in at once on one's mind that such soils cannot possibly be overdrained.

Drainage is, therefore, made as perfect as possible. Then a drought appears and the want of moisture and the bitterly parched appearance of the soil is the despair of the grower.

All the troubles that a heavy impervious clay soil gives rise to, sink into insignificance when such a soil is supporting the lime plant. Then indeed is one compelled to summon to one's aid every resource, either practical or theoretical, if success is to crown the efforts made.

But it has been proved that even so disreputable a soil can, with judicious care, be made to bring forth fruit at a reasonable cost.

In the first place one has to give the lime plants a good start in life —a very important item in all life, plant or animal. To do this there must be a careful selection of seed. It is amazing what results of a disappointing nature do arise, when the progeny obtained from limes growing on a very light soil, are brought under the conditions afforded by heavy clays. Some of the results are almost fantastic.

Not only is the growth under these circumstances stunted, but the habit assumed is quite different from that of the lime. Having selected seeds from trees growing on soils of a fairly heavy nature which are good bearers and in sound health, yielding juicy thin-rinded fruit, the next step is to prepare suitable nursery seed-beds.

Before the trees have obtained a sufficient size and are ready for the field, careful work will be necessary for the preparation of good, high mounds for their reception.

To do this one must dig holes about two feet in depth and three feet in diameter, slightly breaking the edges and bottom with the fork. From the bottom of the hole a straight drill about eighteen inches in width and two feet deep should be dug sloping to the ordinary small drain. If this is not done the holes will act as "water-traps" when the heavy rainy season comes. Such holes must be left open to wind and sun for a considerable period. They should then be filled in with the soil already taken out, on which the action of the sun will have now had a beneficial effect, together with what surface soil there may be available.

It is presumed, of course, that the ordinary saddle-backed three "rod" beds are utilised. Unless care is exercised in seeing that the soil is well chipped and worked with the shovel, there will be a considerable sinking of the edges around the holes, in which case, of course, water will collect around the holes during the rainy season, with disastrous results to the plants.

Then it is important that the young plants are put out in the fields at the very beginning of the rainy season, otherwise they will be subjected to deluges of rain before they have made much root action, with results obviously disappointing to the planter.

When one has decided on actual planting operations there is still trouble ahead. It is a fact beyond dispute that in this colony where crops are generally hardy, and experience has been mostly in connection with planting cane-tops, the most extreme rough-and-ready methods prevail on the part of the labourer. Such things as root-hairs are unknown, so that unless a special gang has been trained to carry out the necessary transplanting from the nursery beds, one will be horrified at the manner at which such work is attempted. After having dug up the plant with a good mound of mother earth, a hole has to be dug in the mound itself, the plant placed in it with the roots conveniently spread; the earth having been firmly put round it with a trowel or some such implement, the operator should then stand on the mound with the tree between his legs, and carefully and lightly held by the hands. A sharp, sudden, downward, heel-and-toe motion, must then be given. He must then step off the mound and again step on it, this time with his heels and toes in the opposite direction, and again go through the same performance. It is a mistake to dance around the tree and "bake" the soil around the stem. There should then be a light moulding with the

shovel, nor must there be any neglect in watering the plant with an ordinary watering can, as soon as it is put into the ground. This will help to settle the roots and should be done even if it is raining at the time of planting.

It is important also to cut back the branches a few inches at the time of planting. Too much care cannot be exercised with regard to the keeping of the roots protected when being transported, and whilst awaiting their turn at being put into their permanent places in the field. Too often the plant is put upon the mound by the "creole" gang, the sun being allowed to beat pitilessly down upon the more or less exposed root system. A safe distance for spacing is fifteen feet by fifteen feet.

The holes having been carefully prepared, the plant can make a good and rapid start, its roots penetrating the loose soil easily. However, unless the most excellent drainage is afforded, nothing whatever can be accomplished. Heavy clays in rainy weather from the feet of the labourers soon become trampled and hopeless, so that it is most important not only to guard against this, but to keep all small drains well dug and an efficient sideline draining trench.

At an early period, long before actual planting has been thought of, consideration must be given to wind-belts. If there is no natural wind-belt a quick-growing tree, such as the *Erythrina*, must be established. Though not altogether suited to this purpose, yet from its quick-growing habit of growth, its nitrogenous-bearing nodules, its facility at establishment and its relative cheapness, it is by no means to be despised.

Whatever means are adopted it must be clearly understood that protection from wind is a *sine quâ non*, as not only does exposure to the wind mean a dwarfed habit of growth, but the flowers of the lime are very readily blown off. There need be no protection from the sun, but on such a soil as we are writing of, it is exceedingly useful to grow *Erythrinas* right through the lime beds. By this we do not mean these *Erythrinas*, or as they are known generally, Sand-kokers. Oronoques or Bois Immortelles, must be allowed to grow into large trees overshadowing the lime plants, but that they should be established throughout all the beds, and at stated intervals cut right back to almost bare poles. Not only will the leaves afford a most excellent mulch but these prunings will also. By utilising the Erythrinas in this way, the surface soil will be immensely improved by the fall of leaf—the trees are deciduous—whilst the roots of the Erythrinas will open up and aerate the surface soil; as limes are essentially surface feeders, and as such a soil must be encouraged to keep their roots on the surface, the immense amount of good a judicious use of this tree can be made to perform can only be estimated by those who have tried it.

When the trees have grown somewhat and the mounds have begun to settle down, then it will be necessary to fork around them, so as to get a certain amount of tilth ready for the roots as they spread. Here

again care is very necessary. A careless workman will, by forking too close to the roots, destroy the feeding area and absolutely murder the plant. Also the operator must keep his back to the plant as he works and not fork towards it, otherwise there is a tendency on the part of the feeding roots to curl back towards the stem.

Shallow planting has also to be avoided. Limes being ordinarily surface feeders, under such conditions their roots are scorched during the day and chilled during the night. On the other hand, if planted too deeply, the roots may run for food and moisture to the sour soil below.

Mulching is an operation that is very often carelessly performed unless very strict supervision is given. If the plants have been planted too deeply, mulching, though ordinarily the most beneficial of operations may become a grave danger. The practice of heaping a quantity of grass and weedings generally quite close to the stem, where it lies and rots, is a common one, but this is not mulching.

But not only is the soil itself a fearful handicap to the grower, but what it supports is also a source of continual annoyance and anxiety. It is obviously impossible to expect to keep a young cultivation entirely clean weeded, it is only possible to keep an area around the young plants clean of weeds, gradually increasing this as the trees grow larger, with an occasional brushing down of all grass and bush with the cutlass. But one has to contend with the all-powerful razor-grass. No one who has not experienced it can realise to what a state of impenetrable dense jungle this greedy grass can attain. No cover crop in the world can fight with this mighty foe. Nothing can rival it, floods seem but to make it more sturdy, while fire only serves to make it spring again with fresh luxuriance. To fork it up by the roots and transport it from the field is not an operation which the practical planter can contemplate, if he is growing his limes as a commercial venture.

The amount of laceration the saw-like edges of this grass can inflict on the one ignorant as to how to get through it, will give some idea as to the blood-thirsty nature of this pest.

Next is the hardy, tight-clinging "iron" or "wire" grass, a comparatively small tuft of which will defy the persuasive powers of a really strong man to pull out by the roots. This enemy must be constantly forked up, otherwise the lime plant stands not the slightest chance of making any progress, as it binds the surface soil around to such an extent as to make it so impenetrable that the unfortunate lime plant so surrounded remains dwarfed and stunted, a ready prey for any disease and a fit subject for a severe attack from various scale insects. Such a tree soon assumes a golden hue and is a menace to healthy trees in the neighbourhood.

We pass over, after this, such tritling foes as guava bush, congo pump (*Cecropia peltata*), *Hydrolea spinosa*, with its beautiful blue-

tinted flowers and ruthless spines, the wild cassava vine and numerous other bushes and creepers, to deal with the more serious business of keeping a bright look-out for the parasite known as Bird Vine (*Loranthus spp.*), which finds the lime plant a very convenient host.

This Demerara mistletoe is a most cold-blooded murderer. Its berries are particularly attractive to birds by means of which agency it is quickly propagated—carrying death and destruction wherever it is allowed to hold its sway.

The disc, with which it is furnished, sticks to the stem of the tree and soon begins its work of death, draining the life sap of its host and spreading its wicked clutches eventually all over the branches until it sucks its host dry. As the tree gradually dries up it spreads to others and the careless or lazy planter wakes up to find a large portion of his cultivation attacked. The only way to deal with such a ruthless foe is vigorously to attack it on its very first appearance. Once it has gained a foothold, the cost of thorough eradication is almost prohibitive. The wise planter is at pains to see that no such trees as the casuarina and others which appear to be very liable to such attacks, are allowed to remain in the neighbourhood of his lime cultivation.

Citrus plants of all kinds are ready preys for attacks of scale insects, but it is the man who is growing limes on a heavy clay who knows what these attacks will mean if not treated with that degree of promptitude which goes with recognition of the truth of the adage, "Prevention is better than cure." Limes on clay soils are most subject to attacks of such scale insects as the orange snow scale (*Chionaspis citri*), the West Indian red scale (*Aspidiotus articulatus*), and the brown shield scale, so commonly seen in this colony, (*Lecanium* sp.), whilst a constant look-out must be kept for the most dangerous of all—the damaging mussel scale (*Mytilaspis citricola.*)

To deal effectively with scale insects good knapsack-sprayers must be employed, and the art of correct and timely spraying must be thoroughly taught those who carry on this important branch of work. The compound rosin wash has been proved a most useful and cheap insecticide. Next, as the trees increase in size, all decayed and dead twigs and branches must be properly pruned away.

Here again the labourer has, in this colony, to be carefully taught how to do this and how and when to apply antiseptics. Though limes, unlike oranges, require little pruning yet, nevertheless, young gormandizing suckers must be removed if one has any regard to getting a good crop, and does not wish to see those branches which should be laden with fruit, dying back.

Apart from scale insects we have found young nursery plants most severely attacked and damaged by Flea beetles (*Halticidae*). These can prove most destructive. Our readers will doubtless be familiar with

probably an allied species (*Phyllotreta nemorum*) which often ravages turnip and such like crops. Though paraffin is very useful we have found arsenate of lead completely routed these pests. It is wise to keep all young nursery stock as moist as possible as flea beetles love to get to work in bright sunshine.

We have noticed these flea beetles in the fields in large quantities on the plant known locally as "burra burra pimpler"—a species of Solanum, so possibly this is one of its natural food supplies.

The troubles of the lime-grower are not by any means ended yet. Possibly there is a Cushi ant's nest in the neighbourhood—then woe betide the luckless planter if he does not destroy this voracious pest by the judicious use of carbon bisulphide, otherwise he will wake up one fine morning to find that a large number of his trees has been completely defoliated by these intensely interesting, but terribly destructive, insects.

But all these troubles are mere trifles when compared with the gumming troubles of citric plants growing on heavy non-porous clays. Whether or not there is the specific fungus, *Fusarium limonis*, which is responsible for so much damage to the orange and lemon trees of Florida and Italy, the damage caused by gummosis arising from physiological causes is quite sufficient to drive the lime grower to despair. Exudations of gum burst through the bark in patches near the base of the tree as a rule, and more often than not the tissues are killed, bark, cambium and wood being affected. When the disease destroys the cambium around the tree it is girdled, and, of course, death ensues.

Often the gumming takes place out of sight at the base below the soil, and as gummosis must be dealt with as quickly as possible, a bright look-out and search for this disease has to be continually kept. Hence if the trees begin to turn yellow and there is a certain amount of dying back of the smaller branches, it is wise to suspect some gumming trouble.

It will be seen that growing limes on a heavy clay soil is not by any means so simple a matter as many might suppose, and that the "common lime," as it is generally referred to in this colony, can teach us many a useful lesson, not the least of which is contained in one of Dickens's letters, where he writes: "Whatever the right hand finds to do must be done with the heart in it."

The anxieties are many and the work is arduous and often disappointing, but it can and has been done, in spite of cast-iron dogmas which state the contrary. Furthermore, the feeling that one has to conquer so unkind and unsuitable a soil saves the lime-grower from sinking into that state of mind which often accompanies work which settles down into a monotonous routine. Too often many planters "lose their powers of vision like horses who turn mills in the dark," when they allow routine's deadly grip to reach them.

BUTTERFLIES AND MOTHS.

Their Ways and Habits.

By H. W. B. Moore.

To the July number of this journal I contributed an article on the "Ways and Habits of Caterpillars," and I shall now mention a few facts illustrative of the "Ways and Habits of our Butterflies and Moths," the ultimate forms Caterpillars assume.

Butterflies are diurnal in their habits, moths nocturnal. There are, however, exceptions to these rules, some butterflies being nocturnal or crepuscular, and some moths diurnal, the exceptions being, as would be expected, more numerous among the latter, since these are so much more abundant in number and kinds than the former. The various species of Caligo, Brassolis and Opsiphanes, may be pointed out as butterflies that may be observed to be active in the evening twilight. I have frequently seen males and females of *Brassolis sophorae* besporting themselves at and after sunset. The members of the Brassolinæ are the only butterflies I can name that are not strictly diurnal.

Many butterflies are essentially creatures of the sun and love the open. On the other hand, there are many which love concealment, and consequently keep beneath or among the thick, low bush on dams and the dense undergrowth in forests and gardens, or alight on the bare, dark earth in the shade of trees. The Satyridæ afford the best examples of this class. Most of them are of sombre hues which admirably suit their retiring habits, while others have smoky transparent wings, which render the owners virtually invisible when they alight on bare patches of humus-covered earth in the forest gloom. *Euptychia hermes*, a rather small, dark brown insect with a row of eye-spots round the border of the undersurface of the wings, is very common in the dense parts of the Botanic Gardens, and among the thick crop of weeds which usually crown our dams. Late in the afternoon between five and six o'clock, it will often leave its bushy fastnesses in numbers and seek the open to sip moisture from discarded bits of sugar cane. Those Satyrids with transparent wings, certain species of Hætera, belong to the forests, and begin to be met with a few miles up No. 1 Canal, on the West Bank.

Among moths there are several families containing forms that are diurnal in habits to a greater or less degree. Among the Tineids there may be mentioned as strictly diurnal the species of Gauris, broad-winged insects, dark orange and yellow, blended so as to form exquisite patterns, and often glittering with gilded or silvery streaks or points. It is the delight of these insects to settle on leaves exposed to the blazing sun, and there display the richness of their colours. Some other Tineids,

narrow and elongated, with hairy wings that scintillate with pearly blue spots, or that have the appearance of being glossed over with silver, alight on leaves in the brilliant sunshine, and circle round in a mad dance, now from right to left, now from left to right, their long antennæ quivering the while. Many of these may easily be mistaken by an inexperienced observer for neuropterous insects,—insects of and entirely different order.

As to *Cydimon leilus* with fore-wings black and crossed transversely by several brilliant green bars, and with hind wings having white-edged scallops and a long white tail, it is as diurnal as the most diurnal of butterflies. None the less, it sometimes flies at nights to the electric arc lights on the streets, or even to lights in houses. It belongs to the family Uraniidæ, and is one of the most showy of our large moths. It is popularly known as the Christmas "butterfly," as it is thought to herald the advent of Christmas. Its diurnal sun-loving habits along with the brilliance of its livery may well cause it to be popularly considered as a butterfly. During the mid-year months of the year it is also often abundant, and was particularly so this year, having been present in thousands during June to August all along the coast from Berbice to Essequebo.

The family of the Sphingidæ or hawkmoths contains forms known as the humming-bird hawk-moths, species of Macroglossa, that are frequently met with by day. In their manner of flight and feeding they behave much like humming birds, but are seen at close range to lack the latter's sparkling iridiscent flashes of colours. On wings vibrating with incredible speed, they poise before a flower to sip the nectar with their tongue, and then dart off like an arrow to another. Quite bold they are too, for they halt at a flower so close to us that we can distinctly hear the hum of their rapidly vibrating wings. Only a moment they give us for admiring and studying them at such proximity; at the next they are ten or twenty yards away hovering before another flower. So humming-bird-like are their actions and general appearance on the wing that the great naturalist Bates records in his book, "The Naturalist on the Amazons," that he sometimes shot them by mistake for humming-birds. One of our commonest is *Macroglossa tantalus* with a broad striking white band on the middle of the upper surface of the abdomen.

Castnia licus, of the family Castniidæ, richly hued, shot with brilliant green and violet reflections according to the angle at which the light strikes, the caterpillar of which is so destructive to our sugar canes, is diurnal, as are other members of this fine family.

The big family of the Syntomidæ could furnish us with several examples of moths that are diurnal, or somewhat so, in habits. *Dycladia xanthobasis* is such an one. It flies about the leaves of low-growing plants by day, and may be overlooked as one of the Lycidæ, a family of beetles said to be unpalatable to such insect enemies as birds, while the large-bodied *Isanthrene melas* looks rather bee-like, as, late in the afternoon, it deliberately wings its way from flower to flower.

Certain Geometers and Arctiids are often seen abroad by day Among the former, mention may be made of *Anisodes rudimentaria*, a fragile creature, whitish brown, delicately freckled with rust. It may frequently be discovered settled, with fully expanded wings, in bright sunshine on the upper surface of a green leaf, and very closely adpressed thereto. In such a position it resembles a dried leaf that has been caused to adhere to the green one by water, as often actually does occur as a consequence of rain or dew. Among the Arctiids we may select *Utetheisa ornatrix*, the beautiful red underwing of the rattlebush, as an example of a moth that is sometimes active by day.

To sum up, it may be stated that, broadly speaking, butterflies which are crepuscular or nocturnal, or of retiring habits, are insects of comparatively dull colours, whereas moths which are diurnal are for the most part gaudily tinted.

The diurnal habits of butterflies as contrasted with the nocturnal habits of moths may be noticed even in the times of emergence from the pupa. Butterflies, as a rule, emerge from the pupa by day, oftenest in the forenoon, whereas most moths emerge at night. However, *Attacus hesperus*, our silk moth, of the family Saturniidæ, which, as far as I know, consists of night-flying moths, frequently emerges by day, in the early forenoon, while Hyperchiria, of the same family, emerges, it would seem, in the afternoon. Other Saturniids which I have managed to rear, also emerge from pupa during the daytime.

Certain butterflies, the Papilios, for example, are capable of strong, sustained flight, which renders them difficult to be captured. For attracting strong fliers with a view to their more easy capture, baits, such as molasses and other saccharine products, ripe or rotting fruits, may often be set with advantage.

Some butterflies, again, have a weak fluttering flight, and with these, long distance flying is out of the question. Among such may be mentioned *Sais rosalia*, and some other frail-built Ithomiinids of the family Nymphalidæ. *Sais rosalia* is a forest-loving insect, and about an hour or two after sunrise comes fluttering up from the shady retreats, where the night had been spent, in order to catch in the forest paths what little it can of the sun's light and heat.

Among the larger members of the same family there are the Heliconinæ and the Danaimæ that have a rather slow deliberate flight, and that have no objection to flying where they can be seen —along clearings, road-sides, dams, foot-paths, and over the tops of forest trees. The members of these groups, though showily coloured, are protected by possessing properties which render them distasteful to birds. Therefore they can afford to expose themselves and to fly slowly and fearlessly. In fact, their gay colours and manner of flight are believed to mark them out to their enemies as being uneatable. Of the first group *Heliconius melpomene*, black, with a broad red transverse bar or patch on the forewings, may be

taken as a typical example. This insect is only now and then seen near the city, but is common at the back of villages. As a type of the second, *Anosia plexippus*, the Asclepias, or wild ipecacuanha butterfly, fulvous and with black veins, seen in plenty feeding on the flowers of the food-plant of its caterpillar, may be selected. It is said that even mites, so destructive to insects in museums if adequate precautions be not taken to keep off their attentions, do not attack it in collections, and I have lately come across an incident which seems to show that some ants at least have no relish for it. A lad collected a few of our large moths and butterflies, and pinned them on a board to dry, but never thought he might have to reckon against an invasion of ants. Next morning it was found that every insect had been attacked except the Anosias.

The Ithomiinæ fly much like the Heliconinæ but never seem to quit the shades of woods or forests. Only one of these insects, *viz.*, *Mechanitis polymnia*, is seen near the city. It may be met with occasionally in the shady and bushy parts of the Botanic Gardens, either having been brought up from further inland by strong land breezes, or having been bred there naturally from the burra-burra, a species of Solanum, on which its caterpillar feeds.

Most of the Hesperiidæ or skippers have a strong rapid but not continuous flight. They fly generally short distances at a time, a sort of skipping flight—hence their common name of skippers. It is marvellous, indeed, how powerful stout-bodied members of this family will, even while copulating, dash with lightning velocity through a dense tangle of vegetation without so much as striking against a leaf or a twig, such opposing objects being dodged or eluded with incredible dexterity. Wallace was inclined to believe that the rapidity of flight of the larger skippers surpassed that of all other insects. "The eye cannot follow them as they dart past; and the air forcibly divided, gives out a sound louder than that produced by the humming-bird itself. If power of wing, rapidity of flight could place them in that rank, they should be considered the most highly organised of butterflies."

Among moths, modes of flight similar to those among butterflies may be observed. That of the hawk-moths, for instance, is surprisingly strong and rapid, so that the bigger of these insects, may, as they race about the street lights at nights, be mistaken for bats. That of the Syntomidæ is usually slow and deliberate, while that of the Pyralidæ and Noctuidæ is short but often very swift. The manner of flight of the Syntomidæ may be correlated with the resemblance which many of them bear to bees and wasps, a class of insects protected by a hard body and a sting, and to certain beetles which are distasteful to birds. The Uraniid *Cydimon leilus* is a very rapid flier, rivalling such swallow-tailed Papilios as *Papilio agesilaus* and *Papilio thoas*. It flashes by us so swiftly that it is gone before we quite recover from the pleasant shock occasioned by having been suddenly, and perhaps unexpectedly, brought

face to face, even but for a moment, with its exquisite beauty, which is much more enhanced and appreciated when seen in connection with the manifold and diversified surroundings of the wide outdoor world than in the tame and narrow confines of an ordinary museum show-case.

Some butterflies have a way of assembling at times in little flocks, when they may go through a series of beautiful aërial evolutions. Species of Heliconius act in this manner, and there is hardly a more pleasing spectacle than that of a number of one or more of the more showy species of this genus dancing in the sunlight in the openings at or near the tops of forest trees. With charming grace they move in and out among themselves. Living fairy kites would be a suitable epithet for them then.

The powers of flight of certain butterflies and moths are such as to enable them to cross fairly wide stretches of water. In July my duties took me down to the Essequebo coast. On the way to Suddie I observed thousands of *Callidryas eubule*, our yellow butterfly, flying across the Essequebo river from Wakenaam to Hog Island and Great Troolie Island. They were flying chiefly in one's, but two's, three's, and higher numbers were not infrequent, while once in a way a flock of twelve to twenty could be counted. The great majority were males. A few were flying in the opposite direction, or they had turned back, as though afraid to make the flight or had changed their minds. The insects looked much like bits of yellow paper being blown helter-skelter by wind, or like yellow flower petals streaming off from tall trees. Many of them pitched across the decks of the steamer. Soon after Kurubaru Islands were passed the butterflies were to be seen flying from the mainland towards Wakenaam. Going on towards Aurora and Suddie, they were seen flying up stream, following, it seemed, more or less, the direction of the wind. The captain informed me that such flights occurred only at certain seasons, and that a couple of weeks before the butterflies were so plentiful crossing the river at Bartica that it looked like snow falling. This, I expect, was another butterfly—a Eurema probably.

It is well known that *Callidryas eubule* migrates in countless myriads. One of these migratory swarms was observed by Sir Robert Schomburgk on the 18th of October, 1838, when going up the Essequebo River, and it continued crossing the course of the river for nine hours and a half, during which time his boat had ascended nine miles. A thousand million is not too high an estimate for the number of individuals in the swarm. The caterpillars feed on various species of Cassia, and many a Cassia must have been stripped of its leaves in the turning out of such a swarm. Some years ago Mr. Rodway, Curator of the Museum, on one of his orchid expeditions up the Demerara River, was also fortunate enough to witness a flying swarm of these pretty butterflies. The origin, destination, and cause of such migratory swarms are, I believe, still matters of speculation.

Other lepidopterous insects I noticed flying across from Wakenaam to Hog Island and Great Troolie Island were *Pontia monuste*, a goodly number, *Cydimon leilus*, a fair number, *Anosia plexippus*, a few, and one that appeared to be *Junonia cænia*, a very few. In most cases the insects did not fly very high above the water surface, and the stronger the wind the closer down they kept. On the return journey I observed *Cydimon leilus* crossing the wide stretch, between Leguan and Tuschen, about two miles, perhaps.

Anosia plexippus is also known to migrate in big swarms like *Callidryas eubule*.

The habits of a butterfly may vary in some respects in different localities according to circumstances. *Junonia cænia* may be instanced. On the coastlands it generally keeps to wooded places. It seldom ventures into the open or far from its shelter. One of its favourite haunts is the thick belt of eourida along the shore. On the other hand, on the open grassy savannahs, at Coomacca, on the upper Berbice River, I saw it besporting itself like other butterflies. Not a specimen of it was noticed in the clumps of wood. This difference in habit may be attributed to the absence at Coomacca of big dragon-flies, notably *Lepthemis vesiculosa*, the common green dragon-fly of our coast-lands, and, as far as I have observed, the greatest enemy of the Junonia, and also to the presence of long grass which could afford a ready-to-hand refuge in case of pressing need, as further instanced.

Ageronia feronia, a butterfly coloured like a Dominique or Plymouth Rock hen, has the power of making quite an audible curious sound with its wings. It loves to frequent places where there are numbers of big shady trees as in orchards and fruit walks, or on dams. Possessed of strong ample wings attached to a strong body, it is one of our most swiftly-flying butterflies, quite equalling in this respect the stout-bodied skippers and hawk-moths. Male and female flit about in play, or male and male in dispute for a mate, perhaps, with lightning-like rapidity, making the while with their wings sharp clicking or crackling sounds, which, according to the hearer's fancy, may be likened to the joints of a man's body cracking in quick succession, to a type-writer rapidly manipulated by an expert, to stiff paper being crumpled, or to an explosion of tiny squibs. So swiftly they fly and in such a maze of geometrical figures that it is a matter of great difficulty to follow them, the difficulty of doing so being largely increased by their complicated colouration of bluish grey, dark brown, and white. After a few seconds of giddy wheel and frenzied flight, they suddenly separate in different directions, and take a breathing spell by alighting head downward, on the trunk of a tree. Darwin mentions this butterfly as frequenting orange groves in Brazil, and refers to its stridulating powers and in its habit of alighting on tree trunks. Here it is fairly common in the cultivation aback of our villages and in that of cacao estates. Several other butterflies are now known to emit stridulating sounds, but *Ageronia feronia* is the first on which the

observation was made. The Cambridge Natural History says that butterflies of the genus Ageronia delight in settling on the trunks of trees rather than on flowers and leaves, and make a clicking noise with their wings, both when in flight and at rest. The object of the noise is quite uncertain, but it is suggested that it is done in rivalry or courtship, or to frighten away enemies. It has been observed, however, in South Brazil that the sound attracts a lazy little bird which swoops down and eats the clicker. The mode in which the sound is produced is not quite clear, but Sir George Hampson has pointed out that the fore-wings have at the extreme base a small appendage bearing two hooks, and that two other processes on the thorax play on these when the wing moves. His suggestion that these hooks are the cause of the sound seems highly probable.

Butterflies alight or rest with their wings expanded horizontally, or closed perpendicularly over the back, the latter being the more usual habit. Both ways of holding the wings may frequently be seen in some species, for example, in *Anartia jatrophæ*, our common marbled butterfly, while others habitually adopt either the one way or the other. The gorgeous blue Morpho, that wins the admiration of every traveller in our hinterland, and is the desideratum of many an insect collector, rests with wings closed and elevated perpendicularly over its back, so that their comparatively dull under-surface is exposed to view. This habit gives the insect the power of vanishing from sight most mysteriously. We see it, as it flies along, as a dazzling blue object that captivates the eye, and of a sudden it disappears. We advance to the spot where it vanished, and though we know it must be at rest on some twig or tree-trunk right before us, a careful scanning of our surroundings may fail to bring it into view. Indeed, the first indication we may have of its presence may be as we unintentionally startle it from a point scarcely a yard from us, and it resumes its flight as a conspicuous blue object. The Morphos belong to one of the subdivisions of the extensive family of Nymphalidæ, which, as a rule, keep their wings closed and elevated when at rest. *Gynæcia dirce* may be mentioned as another excellent example of a spectral or hide-and-seek butterfly. *Junonia cænia*, too, has the power of performing the vanishing trick, but in a different manner. If hotly pursued, it just drops plump down into tall grass or tangled bush, and no amount of searching will then find it, even though we feel certain we are rummaging the exact spot where we saw it descend. Twice this butterfly tricked me so, once near Kitty, and again on the Coomacca savannah.

The Lycænidæ, which may be called our "blues," also rest with the wings closed and elevated, so that the rich blue, which in most adorns the upper surface of the wings, flickers into sight only when the insects are on the wing. When at rest they often gently slide the wings up and down alternately, so that the delicate tails of the hind-wings keep up a vibration.

A goodly number of the Erycinidæ, creatures rather fond of shade and retirement, but beautiful none the less, ornamented generally with white, orange, yellow, or crimson, and often with eye-spots too, rest with the wings expanded, and very often, like many moths, on the under-surface of leaves. This moth-like habit of resting is well exemplified in species of Nymphidium and Eurybia. The richly coloured Diorhina and Ancyluris delight to run themselves on the upper surface of leaves, selecting for this purpose such leaves as are struck by a strong beam of sunlight that finds its way through the green canopy, or such as are on the borders of clearings or open spaces.

Many of the Hesperiidæ, or skippers, have a curious way of resting. Besides the usual modes of expanding the wings or of closing and elevating them, they often rest with the hind-wings but slightly raised above the horizontal, while at the same time the fore-wings are held up almost perpendicularly. The consequence is that all four wings are plainly discernible while the butterflies are at rest. This habit is most frequently seen among the Pamphilas and their close allies, and is most often indulged in when the day is hot, bright, and calm. It is their way of sunning themselves, and may be compared to a similar habit that exists among carrion-crows, which all have noticed on house-tops or other lofty perches, spreading out their sable wings to the brilliant sunshine.

Moths rest with their wings expanded horizontally at right angles or at acute angles with their body, or closed and sloping roof-like over their back. In the latter case the hind-wings generally partially roll up length-wise along their inner border, while the fore-wings lie sloping over them. If at rest on leaves they keep usually to the under-surface. The gorgeous black and green day-flying Uraniid *Cydimon leilus* rests on the upper surface of leaves, and keeps its wings expanded as though to enchant us with their surpassing richness of colour. The Syntomids rest generally on the under-surface, and hold their wings fully open or at acute angles with the body, while among the Pyralids which also generally rest on the under-surface of leaves, both these modes may be noticed, in addition to that of keeping them closed roof-like over the back. The Geometers, which rest on the upper or on either side of leaves, like to keep theirs open, and so do the pretty Hypsidæ, which rest on the under-surface. The smaller Noctuids rest on the under surface of leaves and keep their wings roof-like. The larger Noctuids, such as species of Erebus, Letis, etc., keep their wings expanded horizontally when at rest. *Erebus odora* likes to rest head down on tree-trunks. *Castnia licus*, of the family Castniidæ, sometimes will alight on a broad leaf, and spread its wings as though to sun itself. It generally, however, elects to sit still with its wings held roof-like.

Similar ways of holding the wings may be instanced from other families of moths. There are, however, certain other interesting and even curious details to be observed in particular species. *Ancylostomia stercorea*, the pigeon pea Pyralid, for example, clasping a twig or other

suitable support with its second and third pairs of legs, raises up the forepart of its body, while the palpi project like a snout. In this position it considerably resembles certain snouted homoptera—insects of the plant-bug tribe. The most curious resting posture I can mention is that of the burra-burra social moth, also a Pyralid, a species of Lineodes. It brings its two forelegs together and sets them well forward, sticks its wings off at an angle of about 60° with the sides, and throws its antennæ stiffly back over the thorax, so that they lie between the body and the root of the hind-wings, and touch the surface on which the moth rests, while the abdomen is curled back, sometimes far enough to touch the head.

Certain very small moths of another family instead of being tilted up headwise when at rest are tilted up tailwise, so that they appear to be engaged in a profound study of the object on which they are posted.

Curious resemblances are brought about with some moths when at rest. For instance, *Gonodonta clothilda*, a Noctuid that frequents shady localities, rests on the upper surface of leaves head-down, and with wings held roof-like. In this position it certainly looks like an inanimate object. In fact, it exactly resembles a lump of bird droppings, the white colour of the head and palpi causing it to appear as though the softer constituents of the droppings had begun to run down in obedience to the law of gravitation.

Butterflies and moths in their feeding habits do not limit their bill of fare to the nectar of flowers, but include also over-ripe and decaying fruits, honey-dew, the moisture on damp earth, the sap that exudes from wounded trees, fresh bird droppings, &c. In a few instances they even attack ripe or unripe fruit still hanging on trees, and sometimes do great damage. Accordingly, the belief that butterflies and moths are injurious to the agriculturist only in their larval or caterpillar stage is not in all cases correct. About two years ago in an issue of the "Field" a number of instances was brought together of butterflies and moths having injured fruit in the United States and in the southern parts of Africa. The fruits named were apples, quinces, and oranges, as well as peaches, plums, and grapes. Some of the oranges were a thick-skinned variety, and were still green. They punctured the fruits with their proboscis and sucked up the juices, a section through the part attacked showing a mass of fibres with all the juice extracted. In a case recorded from Africa hundreds of butterflies were said to be present, as many as seven or eight being often seen on one orange. The moth described as having damaged orange crops in the United States was a species of Ophideres, and it may be noted that we have Ophiderids in this colony. The commonest of them is *Argadesa maturna*, an Eastern moth that in some way or other has found its way into the West. From June to August gone this moth and its larvæ were rather plentiful. Of course, for a butterfly or a moth to be capable of puncturing a hard green fruit, it is necessary that it have a strong sharp proboscis.

Many skippers are fond of feeding on fresh bird droppings, so common on leaves of plants growing beneath trees where birds congregate. Such a feeding habit does not quite fall in line with what one would expect of a butterfly, and it now and then causes the death of the feeder, for there are some spiders which, when crouched on the look-out for prey, greatly resemble bird droppings, and, of course, it goes ill with the butterfly that should alight on such a cunningly deceptive mass of animate matter.

Our yellow butterfly delights in sipping the moisture from damp earth, and for this purpose frequently resorts in crowds to hollows or the beds of creeks. The big pretty *Morpho achilles* is fond of regaling itself on the moisture from the skins of sucked ripe mangoes which have been thrown down on foot-paths that traverse its habitat.

As regards egg-laying it is frequently possible by observing the manner of flight of a female butterfly to tell she is engaged in egg-laying, or is in search of a particular plant for the purpose of depositing eggs thereon. Her flight is then slower and more deliberate than usual. She goes in and out among the bushes with the air of being earnestly in quest of some object. In vain are flowers hung out as gaudy signals alluring her to a feast of nectar. Under ordinary circumstances she may have paused to taste of the honeyed feast each had in store. At last she alights on a leaf of a plant, curls her abdomen, and, after a pause of barely three seconds, is on the wing again. Examining the leaf she has just quitted, we notice on its under-side perhaps, a small conical or rounded whitish object. This is her egg. In the meanwhile she makes several wide circuits, and after two or three minutes returns to the plant, and, paying no heed to us, motionless since we stand, lays a second egg on another leaf of the same plant. We wonder that she found the plant, small, and almost completely hidden as it was in a tangle of miscellaneous vegetation, and without a flower, too, that may have served her to some extent as a guide.

When we observe a butterfly search along a stretch of vegetation for a particular plant, and find it under the conditions just mentioned, we cannot but perceive that it is, in its own way, a botanist of no mean standing. Somehow or other it is able to distinguish the plant, and can pick it out from the lot with a certainty which even the human botanist cannot surpass. The caterpillar of our yellow butterfly feeds on Cassias and the adult female can pick them out readily from among other plants. The caterpillars of three or four other of our common butterflies feed on Passifloras—vines of the semitou type—and the parent insect can find them out though they be climbing low among grass and bush. Indeed, the persistent presence of one or other of these butterflies is an unerring indication to the field naturalist that a Passiflora is in his immediate neighbourhood, even though he may not yet see it

When eggs are deposited on a leaf, they may be laid on the upper surface or on the lower surface, or in some cases on either surface indiscrimi-

nately, and they may be laid singly or in large or small clusters. The yellow butterfly, *Callidryas eubule*, for example, lays her eggs singly on the upper or on the lower surface of a leaf, but *Brassolis sophorae*, the palm pest, in a cluster on the upper surface of one of the leaflets of the palm. The rattle-bush moth *Utetheisa ornatrix* lays hers in clusters on the upper surface of the leaf along the midrib, and arranges them in roughly parallel rows, the centre row being on the midrib. On the other hand, *Anteryx caicus*, the Echites hawk-moth places hers singly on the tender leaves or on the growing shoot of the plant. The many-roots moth, *Cobubatha quadrifera*, puts her tiny dull green eggs, to the number of three at least, on one of the two tender leaves at the extreme top of the plant, and as far down between them as her abdomen can reach.

When the food-plant is small and not excessively abundant, and the butterfly or moth large, the eggs are laid singly and not many—up to three or four perhaps—on one plant. If all the eggs were deposited on the plant, the latter might not be able to afford nourishment for the resulting caterpillars, so that all or most of them would eventually die of starvation, especially if no suitable food-plant were within crawling range. The wild ipecacuanha or Aselepias butterfly does not put all its eggs on a single plant, but places them on several ipecacuanhas, for the welfare of the offspring and the preservation of the species. On the contrary, when the food-plant is large, or small but excessively abundant, the eggs are often laid in a big cluster. A coconut palm is a large tree with ample foliage, hence Brassolis can lay all her eggs in a great cluster on a single tree without fear that the caterpillars will starve to death after hatching. In this case all the eggs can be placed in one basket, so to speak, with impunity.

The small moth-borers of the sugar-cane, species of Diatræa, deposit their eggs in clusters of two to ninety on the upper or lower surface of the green blades, sometimes of the dry blades or trash, on the cane stem, and on blades of various grasses in and about cane-fields. Mr. Quelch states that *Castnia licus*, the large moth-borer of the sugar-cane, deposits her eggs singly about the cane-fields, in the ground, close to the stool, or on the stool itself. *Caligo oberon*, a butterfly whose caterpillars feed on leaves of the sugar-cane, the plantain, the banana, and the coconut, lays hers, as regards the sugar-cane, on the blades, on the under surface, to the number of six at a time, in a straight line, in contact with each other, or nearly so, and connected by a transparent mucilaginous substance. The Satyrid *Taygetis andromeda*, whose caterpillar feeds on blades of sugar-cane, razor-grass, and other grasses, also lays her eggs on the blades. Twice I have come across the eggs, and on each occasion they were two on a blade.

Eggs are not always deposited upon the food-plant of the caterpillar of the mother insect. Some may be laid on it, while others may be merely placed near it upon different plants, or even upon dry vegetable matter. On one occasion I noticed *Agraulis pharusa*, a butter-fly

whose caterpillar lives on Passifloras, lay an egg on a dry blade of para-grass, another on the flowering head of another grass, while a third was placed on the food-plant, in this case the wild semiton, *Passiflora hemicycla*. The caterpillars of *Anartia jatrophæ* feed on many roots (*Ruellia tuberosa*) and on Beloperone, a closely allied plant, but I have seen the butterfly lay her eggs not only on the undersurface of the leaves of these plants, but beneath dry sticks and other withered vegetable material. As examples of moths which do not always deposit their eggs on the food-plant or food-plants of their caterpillars, mention may be made of the Noctuids *Laphygma frugiperda*, *Lycophotia infecta*, and of the Arctiid *Ecpantheria eridanus*. The food-plants of the caterpillars of the two first-named are various kinds of grasses, but the eggs are often deposited on vines and bushes, the caterpillars on hatching, either dropping or crawling down to the grass below, or allowing themselves to be blown about by the wind, eventually, of course, finding their way to grass of some sort or other. *Ecpantheria eridanus*, whose caterpillars most usually feed on the mucca-mucca (*Montrichardia arborescens*), deposits her eggs on other plants as well. Both this moth and *Laphygma frugiperda* frequently deposit their eggs in big clusters of several hundreds, often in two layers one upon another. In the case of *Laphygma frugiperda*, the mother insect very frequently lightly covers over the egg-cluster with fluff from her own body.

Other butterflies and moths the egg-laying habits of which I have studied under nature include the following :—

Name.	*Family.*	*Food-plant.*
Euptoieta hegesias	Nymphalidæ	Sida Sp.
Ageronia feronia	,,	*Trayia volubilis*, or vine-nettle.
Colænis dido	,,	Passifloras
Agraulis vanillæ	,,	,,
Heliconius melpomene	,,	,,
Danaus eresimus	,,	Climbing Asclepiad
Eurema (2 species)	Pieridæ	Shamebush (Mimosa sp.)
Chilades hanno	Lycænidæ	*Æschynomine sensitiva?*
Papilio androgeus	Papilionidæ	Lime and orange.
Pyrrhopyge amyclas	Hesperiidæ	Guava, Indian almond, &c.
Anceryx alope	Sphingidæ	Papaw.
Isognathus caricæ	,,	Allamanda.
Dilophonota ello	,,	Cassava, Hevea, climbing Asclepiad.
Protoparce cingulata	,,	Sweet and wild potato.
Protoparce paphus	,,	Tomato, peppers, &c.
Enthisanotia timais	Noctuidæ	Lily.
Megalopyge lanata	Megalopygidæ	Guava, mango, and other trees.
Sibine trimacula	Limacodidæ	Castor oil, and over a dozen other plants, both exogens and endogens.
Antichloris eriphia	Syntomidæ	Banana, plantain,

THE HYMENOPTERA OF THE GEORGETOWN MUSEUM.

PART IV.

By P. Cameron.

THE FOSSORIAL HYMENOPTERA.

Mutillidæ.

Mutilla Moorei, sp. n.

Black, the head and thorax covered with white pubescence, which is densest on the mesopleuræ and base of metanotum, and forms a distinct band on the apex of the pronotum; on the mesopleuræ and metanotum there is a silky, white pile under the hair; the apex of the 1st abdominal segment and the whole of the 2nd to 4th ferruginous, the segments fringed with ferruginous, stiff hair; the apex of the 1st antennal joint, the 2nd and the base of the 3rd are testaceous, the testaceous colour on the 3rd paler in tint; legs thickly covered with stiff white hair; the spurs white; wings fuscous violaceous, almost hyaline at the base to the transverse median and transverse basal nervures: the stigma and nervures black; the radius with 5 angles; the basal rounded, the 2nd about one-fourth longer than the 3rd; the 4th and 5th oblique, forming an angle at their junction, the apical more sharply oblique, thicker and a little shorter than the 4th; both the recurrent nervures are received shortly beyond the middle. The basal ventral segment is broadly rounded at the base, there is a rufous broad triangular tooth. There is a smooth, flat shining keel down the centre of the scutellum, widened slightly towards the apex, commencing near the base and reaching to the top of the apical slope. Metathorax reticulated, the apical slope straight, oblique; the areola open at the base, the keels broadly rounded outwardly there, narrowed at the apex into a sharp point. Pro and mesonotum, with the scutellum strongly punctured; there are 2 distinct deep furrows on the apical two-thirds of the mesonotum; the promesopleuræ and basal half of metapleuræ almost smooth, the apical half of the Metapleuræ reticulated.

Male. Length 15 m.m.

Head nearly as wide as the thorax. The hair on the face and clypeus is denser and longer than on the front. Clypeus smooth, its apex rounded Tegulæ moderately large, smooth, the apex curled up. The basal slope of 1st abdominal segment is straight, oblique, and is more strongly and sparsely punctured than the apex. The pygidium is closely, distinctly, not very strongly punctured, a smooth furrow down the centre and densely covered with longish black, stiff hair. Tibial and tarsal spines white.

Mutilla longilineata sp.n.

Black, the thorax red except the mesopleuræ, the apex of the scape and the pedicle of the antennæ rufous; the under side of the 8 or 9 apical joints dark reddish brown; the apex of the basal 2 abdominal segments, a line on either side of the middle of the 2nd segment and lines down the sides of the 3rd to 6th, the apical pair wider than the others. Head a little wider than the thorax, the thorax twice longer than wide, the base distinctly roundly narrowed, the apex bluntly rounded, almost transverse, the basal third above slightly wider than the middle, the apical slope straight, oblique. There is a transverse, curved keel on the base of the metanotum in the centre. The base of the 1st abdominal segment has a triangular projection on either side; the ventral keel is depressed in the middle, the apex forms a triangular, reddish tooth, Pygidium finely, closely longitudinally striated, the striæ interlacing. Tibial spines black, the tarsal and the spurs white. The basal and apical abdominal segments and the sides of the others are covered with longish white, the central part of the 2nd to 5th dorsal segments are closely covered with short black pubescence. Female.

Length 7 m.m.

The mesonotum is more strongly, rugosely punctured than the head. Antennal tubercles dark red, punctured. Pleuræ smooth, except round the top of the pro and metapleuræ.

Ephuta sphegea, F.

Mutilla argentea, Lep., Hist. Nat. Ins. Hymen., iii., 636; *Mutilla argyra* Spin, Ann. Soc. Ent., Fr. x., 85; *Mutilla sphegea*, Gerstaecker, Arch. f. Naturg, xxxv., 319.

What I make out to be the above species has been taken by the Rev. Mr, Harper at Demerara. The cloud in the apex of the wings commences at the end of the radial cellule, fills the 2nd cubital except a triangle at the base in front and below, extends shortly behind the 2nd recurrent nervure; the radial cellule is short, its apex truncated; the 2 first transverse cubital nervures approach closely to each other in front; the 1st long, its apical three-fourths obliquely sloped; the 2nd is broadly, roundly curved; the 1st recurrent nervure is received at the apex of the basal third, the 2nd in the middle of the cellule. Apex of scutellum distinctly trilobate, the middle lobe twice wider than the lateral, its apex broadly incised, the hair on the mesonotum is dense, stiff and long. Head narrower than the thorax. The apical half of the ventral keel projects into a large, triangular keel.

This species agrees fairly well with the description of *argentea*, so far as it goes, except that the wings are described as "transparent at the base, the end largely black"; in my species I should call them "hyaline, the apex smoky." No mention is made of the apex of the scutellum being trilobate, nor of the form of the ventral keel.

Ephuta? caenodonta, sp. n.

Black, the centre and sides of front, vertex, antennal tubercles, the upper part of the thorax, the upper half of the propleurae and the upper part of the meso and metapleurae more narrowly, a wide, interrupted line, narrowed on the apical outerside, and margined with rufous, on the apex of the 2nd abdominal segment. Head, thorax and abdomen not very thickly covered with longish white hair. There are 2 pale testaceous rounded tubercles on the top of the sides of the metanotum and 4 large testaceous spines below these. There are 6 irregular tubercular-like teeth on the sides of the back of 2nd abdominal segment, which is depressed between them. Pygidium covered with long, stiff black hair, smooth down the centre. The ventral keel is narrowed towards the base. Underside of flagellum of antennæ brownish red. Eyes prominent. Temples straight, obliquely narrowed behind them; the occiput transverse. The 1st abdominal segment is short, gradually widened towards the apex. The apical third of the thorax is of equal width, behind this it is rounded inwardly, the apex becomes gradually narrowed. The 3rd antennal joint is one-half longer than 4th. Tibial and tarsal spines and the spurs white; the hair on the legs long and white. Female.

Length 6 m.m.

Characteristic of this species are the tubercles on the sides of the 2nd abdominal segment. The generic position of the species is very doubtful. It seems, in some respects, to be intermediate between the *Ephutini* and the *Sphaerophthalmi* as defined by Ashmead (Canad. Ent. xxxiv., 6). The eyes are prominent, hemispherical, smooth above, finely facetted below; on the mandibles there is a small tooth at some distance from the apex. In Ashmead's table (*l.c. p.* 9) it runs to *Dasymutilla*, the type of which is *Waco*, Blake. That species has not the thorax spinose, nor has it tubercles on the 2nd abdominal segment. The Georgetown species may form the type of a new genus or sub genus.

Traumatomutilla indica, L.

diadema F.

Two females of this species were given me by the Rev. Mr. Harper, both taken at Georgetown. The colour of the 4 spots on the 2nd abdominal segment varies from cream colour to reddish brown. The species is a *Traumatomutilla-Sphaeropthalma*, Ashmead.

Traumatomutilla nitidipustulata sp. n.

Black, a broad curved line of white pubescence across the vertex, extending to the middle of the eyes, narrowed in the centre, a line on the sides of the apical slope of the metanotum, narrowed above and below on the inner side; the apex of propleurae, the apical third of the lower part of the mesopleurae and of the metapleurae, the sides of the 1st abdominal segment, spots on the centre of the 3rd to 5th, the spots becoming gradually larger, the sides of the 2nd to 6th segments and the apices of the ventral covered with silvery white hair; there are 2 smooth, bare cream coloured spots on the base and apex of the 2nd seg-

ment, the apical pair larger and wider than the basal. Ventral keel straight. Thorax with the basal half distinctly narrower than the basal ; a smooth tubercle at the base of the metanotum—Pleuræ smooth, the apex of mesopleuræ crenulated. Metapleuræ sparsely punctured. Pygidium regularly longitudinally striated. There is a line of white pubescence along the lower side of the 2nd abdomial segment ; the lower edge is covered with white pubescence, The ventral segments are fringed with white pubescence. Female.

Length 12 m.m.

Allied to *E. indica* : that species is larger, has the basal 2 spots on the base of the 2nd abdominal segment longish, longitudinal, oblique, the apical 2 larger, transverse, the lateral tubercle at the base of the metanotum is larger, more prominent, the apex of the sides of the mesonotum projects more and has a more distinct tubercle at the base of the projection, the ventral keel is incised in the middle and the pygidium is not distinctly longitudinally striated.

SCOLIIDÆ.

Dialis peregrina, Lep., var. *regina*, Saussure. Cf. Cat. sp. gen. Scolia, 217, 218.

Elis regina, Cam. Biol. Cent. Am. ii., 228.

Dielis hyalinis, Saussure l. c., 219, 236.

Dielis conspicua, Smith. Cat. Hym. Ins. Brit. Mus. iii., 107. 106 ; Saussure *l.c.*, 228, 243.

Dielis dorsata, Fab. *Scolia hæmatogastra*, Perty, Erichson, in Schomburgk's Reise in Brit. Guiana, iii, 589.

Elis dorsata ; Cam. Biol. Cent. Am., Hymen., ii., 230, 9. Female and Male.

Both sexes are in the collection . One Male is 17, another 13 m.m. long.

Dielis variegata, Fab. *Elis variegata*, Saussure, Cat. Sp. Gen. Scolia, 226, 303 ; Cam., Biol. Cent. Am., Hymen. ii, 229, 7.

Dielis nitidiventris, sp. n.

Black, shining, with bluish violaceous tint which is more shining on the abdomen, the face, a line on the lower half of the eye incision, widened below, a broad line on the apex of the prothorax, the part on the pleuræ roundly narrowed below, curling round to the tubercles at the apex, a short narrow line on the mesonotum shortly beyond the tegulæ, a mark, wider than long, rounded and narrowed on the inner side, on the sides of the scutellum in the middle, but nearer the base than the apex, a curved line on the post scutellum, nearer the base than the apex, large transverse lines on the sides of the basal 3 abdominal segments, that on the 1st gradually narrowed to the inner side, the following 2 larger, wider, the 2nd broadly, roundly dilated on the outer side at the base, the 3rd is wider, but not so widely dilated on the basal outerside ; there is a shorter, narrower line on the sides of the 4th on the

apex, a longish line on the outer apical third of the 2nd ventral segment and a shorter wider one on the 4th. Legs black, the apical half of the fore femora and the whole of the 4 posterior yellow; there is a line on the basal half of the 4 anterior tibiæ behind; the spurs are paler yellow; the tarsal spines white. Wings fuscous violaceous, the apex of the costal cellule, the 2 radials, the apex of the 2nd cubital and the apical margin of the wings darker coloured, almost black, the nervures black, the apex of the radius is broadly, roundly curved and projects more than the length of the apical transverse cubital beyond the latter, which is roundly curved outwardly in the middle. The pubescence is long and dense, blackish on the scape of antennæ, the front, vertex, mesonotum and abdomen black, on the other part and legs grey, almost white, that on the basal ventral segments being also pale; that on the metanotum is much longer and denser than it is on the mesonotum. Female.

Length 24 m.m.

Clypeus strongly punctured round the upper edges. Front and vertex smooth; the ocellar region slightly raised, square. Mesonotum weakly, sparsely punctured; the scutellums more sparsely and weakly punctured; smooth at the apex. Metanotum more closely and strongly punctured, the outer areæ more closely and finely than the central Abdomen distinctly punctured, the puncturation becoming stronger and closer towards the apex.

Siphidæ.

Epomidiopteron heierospilum, sp. n.

Black, shining, a trilobate line on the top of clypeus, the outer lobes larger than the central, their inner upper edge dilated the central part broadly roundly dilated in the middle, a large broadly conical spot on the outerside of the pronotum, its base extending on to the basal keel, its narrowed apex extending close to the middle of the outer part, the greater part of the scutellum, the mark obliquely narrowed on the sides at the base, the apex broadly, bluntly rounded, a large semicir ular spot almost filling the post-scutellum, a large mark on the basal upper half of the mesopleuræ, longer from the top to the bottom than longitudinally, the top almost transverse, narrowed slightly towards the bottom, which is rounded, the apex more obliquely so than the base, an irregular transverse spot on the sides of the 1st abdominal segment, its inner side narrower than the outer, a mark, about 4 times its size on the 2nd, its basal inner half obliquely narrowed, the base and apex rounded, a transverse oval one, one third of the size of the 2nd on the 3rd segment, a small oval spot, not one quarter of the size of the 3rd on the 4th, and 2 transverse lines, rounded at the apex, on the back of the 5th, pallid yellow. Legs, including the spurs, black, the tibiæ and tarsi densely covered with stiff glistening white hair. The wings are uniformly fuscous violaceous the stigma and nervures black; the 1st recurrent nervure is roundly curved and is received near the base of the cellule, the 2nd shortly before the middle. Female.

Length 18 m.m.

Mesonotum sparsely, weakly punctured, except for an irregular belt across the apex, the scutellums almost smooth. More than the central half of the metanotum is rather closely, strongly punctured and has 2 parallel keels down the centre, the apical slope opaque, impunctate. Propleuræ irregularly punctured in the middle, the mesopleuræ sparsely, weakly punctured above, more strongly and closely below; the upper half of the metapleuræ closely, strongly obliquely striated. Basal slope of the 1st abdominal segment margined above; the basal half of the segments irregularly punctured, with a stronger transverse row of punctures beyond the middle; the punctures are finer and closer on the apical than on the basal segments; the last is punctured at the base except in the middle; the rest of the pygidium smooth, opaque. The ventral segments are more closely, strongly and regularly punctured than the dorsal; the puncturation becomes closer towards the apex. There is an irregular row of punctures down the apical two-thirds of the metanotal area Tegulæ smooth, not reaching to the apex of scutellum.

This species has 2 more abdominal marks than *E.* 12 *maculata*, Cam. and *E. julii*, Romand, besides the 2 transverse ones on the last segment.

Pompilidæ.

Salius auro-lecoratus, sp. n.

Black, densely covered all over with bright golden pubescence, including the coxæ, the rest of the legs bare, the greater part of the 6th and the 7th to 10th antennal joints rufo-yellow; wings bright orange yellow to the base of the radius, paler, almost hyaline beyond, a pale fuscous cloud fills almost the basal half of the radial cellule, the 2nd cubital, the base of the 3rd irregularly, a large conical cloud along the basal three-fourths of the 2nd recurrent nervure on the inner side and there is a cloud round the apex; both the recurrent nervures are received shortly before the middle; the 2nd cubital cellule longer along the radius and cubitus than along the transverse cubital; the transverse median nervure received shortly, but distinctly beyond the transverse basal; the accessory in hind wings shortly before the cubitus. Male.

Length 13 m.m.

Hind ocelli separated from the eyes by one half more than they are from each other. Claws bidentate. Long spur of hind tibiæ almost half the length of metatarsus. Hypopygium densely pilose, its apex broadly rounded.

Salius tuberculiventris, sp.n.

Black, the apical three-fourths of the 3rd and the whole of the following antennal joints rufo-fulvous, velvety, opaque, the head, scutellum, metanotum and apical abdominal segments sparsely covered with black hair: wings uniformly fuscous violaceous, iridescent, the stigma and nervures black, the 1st abscissa of radius about one quarter of the length of the 2nd, which is about one quarter longer than the 3rd; the 1st recurrent nervure is received in the apical fourth, the 2nd very shortly before the middle of the cellule; the

accessory nervure in hind wings interstitial. Apex of clypeus margined, slightly rounded inwardly in the middle. Apex of pronotum bluntly angled in the middle. Middle of metanotum irregularly transversely striated. The 2nd ventral segment bears 2 stout, conspicuous tubercles in the centre shortly beyond the middle. Pygidium thickly covered with long, black hair, and more sparsely in the centre with shorter fiery red hair. Female.

Length 27 m.m.

There is a shallow wide furrow down the centre of the metanotum, it is wider and deeper on the upper half of the apical slope ; the upper half of the metapleuræ is closely obliquely striated.

Pepsis ruficornis, Fab.

Lepelletier, Hymen. iii, 480 ; Cresson, Proc. Ent. Soc. Phil. iv, 134 ; Trans. Amer. Ent. Soc., i, 148.

Priocnemis pilifrons, sp. n.

Black, velvety, the head densely covered with longish black hair all over, the metanotum covered more sparsely with still longer hair ; wings uniformly fuscous violaceous, the stigma and nervures black the 2nd abscissa of radius about one quarter longer than the 3rd, which is fully one quarter shorter than the roundly curved apical ; the transverse median is received distinctly beyond the transverse basal ; both the recurrent nervures are received shortly beyond the middle of the cellule, the 1st at a greater distance than the 2nd ; the accessory nervure in the hind wings is received shortly beyond the cubitus. Eyes distinctly converging at the top ; the hind ocelli separated there by the same distance as they are from the eyes. Apex of clypeus broadly rounded, depressed, margined. Apex of pronotum broadly rounded, not angled in the middle. Metanotum alutaceous, obscurely, transversely striated. Claws with 1 tooth. The long spur of the hind tibiæ one-third of the length of the metatarsus. Female.

Length 17 m.m.

Priocnemis curtispinus, sp. n.

Black, covered with a white silky pile, the tibiæ and tarsi and the 4 hinder tarsi fuscous ; the base of the wings to the transverse median and transverse basal nervures, more lighter coloured towards the hinder half of the former, the costal cellule, the radial, the 4 cubitals, the apical 2 lighter coloured behind, light fuscous violaceous, the costa and nervures black, the stigma livid testaceous, the 1st abscissa of radius one-fourth of the length of the 2nd ; the 3rd is as long as the basal 2 united, the 1st recurrent nervure is received at the base of the apical fourth, the 2nd shortly before the middle the accessory nervure in hind wings received half the length of the transverse cubitus beyond the cubitus. Apex of pronotum bluntly rounded. Metanotum short, rounded from the base to the apex. Claws with 1 tooth. The long spur of the hind tibiæ one-third of the length of metatarsus. The hair on the front, face, clypeus pronotum, breast and metanotum is long and white. The tibial spines are short and brown. Female.

Length 14 m.m.

Temples wide, broadly rounded. Apex of clypeus transverse, its upper furrow distinct.

Priocnemis purpureipes, sp.n.

Black, covered with a blue bloom, varied with purple, the legs almost entirely purple; the antennal scape purple, the 2nd to the apex of the 5th joints black, the others rufous yellow; wings yellowish-rufous hyaline, the base narrowly black the apex with a narrow pale fuscous border; the 1st abscissa of the radius one-fourth of the length of the 2nd which is hardly one-fourth longer than the 3rd; the 1st recurrent nervure is received one quarter of the length of the 2nd transverse cubital nervure from the apex of the cellule, the 2nd distinctly before the middle, not far from the apex of the basal third: it is broadly roundly curved outwardly. Apex of 2nd ventral segment broadly bituberculate. Claws with 1 tooth.

Length 36 m.m.

Eyes converging above. Hinder ocelli separated from the eyes by one-half more than they are from each other. Apex of clypeus with a shallow, broad incision. Temples broadly rounded as long as the top of the eyes, the occiput with a shallow incision. Apex of pronotum bluntly angled in the middle, the sides broadly rounded. Metanotum weakly transversely striated, the apical slope more strongly than the base, and having also some longitudinal striæ, the 2 forming weak, irregular reticulations. The accessory nervure in hind wings is received very shortly beyond the cubitus.

Has the appearance of a *Pepsis*.

Priocnemis sericiornatus, sp.n.

Black, densely covered with a white silky pile, the apical abdominal segments covered with white hair, wings hyaline to near the transverse basal and transverse median nervures, fuscous violaceous beyond; the 1st abscissa of radius one-third shorter than the 2nd, which is about one-fourth shorter than the 3rd; the transverse median nervure received shortly beyond the transverse basal, the 1st recurrent nervure received at the base of the apical third, the 2nd at the apex of the basal fourth, broadly, roundly curved. Eyes distinctly converging above; the hinder ocelli separated from each other by one-fourth more than they are from the eyes. The temples are very short, very slightly developed, the occiput transverse. The head is flattened in front and is wider than the thorax. There is only 1 tooth on the claw.

The head shows an approach to *Planiceps*.

Pompilus interruptus, Say.

This is a widely distributed, and as regards the amount of black on the body and legs, very variable species. It also varies greatly in size. *P. costatus*, Tasch., *P. polistoides*, Smith and *P. flavopictus*, Smith are forms of it.

Pompilus crassidentatus, sp n.

Ferruginous, the mandibular teeth, the 4th and following joints of the antennæ and the pleural sutures black; the wings fuscous violaceous, the stigma

and nervures black, the 2nd and 3rd abscissæ of the radius equal in length, the 1st recurrent nervure received near the apex, the 2nd shortly beyond the apex of the basal third of the cellule, the transverse median nervure interstitial; the accessory in hind wings received shortly behind the cubitus. The stigmal region of the metanotum is bordered at the apex by a wide curved furrow; the sides at the apical slope project into prominent rounded tubercles. Head as wide as the thorax, the temples roundly narrowed; the hinder ocelli separated from each other by a slightly greater distance than they are from the eyes, which distinctly converge above. Apex of clypeus transverse. Pronotum broadly rounded in front; the lower part of the propleuræ is raised into a longish triangle, the narrowed end above and bordered at the apex by a furrow. Tibial and tarsal spines longish, stout: there is a tooth near the middle of the claws; there are 4 long spines on the foremetatarsus, with a short one between the 1st and 2nd and the 2nd and 3rd; the long spur of the hind tibiæ is about one-third of the length of metatarsus. Female.

Length 23 m.m.

Smooth and shining, covered with a silvery pile. The 3rd joint of the antennæ is almost as long as the following 2 united. The eyes at the top are separated by the length of the antennal scape and pedicle united. The 2nd recurrent nervure is broadly rounded, oblique.

Very similar, as regards size and colouration, to *P. virulentus*, Sm., which may be known from it by the sides of the metanotum not being tuberculated; by the 3rd abscissa of radius being distinctly shorter than the 2nd, by the 2nd recurrent nervure being roundly curved outwardly in the middle and by the much lighter coloured wings.

Pompilus regius, Fab. *Anoplius regius*, Lep., Hymen., iii., 450.

A female is probably this species; only the male was described by Lepelletier. I have a male from Amazonia named *regius* by F. Smith. It differs from the female in having the 3rd abscissa of the radius slightly longer—or sub-equal—than the 2nd; the hind wings are fuscous violaceous in front, clear hyaline behind; the 2nd transverse cubital nervure is oblique and roundly bicurved, the 1st recurrent nervure is received in the apical, the 2nd in the basal fourth; the transverse median nervure is almost, the accessory in the hind wings entirely interstitial. Eyes a little converging above; the hinder ocelli are separated from the eyes by one half more than they are from each other.

Pompilus demeraraensis, sp.n.

Black, the front, face and clypeus densely covered with silvery pubescence (probably the whole body in fresh examples); wings uniformly fuscous violaceous, the stigma and nervures black; the 2nd and 3rd abscissæ of the radius equal in length; the transverse median nervure received shortly beyond the transverse basal; the 1st recurrent nervure received in the apical, the 2nd in basal fourth of the cellule; the acessory nervure in hind wing interstitial. Eyes parallel; the hinder ocelli separated from each other by fully half the distance they are from the eyes. The long spur of the hind tibiæ does not quite

reach to the middle of metatarsus ; the tibial and tarsal spines longish, sparse ; claws bifid. Female.

Length 11 m.m. female ; male 8 m.m.

Temples very short, the occiput transverse. Apex of pronotum broadly rounded, not angled. The 3rd transverse cubital nervure is angularly bent in front.

Pompilus imperialis, Smith.

Black, with a blue tomentum, more noticeable on the abdomen than on the thorax ; wings uniformly fuscous violaceous, the nervures and stigma black ; the 3rd abscissa of radius one quarter of the length of the 2nd and one-half shorter than the 1st ; the transverse median nervure interstitial, the 1st recurrent nervure received in the apical fourth of the cellule, the 2nd shortly, but distinctly before the middle ; the accessory nervure in hind wings received very shortly beyond the cubitus. Female.

Length 15 m.m.

Eyes converging slightly above, the hinder ocelli separated from each other by a slightly less distance than they are from the eyes. Apex of clypeus broadly, roundly incised. Apex of pronotum angled in the middle, the sides straight, oblique. Claws with a distinct tooth. Fore metatarsus with 6 spines. The tibial and tarsal spines long, stout. The hinder half of the 1st transverse cubital nervure is broadly rounded, the anterior straight, more obliquely sloped, the 2nd has the front half slightly but distinctly sloped, the 3rd is broadly roundly obliquely sloped towards the front of the 2nd ; apex of metanotum straight, oblique in the centre, the sides and top rounded.

An example in the collection seems to be the above species. *Cf.* Cameron, Biol. Cent. Amer. Hymen., ii, 196, Tab. xi, f 16, 16 a. ; Smith Descr. of New Species of Hymen. 155. It is certainly identical with a larger specimen from Rio Purus, Amazonia, which was named for me *P. nitidulus*, Guer. by F. Smith. The latter is a Chilian species and the Amazonian species is certainly different from the *P. nitidulus*, described by Kohl, who also figures the wing *Cf.* Verh. der K. K. Zool.-Bot. Gesell.in Wien, 1905, p. 341, *f.* 5. I have given a description of the Guiana *imperialis*. It varies in size, from 13 to 20 m.m.

Pompilus harperi, sp.n.

Black, densely covered with silvery pubescence ; wings clear hyaline, with 3 fuscous violaceous clouds, one commencing immediately behind the transverse median and transverse basal, beyond the former it is roundly, irregularly dilated in the middle and extends to shortly beyond the apex of the basal third of the 1st abscissa of cubitus, below it fills the discoidal cellule except at the apex to the anal nervure ; the 2nd cloud fills the radial cellule to the middle of the apical abscissa of the radius ; it fills the 2nd except behind, the hyaline band wider at the base than at the apex, the whole of the 3rd, except for a lighter coloured curved band at the base, and a large cloud extending from the base of the 1st recurrent to the 3rd transverse cubital nervures, across the 2nd recurrent,

the apex of which it reaches; the apical cloud is narrow and faint; the 2nd abscissa of the radius is almost one-fourth longer than the 3rd. The 1st transverse cubital nervure is obliquely sloped from near the bottom, the separation of the 2 forming an angle, the larger fore part is slightly curved; the 3rd is broadly, roundly curved outwardly in the middle; the 2nd recurrent nervure is broadly roundly curved outwardly and is received near the apex of the basal fourth; the transverse median nervure is received very shortly beyond the transverse basal; the acessory nervure in the hind wings is received shortly beyond the cubitus. Apex of clypeus transverse, its sides broadly rounded. Eyes slightly converging above. Ocelli separated from each other by the same distance as they are from the eyes. Front densely covered with golden pile; a furrow down its centre. Temples obliquely, sharply narrow. Apex of pronotum hardly angled in the middle. Apical half of metanotum strongly irregularly transversely striated. Female.

Length 16 m.m.

Pompilus cosmiopterus, sp. n.

Black, densely covered with silvery pubescence, which is very dense on the face, clypeus and apical slope of metanotum and forms broad bands on the abdominal segments; wings clear hyaline, a broad cloud of equal width commencing behind the transverse basal and transverse median nervures and extending to shortly beyond the anterior part of the transverse basal; the edges are irregular; it extends to the posterior edge of the wing; the middle cloud is larger, it fills the radial cellule to shortly beyond the 3rd transverse cubital nervure, the whole of the 2nd and 3rd cubital cellules, extending slightly on to the 1st, and on to the discoidal cellule along the 2nd recurrent, forming a larger semicircle, at the base between the 1st and 3rd transverse cubital nervures; there is a faint cloud in the middle of the hind wings and a broader slightly more distinct one at the apex; the 1st recurrent nervure is received near the base of the apical third, the 2nd in the basal fourth; transverse median nervure interstitial, the accessory in hind wings received shortly before the cubitus. Female.

Length 14 m.m.

Eyes parallel. Hinder ocelli separated from the eyes by twice the distance they are from each other. Apex of clypeus broadly rounded, as is also the apex of pronotum. Apex of metanotum broadly rounded. The long spur of hind tibiæ is about one-third of the length of metatarsus. Claws bifid, the inner one shorter and stouter than outer.

This species and the preceding are very like the Central American *P. gloriosus*, Cresson; the ♂ may be separated thus:

1. (4) The middle cloud in the forewings not narrowed in front, the metonotum not striated.

2. (3) 2nd cubital cellule as long along the radius and cubitus as along the transverse cubital nervures, 1st abscissa of radius one-fourth of the length of 3rd, which is two-thirds of the length of the 2nd transverse cubital nervure and one-third shorter than the 2nd; the apex of the apical cloud broad, transverse, not roundly narrowed. . . . . *gloriosus* ♂.

3. (2) 2nd cubital cellule shorter along the radius than along the transverse cubital nervures 1st abscissa of radius half the length of 3rd, which is not much more than two-thirds of the

length of 2nd and of the 2nd transverse cubital nervure, the apex of apical cloud roundly narrowed semicircular. . . . . *cosmiopterus.*

4 (1) The middle cloud in forewings narrowed in front, the metanotum striated. . *harperi.*

Pompilus inculcatrix, sp. n.

Black, a broad yellowish white line on the apex of the pronotum, the basal 4 abdominal segments red, the apices of the segments broadly darker, probably in fresh examples covered with a silvery pile; wings uniformly fuscous, the nervures and stigma black, the basal 2 abscissæ of the radius almost equal in length, the 3rd about one-fourth of their length, the 2nd and 3rd transverse cubital nervures roundly curved, the 3rd more rounded and more oblique than the 2nd; the 1st recurrent nervure is received in the apical fourth, the 2nd shortly before the middle; transverse median nervure interstitial; the accessory nervure in hind wings received beyond the cubitus. Tibial and tarsal spines black; the long spur of hind tibiæ two-thirds of the length of metatarsus; claws semi-bifid. Female.

Length 12 m.m.

The pubescence is dense and dark silvery. The eyes converge above and are roundly incised on the inner side above the middle. Hinder ocelli separated from each other by about the same distance as they are from the eyes. Face long. Apex of clypeus bluntly rounded. Apex of pronotum almost angled in the centre.

Pompilus moorei, sp. n.

Black, covered with a pale golden pile; wings bright yellowish hyaline, a fuscous band of equal width, extending from shortly behind the transverse basal and transverse median nervures to shortly beyond the base of the cubitus, the cloud wider behind than beyond the transverse basal nervure at the costa, a wider cloud extending from the base of the radius to the 3rd transverse cubital nervure, narrowed and rounded at the apex, it not reaching much beyond the anal nervure; the apex bordered by a narrow cloud; transverse basal nervure interstitial; the 2nd abscissa of radius one quarter longer than the 3rd; the 1st recurrent nervure is received near the apical third the 2nd near the basal third; the 3rd transverse cubital nervure is obliquely bent toward the base of the 2nd from near the middle, the 2nd recurrent nervure is broadly, roundly curved outwardly; the accessory nervure in hind wings interstitial. Female.

Length 18 m.m.

Apex of clypeus bluntly obliquely rounded. Eyes converging at the top. Hinder ocelli separated from each other by a slightly greater distance than they are from the eyes. Apex of pronotum broadly rounded. Apex of metanotum with a steep slope, with 4 or 5 stout, curved transverse striæ. Abdomen clearly longer than the head and thorax united. The long spur of the hind tibiæ is one-third of the length of the metatarsus and a little longer than the 3rd joint. Claws bifid, the inner claw a little longer and thicker than the outer. Tibial and tarsal spines short; they are more numerous on the tarsi. Metanotum hardly so long as it is wide at the base. Metatarsus of the fore-

tarsi as long as the following joints united. Pronotum longer than the head. The wings appear short.

Allied to *P. spilopterus*, Kohl. and *P. chiriquensis*, Cam. The former is only 10 m.m. long, the latter, *inter alia*, may be known by the 3rd abscissa of the radius being longer than the 2nd.

Pseudagenia pulchricornis, n.sp.

Dark blue, including the legs, the thorax red, the basal 6 joints of the antennæ and the basal half of the 7th dark blue, the scape brighter in tint, the apical half of the 7th and the whole of the others fulvous yellow; wings hyaline, the nervures and stigma black; a narrow fuscous cloud of equal width across the transverse median and transverse basal nervures wider on the outer than on the inner side, the basal third of the radial cellule, the 2nd cubital cellule except a triangle in the posterior basal part, the basal third of the 3rd, the cloud faint and irregular at the apex and a square cloud on the inner basal half of the 2nd transverse cubital; the 1st abscissa of radius as long as the 2nd, the 2nd cubital cellule small, shorter along the radius and cubitus than along the transverse cubitals; the 2nd abscissa of radius about one-third of the length of the 3rd; the transverse cubital nervures received shortly beyond the transverse basal; the first recurrent nervure is received near the base of the apical third, the 2nd shortly before the middle; the accessory nervure in hind wings shortly, but distinctly before the middle. Female.

Length 14 mm.

Smooth, shining, covered with a white pile. Eyes converging above; the hinder ocelli separated from each other by fully one-third less than they are from the eyes. Clypeus short transverse, the sides rounded. Temples large, rounded. Pronotum large, roundly narrowed in front, if anything longer than the mesonotum. The long spur of the hind tibiæ one-third of the length of the metatarsus. Tarsi closely spinose. There is a furrow down the front, it becoming deeper below.

Pseudagenia semisuavis, sp.n.

Black, all the femora and the 2 anterior tibiæ and tarsi red, the base and apex of the hind femora narrowly black; the base of the hind tibiæ inclining to fuscous, the 4 hind spurs fuscous; wings clear hyaline, the stigma and nervures black, the 2nd abscissa of radius about one-quarter shorter than the 3rd; the 1st recurrent nervure received shortly beyond the apex of the basal third, the 2nd nearer the basal fourth; the transverse median shortly beyond the transverse basal; the accessory in the hind wings distinctly before the cubitus. Hind ocelli separated from each other by a very little less distance than they are from the eyes. Metanotum irregularly, weakly, widely transversely striated; a shallow furrow down the centre, the pubescence on it is long, white and sparse. Face and clypeus densely covered with white pubescence, the cheeks with long white hair; the front has shorter and the vertex still shorter white hair. Female.

Length 9 mm.

The apical joints of the palpi are fuscous.

SPHEGIDÆ.

* *Chlorion* (*Chlorion viridicoeruleum*, Lep.

Sphex hemiprasinus, Sichel; Kohl, Ann. K.K. Hof. Mus. v, 189.

Chlorion (*Isodonta*) *costipennis*, Lep.

Cameron, Biol. Cent. Amer. Hymen, ii. 35, Pl. iii, f. 10; Kohl., Ann. Natur. Hof. Mus. Wien. 382, Fox, Proc. Acad. Sc. Phil. 1897; Fernald, Proc. U.Z. Nat. Mus. xxxi, 351.

Chlorion (*Proterosphex*) *ichneumoneum auriſluum*, Perty.

Sphex ichneumoneus var. auriſluus, Kohl. Ann. K.K. H.of Mus., Wien, V., 1890, 431.

Chlorion (*Proterosphex*) *ichneumoneum auriſluum* (Perty) Fernald, Proc. U.S. Nat. Mus. xxxi, 403.

The specimen in the collection is typical *auriſluum*.

Chlorion (*Proterosphex*) *caliginosum*, *Erichson*.

Sphex caliginosa, *Erichson*, Schomburgk, Reise in Guiana, iii, 589.

Sphex erythroptera, Cam. Biol. Cen. Amer. ii, 30, Pl. iii, figs, 1, 1a.

The specimen has the base of the wings black and the apex, if anything, lighter coloured, more hyaline, than usual.

Chlorion (*Proterosphex*) *neotropicus*, Kohl. Ann. K. K. H.of. Mus. V., 420.

Sceliphron vindex, Lep.

Pelopeus vindex, St. Fargean, Hymen. iii., 317, 17; *Erichson*, Fauna et Flora Brit. Guy., iii., 558. Saussure, Reise Novara, Hymen, 31.

The metanotum is yellow with a broad line down the middle extending from the base to the top of the apical slope, its base being dilated; a line runs from its base to the lower part of the metapleuræ which is entirely black, this back line forming 2 yellow pleural marks, of which the apical is the larger.

Sceliphron histrio, Lep.

Pelopeus histrio, St. Fargeau, *l.c.* 316, 16; Erichson, *l.c.* 588, Saussure *l.c.* 32 There are 6 marks on the metanotum-Saussure's var *a*, *l.c.*

Podium (*Dynatus*) *nigripes*, West.

Kohl. Abhand, d.k.k. Zool. Bot. Gessell, in Wien, i, (4) 29.

Podium giganteum Klug, Schomburg, Reise in Guiana, iii, 589.

* The generic Nomenclature is after Fernald, "The Digger Wasps of North America and the West Indies belonging to the sub family Chlorioninæ"—Proc. U.S. Nat. Mus., 1906, 291, et seq.

The examples examined belong to the luteous winged form; they have hardly a trace of violaceous colour.

Podium foeniforme, Perty.

Kohl, *l.c.*, 48.

Podium flavipenne, Latr.

Kohl, *l.c.*, 84.

Podium luteipenne, Dahlbom, Hym. Ewn. i, 23 and 435; Lepeletier, Hist. Nat. Ins. Hymen. iii, 324; Cameron, Biol. Cent. Amer. Hymen ii, 27, 2 Tab. 2. f. 15.

Podium (*Trigonopsis*) *affine*, Sm.

Trigonopsis affinis, Smith, Ann. Mag. Nat. Hist. vii (2) 31.

Podium (*Trigonopsis*) *affine*, Kohl, Abhand, d. K.K. Zoo.—Botan. Gessellschaft in Wien, i heft 4. 33.

Podium (*Trigonopsis*) *longipilosellum*. sp.n.

Black, the head and thorax densely covered with long hair, white except on the front and vertex, hinder by a distinctly greater distance than these are from each. There is a broad ferruginous band near the apex of the mandibles. There is a furrow in the middle of the apex of the pronotum and a narrower, more clearly defined one in the centre of the basal third of the mesonotum. Prothorax almost smooth, the mesonotum sparsely, weakly, the pleuræ more closely and strongly punctured, the latter more strongly below, the metanotum more strongly and closely punctured, the apical slope irregularly transversely striated, where it is darker coloured; the apical half of the 4 anterior femora in front and narrowly behind, almost the apical half of the hinder. All the tibiæ except the posterior narrowly behind and the anterior tarsi rufo-testaceous; the wings hyaline, the nervures and stigma black, a narrow cloud along the transverse basal nervure and transverse median, wider along the inner than along the outerside, the whole of the radial cellule, the apex of 1st cubital narrowly, the cloud wider in front, the 2nd cubital cellule entirely, the 3rd to the end of the 3rd abscissa of the radius, a cloud along the apex commencing at the end of the radius, the cloud in the 2nd and 3rd cubital cellules extends into the discoidal cellules to near the apex of the 2nd recurrent and extending beyond it, and the apex of the hinder wings is smoky. Female.

Length 17 mm.

Apex of clypeus armed with 5 almost equally-sized teeth, which become slightly narrowed towards the apex. Eyes distinctly converging above.

There is a shallow closely transversely striated furrow down the apical two-thirds of the basal part of the metanotum, the apical slope has a wider furrow, deepened and widened at the top. The abdomnal petiole is not quite so long as the metanotum and is as long as the basal point of the hind tarsi. Temples roundly, obliquely narrowed, the occiput not transverse. Pronotum two-thirds of the length of the mesonotum, the basal two-thirds gradually narrowed.

Ammophila lobicollis, sp.n.

Black, the face, clypeus, a band round the tubercles, a longish triangular spot on the lower apical part of the mesopleuræ, a spot behind the metanotal spiracles and a triangular spot on the sides of the apex of metanotum, all of white silvery pubescence; wings hyaline, slightly suffused with fuscous, the stigma and nervures black; the 1st abscissa of radius one-third longer than the 2nd, which is half the length of the 3rd; the 3rd transverse cubital nervure is broadly rounded posteriorily, the 2nd is slightly rounded outwardly behind; the 1st recurrent nervure is received in the middle of the cellule. Apex of clypeus with a semi-circular depression in the middle of the apex, the apex obliquely projecting, transverse. Eyes slightly converging above; the hinder ocelli separated from each other by a slightly less distance than they are from the eyes. Apex of pronotum trilobate, the middle lobe the larger, separated in front by an oblique furrow. Middle of scutellum depressed, the apex strongly irregularly striated. Metanotum closely transversely striated, the striæ becoming gradually stronger towards the apex, those on the apical slope more widely separated, more rounded and stronger. Mesopleuræ with distinct scattered punctures. Metapleuræ closely obliquely striated. There is a fine keel down the centre of the basal half of the metanotum. Female.

Length 27 mm.

Allied to *A. auronotata*, Cam. and *A. miliaris*, Cam. both of which differ from it in having the mesonotum striated.

Ammophila guiana, sp.n.

Black, the dilated apical part of the abdomen blue, the face and clypeus, a band behind the tubercles, a longish conical spot in the middle of the apex of the mesopleuræ, an iregular spot, twice longer than wide, behind the metanotal spiracles, a spot double the size of the latter and twice longer than wide and slightly oblique, on the side of the apex, close to the metapleural furrow and the hind coxæ, of silvery pubescence, wings hyaline, the nervures and stigma black; the 1st abscissa of radius curved, about one-quarter longer than the 2nd which is as long as the 3rd; the 1st recurrent nervure is received shortly, but clearly before the middle of the cellule, the 2nd near the apex. Apex of pronotum broadly, roundly raised in the centre, the raised part bordered by shallow oblique depressions. The centre of the mesonotum is raised, more distinctly so and more clearly limited at the apex than at the base; there are some stout widely separated striæ on the apex of the post-scutellum. Metanotum closely transversely striated. Propleuræ smooth. Mesopleuræ with strong scattered punctures. Eyes a little converging above; the hinder ocelli are separated from each other by a slightly less distance than they are from the eyes; there is a distinct furrow joining the hinder behind; a shallow furrow runs down from the ocelli. The tibiæ are sparsely, the tarsi are densely, stoutly spinose. Female.

Length 25 m.m.

Ammophila oxystoma, sp.n.

Black, the face and clypeus densely covered with golden pubescence, a band round the apex of the tubercles, a conical spot, sharply narrowed below, rounded above, shortly below the middle of the apex of mesopleuræ, an irregular spot behind the spiracles, a longish spot on either side of the apex of the metanotum, rounded above, gradually narrowed below of silvery pubescence, the apical spots slightly tinged with gold; wings hyaline, the nervures and stigma black, the 1st and 3rd abscissæ of radius equal in length, the 2nd about half their length; the 1st recurrent nervure received shortly before the middle, the 2nd fully half the length of the 2nd abscissa of the radius from the 3rd. Pronotum broadly rounded, neither raised nor depressed in the middle. Mesonotum sparsely punctured, slightly raised in the middle. Apical slope of metanotum striated, the central striæ stronger and more widely separated, the lateral oblique. Pro and mesopleuræ sparsely punctured; the upper apical half of the metapleuræ finely closely obliquely striated; this striated part is divided into 2 by a strong, somewhat oblique keel, the apical part being more strongly striated than the basal. Metapleuræ closely, obliquely striated, more strongly so than the mesopleuræ, the apical part more strongly than the basal. Male.

Length 23 m.m.

Eyes slightly converging below. Hinder ocelli separated from each other by a little less distance than they are from the eyes. Clypeus long, gradually narrowed from the eyes to the apex, which forms a projecting, tooth-like point. The furrow leading down the front from ocelli is stronger on the upper than on the lower half.

Ammophila pilimarginata, sp.n.

Black, the underside of the 1st abdominal segment, the sides and ventral surface of the 2nd, its apex narrowly above, the 3rd, except for a mark in the centre of the apex, its base roundly narrowed and the sides and ventral surface of the 4th at the base, the lateral mark narrowed above, ferruginous; the apical abdominal segments are tinged with blue. Face, clypeus, the tubercles behind, a broad band of equal width on the mesopleuræ, running down from the tegulæ to the middle coxæ and a large irregular spot on either side of the metanotum of silvery pubescence; wings hyaline, the apex slightly infuscated, the nervures and stigma black; the basal abscissa of the radius as long as the 2nd and 3rd united, the latter 2 of equal length; the 1st recurrent nervure is received near the apex of the basal third Eyes distinctly converging below. Hind ocelli separated from each other by a distinctly less distance than they are from the eyes. Pronotum large, nearly as long as it is wide at the apex, which is broadly rounded. Mesonotum irregularly transversely striated, the base less strongly than the apex. Scutellum strongly striated the central more or less curved. Post-scutellum strongly transversely striated. Metanotum strongly transversely striated; the metapleuræ below the furrow, strongly, but not closely punctured, the base above smooth. The spines on the 4 front legs are white, on the hinder black; the spurs black, testaceous at the apex.

Gorytes auropilosellus, sp. n.

Black, densely covered with pale golden pubescence ; a band one-fourth of its length, shortly behind the middle of the scutellum, bands on the apices of the 2nd to 5th abdominal segment, that on the 2nd fully one-fourth of the length of the segment, that on the others becoming gradually wider, on the 5th it occupying the entire segment, the 6th entirely above and below, the apex of the 2nd ventral narrowly and the whole of the 3rd to 5th, yellowish fulvous. Antennal scape yellow below, joints 1-4 of the flagellum rufous below. The 4 anterior femora, the tibiæ, the apex of the hind femora on the apical half, except behind, rufotestaceous ; wings hyaline, the basal half and the anterior in front to the stigma suffused with rufo-fulvous, the radial cellule, the 2nd cubital and almost the front half of the 3rd fuscous ; the basal nervures to the stigma fulvous, beyond it black, the recurrent nervures are received in the apical fourth of the cellule ; they are separated from each other by slightly less than the space between the 2nd and the apex of the cellule. In the hind wing the accessory nervure is interstitial. The area on median segment large, clearly defined, closely, somewhat strongly striated ; the upper half of the apical slope punctured, the punctures large and clearly separated, the lower half strongly, closely, irregularly transversely striated. Pleuræ smooth, the apical half of the metapleuræ with weak scattered punctures. There are two stronger striæ down the centre of the metanotal area and a stronger single one down the apical slope. Pygidium fully twice longer than it is wide at the base, gradually narrowed to a fine point at the apex, the sides bordered by a distinct raised keel ; there is a fine, not very distinct keel down the apex ; it is strongly, but not closely punctured and there is a smooth space shortly beyond the middle. The spines on the legs are fulvous ; those on the fore tarsi are long ; there are 5 on their basal joint. Female.

Length 12 m.m.

A stout robust species, having the appearance of a Vespid, *e.g.*, *Polybia*. It belongs to Handlirsch's group of *phaleratus* and is most nearly related, of the described species, to *G. Polybia*, Hand., which has also a resemblance to the Vespid *Polybia*. The eyes converge slightly above ; the ocelli are in a wide triangle, the hinder are separated from each other by a slight, but distinctly greater distance than they are from the eyes. There is a fine, but distinct keel down the lower half of the front ; there is also a fine keel down the apical half of the mesonotum.

Nysson varipilosellus, sp. n.

Black, the base of the mesonotum narrowly, the basal depression at the scutellum, and narrow lines on the apices of the basal 4 abdominal segments covered with pale golden pubescence ; the face, clypeus, malar space, base of mandibles, eye orbits, the pleuræ, the mesopleuræ densely, the base and sides of the abdomen and the pygidium all over, covered with silvery pubescence ; there is a pale yellow line, shorter than the black central part ; the legs dark red, the hind coxæ, the sides of hind femora and the hind tibiæ black, the hind tarsi of a darker red ; wings hyaline, slightly infuscated, very iridescent ; the pedicle

of 2nd cubital cellule longer than the lower branches, the transverse cubital nervures received close to each other in front, separated by distinctly less than the distance separating the recurrent nervures, these being separated by the same distance as the 1st is from the base of the cellule ; the anal cellule in hind wings ending before the origin of cubital nervure. Apex of post scutellum bilobate, the lobes large, bluntly triangular. Sides of metanotum above ending in a long, stout spine, narrowed towards the apex, the apical half testaceous. Metanotum areolated, the central basal area longer than wide, roundly narrowed towards the base, the centre with a keel which bifurcates at the apex : the central apical is longish triangular, surrounded at the top by a row of 4 smaller areæ ; below its middle it is joined by 2 oblique keels. Head alutaceous ; there is a stout keel outside the eyes behind. Pronotum smooth its base with some short, stout striæ. Mesonotum alutaceous, covered with shallow punctures, the basal half in the centre with a wide shallow furrow, the apex with deep irregular furrows. Scutellum margined, the apex transverse ; there are 2 longitudinal keels on either side of the middle, the inner stouter than the outer. Mesopleuræ punctured, densely covered with white pile, the pro- and metapleuræ smooth, bare ; there are 2 longitudinal keels on the base of the latter above. Abdomen punctured, the puncturation becoming gradually weaker. The pygidium is longitudinally punctate ; the apex is transverse ; the sides and hypopygium are dark rufous ; the latter is bordered by a furrow. Apex of clypeus transverse, dark testaceous, margined. Apex of scape and pedicle rufous.

This species cannot well be confounded with any of the few described Neotropical species of *Nysson*.

Monedula punctata, Fab.

Handlirsch, Sitzung. d. Kais. Akad. d. Wissen. in Wien, 1890, xcix, 97.

Bembex multipicta, Smith.

Ann. Mag. Nat. Hist. xii., 300 (nec Male) 1783, Cam., Biol. Cent. Amer. ii., 100. Pl. vi f. 17, 18 ; Handlirsch, *l.c.* supra, 831.

Bembex guiana, sp. n.

Antennæ black, the scape yellow, lined with black above. Head black, the clypeus except for a black mark in the middle above, broad above, gradually narrowed below, labrum, the mandibles except at the apex, the face, a line above the antennæ, its top narrowly black in the centre, a broad line on the inner orbits, commencing at the ocelli, the top obliquely narrowed on the inner side and a narrow line on the outer orbits, narrower above than below. Prothorax yellow, a black line across the lower part of the pronotum, continued on to the pleuræ where it becomes gradually narrowed to a fine point at the end. Mesonotum black, a line along the sides, its basal half wider than the apical and a narrower one on either side of the middle, it reaching nearer to the base than to the apex, a broad, narrowly interrupted line on the base of the scutellum, dilated on the outer side, post-scutellum, a curved line on the base of the metanotum, widened in the middle and extending on to the apical

slope, the lateral apical angles broadly, the mesopleuræ, except a narrow line curving round the outer side of the tubercles, and then going down the base, an oblique line running down from the outer side of the tubercles to the middle coxæ, the upper half regular of equal width, the lower irregular, its upper half thicker than the lower, a line on either side of the middle of the metapleuræ on the upper half and a line along the lower edge. The basal 5 abdominal segments are broadly black at the base and apex, the lines narrowed on the outer side, the 2 lines united in the middle by a black longitudinal one, these lines becoming gradually wider, that on the 5th double the width of the 4th line; the last segment is black, except for a longish triangular mark on either side near the apex ventral surface yellow except for an irregular mark in the middle of the penultimate, narrowed in the middle, the apical part thicker and more irregular than the basal; the last segment entirely black. Legs pale yellow, the femora broadly black above, a narrow line on the basal half of the 4 front tibiæ behind, the hinder entirely lined with black broadly behind. Wings hyaline, the nervures black: the 2nd abscissa of the radius is half the length of the 3rd; the 2nd abscissa of the cubitus is broadly rounded between the 1st recurrent and the 2nd transverse cubital; the 2nd recurrent nervure has a minute stump of a vein near the bottom of the anterior third on the outer side. Female.

Length 17 m.m.

There are at least 6 spines on the anterior metatarsus, which becomes gradually widened from the base to the apex on the outer side; the apex is obliquely widened; the following 3 joints are obliquely widened from the base to the apex on the outer side, the base being hardly one-fourth of the width of the apex, the 2nd is larger than the 3rd, the latter than the 4th.

The sides of the metanotum project more and form more distinct angles than in *B. multipicta*, Sm., which may be known from it by the ventral surface of the abdomen being largely marked with black, by the clypeus having 2 marks and the labrum broadly black in the middle, and the apex, not the base of the scutellum is black.

Bembidula ornaticauda, sp. n.

Black, the clypeus and labrum except for a broad black line down their centre, the line on the clypeus narrowed towards the apex, a line on the lower half of the inner orbits, a narrow line on the apex of the pronotum, curving round the tubercles, a mark, on the outer side of the apex of the mesonotum, behind the tegulæ, an oblong mark on the sides of the scutellum in the centre, post-scutellum, the apex of the metanotum on the sides above the incision, a broad line, narrowed in the centre near the apex of the 1st segment of the abdomen and similar lines, not narrowed in the middle, on the apices of the 2nd to 5th segments, a line along the sides of the 6th, a longish triangular mark on the 6th and lines on the apices of the 2nd to 5th ventral, lemon-yellow. Flagellum of antennæ reddish brown except above. Legs black, the 4 front femora yellow below, the middle, more narrowly than the anterior, the anterior tarsi broadly yellow on the lower side, the end joint more broadly

than the others; it is greatly thickened and longer than the preceding 3 united; on the basal joint are 4 stout longish reddish spines. Wings hyaline, the stigma and nervures black; the 1st and 2nd transverse cubital nervure are almost united in front, the 1st is straight and obliquely bent from below the middle, the 2nd is roundly curved; the 1st recurrent nervure is received very shortly before the middle; the 2nd in the apical fourth; the space between the two is as much as that between the 1st and the base of the cellule. Female.

Length 11 m.m.

The lateral angles of the median segment are bluntly rounded; the incision becomes gradually widened below; the part below it is broadly, roundly dilated, more widely so above than below. The last dorsal segment has not a distinct area; it has a smooth, shining line down the middle. Apex of labrum broadly rounded. The vertex at the sides of the ocelli sparsely, the front more strongly and closely punctured except at the sides below. Mesonotum smooth, the sides of the scutellum punctured, the centre smooth, but with indications of a fine striation: the basal upper part of the metanotum closely strongly punctured, the apical slope smooth; its centre bordered by a keel, and by a furrow inside the latter, neither reaching to the top. Seen laterally the apex of the metapleuræ from the incision forms a curved keel. The apical half of the antennæ is thicker than the basal; the last joint is brownish.

In Handlirsch's table (Sitz. d. Kais. Akad. Wissen in Wien., xxviii, 502), this species runs to *angulata*, Smith, from which it differs in many respects.

Larra guiana, sp. n.

Black, the abdomen bright red; the wings fuscous violaceous, the stigma and nervures black; the 1st abscissa of the radius twice the length of the 2nd, which is one-third of the length of the 3rd; the 1st recurrent nervure is received at a slightly less distance from the 1st transverse cubital than it is from the 2nd recurrent, which is received shortly but distinctly before the middle. Antennal scape thickly covered below with silvery pubescence; the 3rd joint is not quite twice the length of the 4th, which is hardly so long as the 5th. Head covered with pale fulvous pubescence, sparsely so on the front, which has a large, deep oval fovea in the centre and a longer, narrower, curved one on either side; a short distinctly defined furrow, about 4 times longer than wide, runs down from the ocellus, which is in a large, wider than long depression; there is a semi-circular depression on the vertex near the middle. Metanotum finely closely granularly punctured, the apical half of the basal region depressed, a keel, obscurely striated on either side, in the middle of the base; the basal slope is transversely striated, more finely so in the middle. Mesopleuræ finely, closely punctured, the basal vertical furrow and the longitudinal one distinct. Female.

Length 17 m.m.

The 1st transverse cubital nervure is straight, oblique, the 2nd is broadly roundly curved towards it. The calcaria are black, as are also the tibial spines, the tarsal spines are for the greater part dark red. The nearest ally of this

species known to me is the Central American *L. godmani*, Cam., which may be known from it by the rufus mandibles, labrum and 4 front tarsi, by the 1st transverse cubital nervure being roundly curved, not straight, by the 2nd transverse cubital nervure being received beyond the middle, by there being no keel down the base of the metanotum and by its apex not being transversely striated, and the furrow there is wider, shallower and less clearly defined. *L. americana*, Saus., is an allied species, it has the wings pale at the base, the leg spines rufo-fuscous. *L. braunsii* Kohl. is another allied species. An easy method of separating *L. guiana* from *L. godmani* is that in the former the eyes above are separated by the length of the 2nd and 3rd antennal joints united, in the latter by the length of the 3rd only. The abdomen in both *guiana* and *godmani* is very smooth and shining, and in the examples examined there is no pile, but there are a few pale, short hairs on the end segment. In *guiana* the distance separating the eyes above is greater than it is in *braunsii*.

The furrow bordering the pygidium is deeper, wider, more irregular—the border on the inner side being more waved—and it is farther removed from the base of the segment than it is in *godmani*.

Tachysphex longiventris, sp. n.

Black, covered with a pale golden pile, the apex of the mesopleuræ, the metathorax entirely and the legs red; wings fuscous violaceous, paler along the apical margin, paler along the hinder part than in front, the stigma and nervures black; the basal abscissa of the radius is twice the length of the 2nd, which is one-quarter shorter than the 3rd; the 2nd recurrent nervure is received near the apex of the basal fourth; the wings appear short, not reaching much beyond the 3rd abdominal segment; the abdomen is longer than usual, the basal 3 segments united are not much longer than the thorax. Female.

Length 15 m.m.

There is a distinct shining, narrow keel down the middle of the clypeus; its apex is shining, obliquely depressed in the centre. Thorax granular; the apical slope densely covered with golden pile; a distinct furrow down its centre; the golden pile extends on to the pleuræ. There is a patch of golden pile above the mesopleural longitudinal furrow. Abdomen opaque, pruinose.

Tachysphex semiappendiculata, sp. n.

Black, densely covered with silvery pubescence, the apices of the abdominal segments with a distinct border of silvery pile; the pygidium with a flat, smooth shining border, the central part opaque, closely, irregularly striated, the striæ stronger towards the apex, which ends in 5 longish, stout spines; wings hyaline, the stigma and nervures black; the recurrent nervures are received near the apex of the basal third; they unite and are almost appendiculated; the 1st abscissa of the radius is almost as long as the 2nd and 3rd united, the 2nd hardly one-fourth longer than the 3rd. There is a small, rounded incision in the apex of the clypeus. Mandibles dull red. The eyes at the top are separated by the length of the 3rd antennal joint. The ocellus is longer than wide and ends in a stout keel, narrowed below; the raised part below it is

furrowed down the middle. The metanotum alutaceous, densely covered with a white pile, the sides of the basal part irregularly, widely striated; the apical slope has a deep furrow, which is deeper above than below; it is bordered by fine striæ. The middle and the apex below of the metapleuræ are irregularly obliquely striated. Female.

Length 11 m.m.

The antennal scape is as long as the following 2 joints united; the 3rd and 4th are almost equal in length. The apex of the hind tibiæ and their long spurs are reddish, as are also the claws; the long spur of the hind tibiæ is as long as the metatarsus; the tibiæ and tarsi are longish.

Tachysphex rufo-geniculata, sp. n.

Black, the pubescence pale golden; it forms narrow, but distinct bands on the apices of the abdominal segments; the knees and the tibiæ in front rufous as are also the apices of the joints of the 4 anterior tarsi; the tarsal spines are pale; wings hyaline, the anterior fuscous along the fore margin, the nervures and stigma black, the 1st abscissa of radius is not quite twice the length of the 2nd; which is one-fourth shorter than the 3rd. The eyes above are separated by the length of the 2nd and 3rd antennal joints united. Ocelli longer than wide, a conical projection in its centre above and below. Apex of clypeus depressed in the centre, punctured above the depression. The 3rd joint of the antennæ is not quite one quarter longer than the 4th. Metanotum finely, closely transversely striated, more or less finely reticulated on the outer part; the apical slope with a distinct shining furrow; which has about 6 clearly separated striæ in the centre. Male.

Length 8 m.m.

The apical half of the antennæ is brownish beneath. The 2nd transverse cubital nervure is received shortly beyond the apex of the basal third; the 2 recurrent nervures are separated from each other by a slightly greater distance than they are from the base of the cellule. The long spur of the hind tibiæ is half the length of the metatarsus; the tarsi incline to brownish, especially at the base.

Tachytes excellens, sp. n.

Black, densely covered with white pubescence, the abdominal segments at the apices, with broad bands of silvery pubescence, the pygidium densely covered with silvery pile; besides the pile the front and vertex bear longish pale hair; the basal 3 segments of the abdomen bright red; the 4 front knees, apex of 4 front tibiæ and their tarsi rufo-testaceous, the hind femora red narrowly black at the base, the tibiæ red, narrowly infuscated at the apex, the tarsi of a slightly paler red, the apices of the joints slightly infuscated; wings hyaline, the costa and stigma testaceous; the 1st abscissa of the radius as long as the 2nd which is twice the length of the 3rd; the 2nd recurrent nervure is received shortly, but distinctly before the middle; the 2 recurrent nervures are separated from each other by a distinctly less distance than they are from the base of the cellule. Female.

Length 10 m.m.

Pro-mesonotum and scutellums closely, distinctly punctured, the post-scutellum densely covered with long grey hair. Metanotum smooth in the middle of the base, the rest alutaceous, the sculpture stronger on the sides.

Tachytes ametina, sp. n.

Black, the apex of the fore femora narrowly, of the middle more broadly, more than the apical half of the posterior and all the tibiæ and tarsi rufo-testaceous, the wings hyaline, the costa and stigma and basal nervures rufo-testaceous; the basal abscissa of radius roundly curved, as long as the 3rd; the 2nd about one-quarter shorter; the 1st recurrent nervure is received near the base of the cellule, the 2nd before the middle; head and thorax densely covered with pale fulvous hair, the apices of the abdominal segments covered with pale golden, almost silvery pubescence; the pile on the pygidium, almost silvery. Eyes distinctly converging above, separated there by a little more than the length of the 3rd antennal joint. Tibial and tarsal spines pale, the apical joint of the hind tarsi black. Female.

Length 14 m.m.

Labrum and middle of mandibles in front red; the base of mandibles densely covered with pale golden pile. There is a longish triangular fovea on the top of the apical slope of the metanotum. Pygidium a little longer than it is wide at the base; the apex is not narrowed to a fine point and is transverse. Tegulæ testaceous.

Tachytes pretiosa, sp. n.

Black, head and thorax densely covered with pale fulvous pubescence, the apices of the abdominal segments with a band of pale fulvous pile; the pygidium covered with bright golden pile, its apex narrowed to a point; tibiæ and tarsi covered densely with silvery pile, their spines white, the spurs and claws rufous; the long spur of the hind tibiæ is clearly longer than the metatarsus, which is curved and narrowed at the base. Wings fulvo-hyaline, clearer at the apex, the costa, stigma and nervures fulvous, the latter darker at the apex; the 1st abscissa of the radius is curved and is as long as the 3rd; the 2nd is shorter; the 1st recurrent nervure is received the length of the 2nd abscissa of the radius from the base of the cellule, the 2nd in the middle. There is a shallow, wide furrow, widened at the apex, down the centre of the basal part; there is a more clearly defined furrow down the middle of the apical slope, its centre deep, the sides obliquely sloped; it is narrowed at the top and bottom. Female.

Length 13 m.m.

Eyes at the top separated by the length of the 3rd antennal joint. Clypeus closely, distinctly punctured. Palpi testaceous. The 3rd antennal joint is not much longer than the 4th. Base of mandibles covered with silvery pubescence.

Crabro stirocephalus, sp.n.

Black, the antennal scape, a line on more than the outer third of the pronotum—almost twice the length of the black central part, a broad oval spot

on the sides of the base of the scutellum, a longer, narrower, curved line behind them and a narrower, longer, more curved one behind these, extending to the post-scutellum the tubercles and the basal third of the mandibles, bright lemon-yellow, the middle of the mandibles reddish ; the flagellum of antennæ rufo-testaceous, darker coloured above. The apex of the femora, the tibiæ and tarsi lemon-yellow ; the 4 anterior tibiæ darker coloured in front, the basal three-fourths of the hind broadly black on the inner and outer side. Ocelli in a wide triangle, the hinder separated from each other by a slightly greater distance than they are from the anterior. Face and clypeus covered densely with silvery pubescence ; the latter in the middle of apex armed with 2 bluntly triangular teeth. Front closely finely punctured, a stout keel runs down from the ocelli to the antennæ ; at the eyes, opposite the lower ocellus, is a longish pyriform area, the narrowed end below and touching the eyes ; there is a crenulated furrow round the top and outer orbits, the lower part of the outer furrow hidden by the dense pubescence. Mesonotum closely punctured, the base of the scutellum sparsely punctured, the apical half irregularly striated ; the post-scutellum is more irregularly striated. Basal part of metanotum irregularly areolated ; the central is more than twice longer than it is wide at the base ; the lateral keel it receives shortly beyond the centre ; on either side of the base are 3 areæ, the central being the larger and confluent with the inner at the apex ; there is a large oval fovea in the centre of the apical slope which is bordered on the outer side by a keel, inside of which are 4 keels, the upper short, the middle curved and united on the inner side, the lower straight, at the bottom is an area, twice wider than long. On the upper half of the base of the mesonotum are 5 short irregular keels ; the 2nd and 3rd of which unite at the apex, the whole of them projecting into the furrow ; on the upper apical part are 3 curved furrows ; on the lower two-thirds near the apex is a wide curved furrow, the apex curved inwardly in the middle, the lower part bordered by a distinct keel behind. Pygidium strongly punctured almost the apical half is rufous, this is also the case with the lower part. Female.

Length 6 m.m.

Crabro curvicollis, sp. n.

Black, the antennal scape, a broad, curved interrupted line on the apex of pronotum, 2 curved irregular lines on the scutellum commencing on the outer basal side and extending close to the middle at the apex, the lines at the junction of the 2 curves being narrowed ; there are transverse lines, twice wider than long, on the 2nd to 5th abdominal segments ; there is a narrow, wider line on the sides of the 6th ; the last segment is almost entirely rufous ; the sides of the pygidium are broad and raised and unite in a sharp point at the apex ; the base is triangular and hollowed. Wings hyaline, the nervures and stigma blackish. The collar is broad, clearly separated, the outer angles bluntly triangular ; in the centre behind at the junction of the yellow lines are 2 keels, there being at the apex of these a longer narrower transverse keel. There are 3 keels down the middle of the mesonotum. There is a distinct semi-circular area on the base of the metanotum with a furrow at its base : a stout keel down its middle, it commencing at the base of the furrow ; there are about 3 keels on either side of it ; the apical transverse keel is rounded on the inner side,

the semi-circular keel bordering the area is weakly irregularly crenulated; there is an area in the centre of the apical slope: its keels are weaker above and roundly converge there; there is a large longish oval in the centre; there are some weak striæ on the inner side of the apical half of the keels. The furrow on the base of the mesopleuræ is strongly crenulated on the lower half; shortly beyond it is a wider, more irregular, having at the top 3 keels which extend to the apex of the propleuræ; there is a large, pyriform fovea in the centre of the mesopleuræ, the apical furrow of which is crenulated. Female.

Length 6 mm.

Ocelli in a curve, the hinder separated from each other by a greater distance than they are from the eyes. A keel runs down rom the ocelli to the frontal area, which is bordered above by a rounded keel.

TRYPOXYLON, Latr.

Trypoxylon albitarse, Fab.

Syst. Piez. 180, i, Lepelletier, Hist. Nat. Ins. Hymen, iv., 228; Saussure, Reise Novara, Hymen. 77.

Both the examples have the mandibles red—var. *mexicanum*, Saussure, *l.c.* They were given me by the Rev. Mr. Harper from Demerara.

Trypoxylon palliditarse, Saussure, *l.c.* 77.

The pubescence in this species is grey or whitish, not fuscous as in *albitarse*. In size it varies from 17 mm. (male) to 22 m. (female).

Trypoxylon aztecum, Saus.

Reise Novara, Hymen., 80. A specimen with only the basal segment of the abdomen present is very probably this species.

Trypoxylon latiornatum, sp.n.

Black, densely covered with golden pile and the head and thorax with pale hair, the basal 4 joints of the flagellum, a longitudinal line, 4 times longer than wide, down the middle of the 1st abdominal segment, commencing at the spiracles and reaching to the base of the apical third, the basal two-thirds of the 2nd segment, the black apical band dilated in the middle, the base of the 3rd narrowly, and the ventral surface of the basal 2 rufo-testaceous, the apices of the other segments narrowly of a paler testaceous colour; the knees, the 4 anterior tibiæ and the basal half of the hinder behind rufo-testaceous; the tarsi of a paler testaceous colour, their apical 2 or 3 joints blackish; the spurs testaceous; wings hyaline, iridescent, the stigma and nervures black; tegulæ piceous. Female.

Length 12 mm.

The pubescence on the face, clypeus and lower part of front is very dense and golden. Vertex from the hinder ocelli closely, strongly punctured, more or less striated and reticulated; below the ocelli is a V-shaped area, formed by shallow, striated furrows, which unite near the antennæ, where they become

deeper and more clearly defined. Apex of clypeus with a shallow but distinct almost semi-circular incision. The 3rd antennal joint is almost double the length of the 4th . Thorax finely, weakly punctured, the basal part of the metanotum aciculated, the apical slope on either side of the furrow rather strongly obliquely striated. There is a distinct band on the apex of pronotum of dense golden pile one at the base of metanotum and the sides of the metanotum are densely covered with longish golden hair ; the sternum is densely covered with pale pubescence. Abdomen covered with a pale golden pile, which is denser on the apical segments.

Comes near to *T. aztecum*. which may be known from it by the black legs and black 1st abdominal segments, by the bidentate apex of clypeus and rufous base of flagellum : it is also a larger, more robust species.

Trypoxylon brevicarinatum, sp. n.

Black, the head and thorax covered with silvery pubescence and more sparsely with silvery hair, the scape of antennæ pedicle and base of 3rd joint, mandibles and the fore keees rufo-testaceous, the spurs, base of tibiæ and the basal 3 joints of the fore tarsi of a paler testaceous colour ; the base of the 2nd joint of the abdomen, of the 3rd more widely and irregularly testaceous ; wings clear hyaline, the nervures and stigma black ; the tegulæ piceous. Immediately below the ocelli is a large, raised oval area, longer than wide, a shallow furrow down the centre of the upper half ; from the centre of the apex a distinct keel runs down to near the antennæ. There is a longish oval fovea in the centre of the basal half, it bears 5 stout clearly separated striæ, there are 5 stout transverse keels on the apical two-thirds of the apical furrow. The abdomen is more than twice the length of the head and thorax united ; the 1st segment is as long as the thorax. Female.

Length 12 mm.

Trypoxylon marginatum, sp. n.

Black, the antennæ, except the top of the flagellum, a narrow, but distinct line on the apex of the clypeus, mandibles except the teeth, palpi, the 4 anterior knees, tibiæ and tarsi and the base of the hind tibiæ testaceous ; the basal joint of the hind tarsi white except on the apical half above ; wings hyaline the nervures and stigma black, the apex of the wings slighty clouded. Front with a clearly defined area, somewhat triangular in shape, the top broadly rounded, from there gradually narrowed to a sharp point ; longer than it is wide above, it is separated from the lower ocelli by the distance the latter is from the upper ; a stout keel runs from the apex of the area to the top of the apex. Apex of clypeus broadly rounded. The basal area on the metanotum is clearly defined, the outer furrows broadly rounded and bear 6 striæ, the apical 3 smaller and closer together than the basal ; the central furrow wider, of equal width, the keels fine, curved, the apex almost free from striæ ; the

apical furrow wide and deep on the upper half, alutaceous, as is also the lower, which has 3 stout, not very clearly defined striæ or keels on the apex. Male.

Length 9 mm.

The hinder ocelli reach close to the eyes; they are separated from each other by a distinctly less distance than they are from the lower—by nearly the same distance as the latter is from the frontal area. Antennæ stout, the 3rd joint about one quarter longer than the 4th, which is about the same size as the 2nd. The 2nd abdominal segment is half the length of the 1st: it is twice longer than wide.

This species is related to *T. peltopsis*, Kohl, from Rio Grande do Sul: in that species the frontal area is differently formed it being not longer than its greatest width, and it is not so rounded above; in my species it is more as in Kohl's figure of it in *Stroudii*, but in that species the lower ocellus is included in the area.

(*To be Continued*).

PROCEEDINGS OF THE SOCIETY.

Meeting, January 18th, 1912. *Elections reported—Associates*—Messrs. L. D. Cleare, Junr., and R. G. Arnold.

The Revd. Jas. Aiken read a paper on Surinam (see p. 145) for which a vote of thanks was heartily accorded on the motion of Prof. J. B. Harrison, and after some appreciative remarks of the President.

Donations to Library. Two vols.—books from the President: *to Museum*, Pottery figures from Moruka.

Meeting, June 5th, 1912. *Elections reported.*—Members—His Honour A. Earnshaw and Messrs. N. W. King, Wm. Morison and G. Lockwood. *Associates*—Messrs. Jas. Ewing, R. T. Johnson, N. K. Jardine, R. H. Cooper, John Brumell, Junr., J. R. McInroy, R. A. Delafons and Capt. A. B. Rose. *Lady Subscribers*—Misses E. Haynes, Schuler, Brock and Gillespie.

The President reports that the Directors had passed Resolutions in connection with the next Agricultural Conference, the Permanent Exhibition Committee, the Society's Book-keeping, the Museum, a special grant for new books and a series of Juvenile Lectures.

Mr. B. Howell Jones was proposed as an Honorary Member. Miss Edith A. Browne read a paper entitled "Your Colony" for which, on the motion of Sir Crossley Rayner, a hearty vote of thanks was accorded after remarks in favour of Miss Browne's suggestions had been made by the President and several members.

Meeting, September 18th, 1912. *Elections reported—Members.*—Messrs. R. Brassington, G. Ball Greene, G. D. Bayley, C. W. Crow, Nicholas Farrar and Dr. Browne. *Associates.*—Messrs. J. D. Smith, Jas. Guyadeen, C. A. Hicks, F. O. Richards and A. B. Macfarlane,—*Hon. Member*—Mr. B. Howell Jones.

The President reported that an attempt was being made to introduce something like the Woman's Self-help Association of Barbados.

His Excellency the Governor introduced the Hon. Dr. J. E. Godfrey, who read a paper on "Village Administration and Local Government." A hearty vote of thanks was accorded on the motion of the Hon. J. Hampden King.

Donation to Library.—4 vols.—Books from the President.

Meeting, October 23rd, 1912. *Elections reported—Members.*—Messrs. F. T. Wills and J. G. Gillespie.

Mr. E. deMontpelier read a paper entitled "Winning the Forest" for which, on the motion of Dean Sloman and after appreciative remarks by the President, a vote of thanks was warmly accorded.

The President spoke of his impending departure for a short time. Dean Sloman and Mr. Franks mentioned the improvements to the Society during his term of office and moved a vote of thanks to Mr. Nunan, which was accorded with acclamation.

Meeting, November 20th. 1912. Dr. W. E. Roth read a pape hu "The Musical and other Sound Instruments of the Guiana Indians." A number of instruments and diagrams illustrating their use added much to the interest of the paper. On the motion of the Rev. R. L. Macnie a vote of thanks was warmly accorded.

Donation to Library.—Pamphlet, St. Mark's Parish, from Rev. J. L. Mansfield.

POPULAR LECTURES, ETC., IN 1912.

February 12.—Lectures by Dr. J. P. S. Cramer and Mr. F. A. Stockdale, the first on "Rubber Cultivation in the East," and the second "Rubber in British Guiana," illustrated by lantern views, Sir Crossley Rayner presided. Mr. A. Leechman manipulated the slides. A hearty vote of thanks was accorded on the motion of Mr. Wood Davis who spoke highly in favour of the lectures and of the work being done here in rubber cultivation.

July 10th.—Conversazione and Reception of His Excellency the Governor and Lady Egerton. A musical programme was rendered by several ladies and gentlemen, after which lantern views of the colony were exhibited by Sir Crossley Rayner. There was a crowded assemblage and the new Governor was enthusiastically received. The President in a short speech welcomed His Excellency and Lady Egerton and spoke of the position of the Society, past and present. His Excellency, in replying, said the Society should move with the times and justify its title to represent Agriculture and Commerce. Refreshments were provided and at the conclusion hearty cheers shook the building, to be at once taken up by the large crowd on the street which had been attracted by the illuminations.

November 8th.—"Chats about Guiana" by Mr. James Rodway. The first of these was given to over five hundred scholars and teachers, the Reading Room being densely crowded. "The Wild and Wonderful" as pictured by some of the old travellers proved very interesting. His Excellency the Governor was present and Sir Crossley Rayner presided. A hearty vote of thanks was accorded. The opening article in this number is a condensation of the "Chat," with about half the illustrations.