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.

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J. J. NUNAN, B.A., LL.B., President,

AND

J. RODWAY, F.L.S., Assistant Secretary.

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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 Henry Light, was nominated Patron, and a committee was instituted which has since been replaced by a Board of Directors.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 giant 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	*Liggyrus ebenus*
Cocoa-nut root-borer	*Strategus alœus*
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	*Elaenea pagana*
Old wife	*Crotophaga ani*
Common wren	*Troglodytes furvus*
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 penetrated, 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 for 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 easliy accessible, this colony should realize, that to put it on the lowest ground, it has a splendid commercial asset in the Kaieteur Fall.

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 Jenmani*, 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. Beekett 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. 11¾ oz.

In 1890 it gave 2lbs. 10 oz.

In 1892 it gave 2lbs. 13 ozs.

making a total of 7lbs. 2¾ 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 andrœcium 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 *Apocynaceae* 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 Pln. Vlissengen. It was originally called Bridgetown on Andrew Rose's chart of 1807, and leased 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., Cumings, 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 uni 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 Wainipero. 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, Abooydary ; 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 Aroabisce, 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, Moracab a, 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 into 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 Alliance*, 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 (*Welgelcegan*),—*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 *Siberia* (a banishment).

The grant might be a treasure (*Mon Bijou*), unrivalled (*Nonpareil*), a *Diamond*, a pearl (*De Parel*), a *Ruby*, or a chalcedony (*Calcedonie*). 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 (*Klyzenaar*) 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 (*Tijdverdrijf*), 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 nex 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 for 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 others, 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 caneful 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 be attached to, the cane 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-mac" 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.

Matıpi, 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 slaves. 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 this 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 eckon 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.

TIMEHRI:

THE JOURNAL

OF

The Royal Agricultural and Commercial Society

OF

British Guiana.

VOL. I. New Series.] *JULY, 1911.* No. 2.

Editors { Hon. J. J. NUNAN, B.A., LL.B., President.
J. RODWAY, ESQ., F.L.S., Assistant Secretary.

Literary Sub-Editor: G. MACKENZIE, ESQ.

Scientific Sub-Editor: REV. J. AIKEN.

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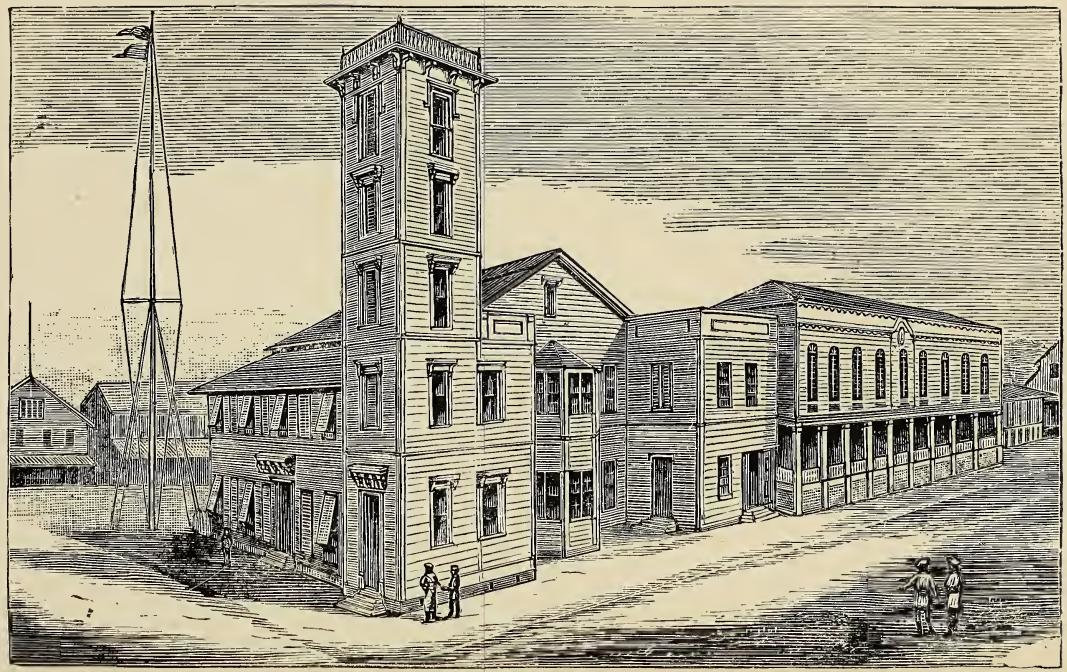

R. A. & C. SOCIETY'S PREMISES, 1870.

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Vol. I. No. II. *(New Series)* 1911.

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HEVEA RUBBER PLANTATION.

TIMEHRI:

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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 the 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 the 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 sLock 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 rats dem for 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 black and 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.' "

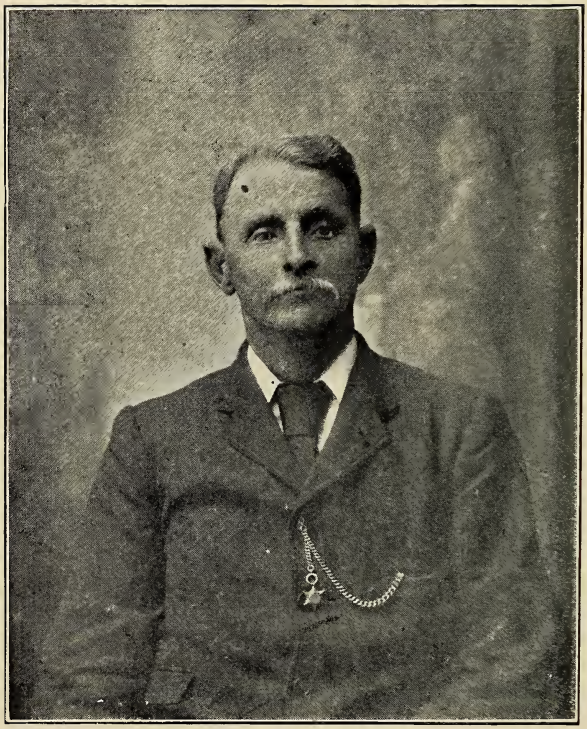
That she was possessed of tact in no mean degree was revealed by the answer of an old floor-scrubber who " did mek she livin' by washin de white people houses." Asked to state her religion, she explained that it " depen' 'pon de white people dem. Ef a wo'k wid a Roman Cat'olic ah is Roman Chu'ch, ef 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 Cal ao. 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 acourie 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 Yuruari 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 thatI 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 his 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 or 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 of 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 Uruan 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 beh lf if I had inadvertantly done anything to give annoyance. Far from it I was told, and further, that the patron wou d 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 wou.d 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 incidentally 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.

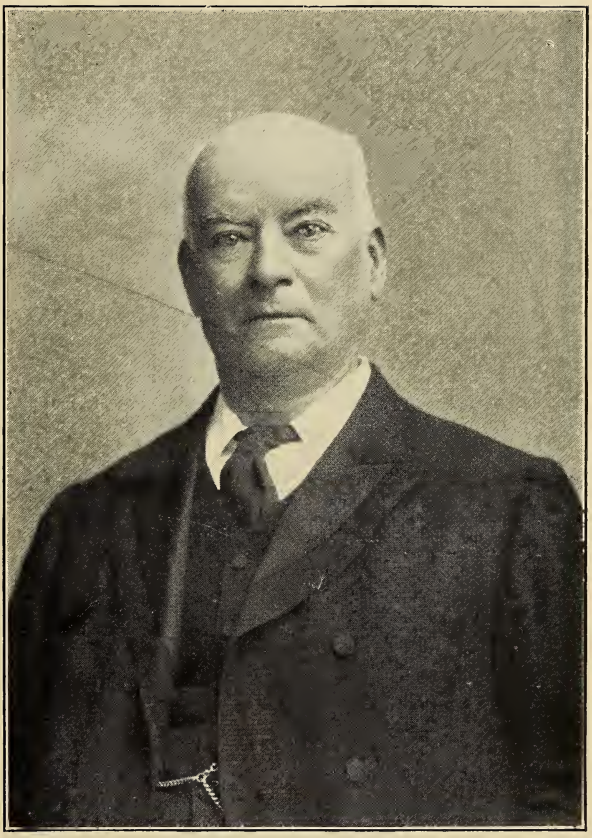
We formed rather an imposing spectacle as our flotilla of "dug-outs" proceeded up the river. Each boat was filled with Malays selected for their valour and reliability. The journey was a tedious one, entailing several days of poling against a rapid stream. After a time even the beauties of nature lose 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." *

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* 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 (*Euxenura 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, where 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 Maipuri 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 jaw 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 two hours' pull from Andabo, you come to a place known as "Big Pond," where you can secure plenty of water-haas (*Hydrochœrus capybara*) Nigger Head (*Tantalus loculator*), 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 moment. 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 school-houses. 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 educationl 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 1876 : —

(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 keep-sakes 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 Adovcates 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 geooideelt 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 dezelvc.

ANTHONY BEAUJON.
Secretaris.

The publication was placaaded by the Government Printer, J. C. Delacoste. Antony Beaujon was made Lieuteuant-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 Forrester 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 all 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.

SCIENTIFIC.

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 fœtida* 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 *Gynœcia 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 flegia* 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 sophoræ* 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 discovered 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

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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

atters. It must be either our doing so, or being content to remain as we are id rest satisfied with a high death-rate, and larger sickness-rate, and consequent ss of labour.

Professor Ross in his recent work "The Prevention of Malaria," under ction 38 gives what he calls some "General Sanitary Axioms": and number of these axioms reads :—

"For economic reasons alone, Governments are justified in spending for the evention of such diseases a sum of money equal to the loss which the diseases flict upon the people." After the word "Governments" we here could very ell add "or proprietors of labour," and in place of the words "are justified" e might read "would be well-advised in."

As I have already mentioned, sections 179 to 187 give all Local Authorities ower to insist on a sufficient water-supply for their districts, and explicitly ate how such a supply is to be obtained and the penalties incurred by those who ilfully neglect to comply with the law.

Diseases Conveyed by Insects.

The ones that concern us chiefly here are : Malarial Fevers, Yellow Fever nd Filariasis

Malarial Fevers :—Everyone knows nowadays that the kind of mosquito hich conveys these fevers, is the Anopheles. In British Guiana, the chief arriers are the *Cellia albipes* and *argyrotarsis*, of the Anopheline family.

Everyone has heard of the huge campaigns which have been so successfully arried out in certain other countries, and most people here seem to be quite atisfied that any such campaign in this Magnificent colony, would be quite out f the question. Being so satisfied, they seem to think that there is nothing rther to be done, beyond telling everybody else that we have no money to pend on "these wild-cat schemes of a few cranks." If my memory serves me right, these very words were used by one of the leading papers of the colony nly 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 one 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 admin-tration of quinine. This in conjunction with the other recognized anti-nalarial measures is no doubt admirable. But when depended upon alone, o the exclusion of other methods, it can hardly be expected to do more than elp 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, thr years' administration of the drug (quinine) had entirely failed to eradicate th disease." This in spite of the fact that the drug was given in 10-grain doses o six days out of seven, or in 20-grain doses when a coolie had fever, or was in suc bad health that he did not feel inclined to work. He goes on to say that "I as has been shown, the immunity from malaria produced by quinine leaves th patient infective while he is acquiring the immunity, then it will be impossibl in the presence of many Anophelines, and in the presence of many new arriv (such as newly-born children), ever to eradicate malaria by quinine." "I follows too, that if drainage be an alternative, even though much more expensiv drainage must be the method which should be adopted."

Prof. Ross goes on to say: "The author carefully compares the conditions Italy with those in his country. The reason for the freedom of the hills in Ital from malaria is that the principal carrier there is s pool breeder and not a strea breeder. The attitude of the Italians to quinine is due to local condition drainage being difficult in many malarious localities there, especially along th coast. But as regards the tropics, the author adds: "To me it seems only th vision of a dreamer that any organisation will ever induce a whole tropical popu lation to take quinine in the doses required by the Italians. And when it i further considered that the population even when taking this quinine, would sti be infectious, the policy of spending money on quinine for an indigenous popu lation, where drainage is possible, appears to me indefensible either on medica or financial grounds." I need hardly add that I am in thorough accord wit Dr. Malcolm Watson's conclusions so far as British Guiana is concerned. I seems to me that everybody out here has come to the conclusion, quite prema ture I believe, that quinine administration is the only method to be adopted, wit perhaps, a little playing about with such additional means as drainage and th clearing of bush. Soon after Sir Rubert Boyce's visit to the colony, a fai amount of clearing of bush and trees was accomplished about Georgetown an a few other places, so that the doing of this came to be known by the name o "Boycing." Nowadays, however, to mention a suggestion of "Boycing" t many individuals, is like holding out a red rag to a bull. And some of thes individuals include those who ought to know better, I have even seen it state that Sir Rubert Boyce, when advocating the cutting down of bush, was onl referring to the bush about Georgetown, and not to that about the dwelling of people in the country ! ! The want of money is by no means the only difficulty i the way of our carrying out anti-malarial measures in British Guiana: almost i not quite as great a drawback is the opposition one meets with from people in th most influential quarters.

What therefore can be done on estates with regard to anti-malarial measure other than the free use of quinine ? Obviously drainage comes first in importanc Most estates are or should be well-drained. But good drainage is not always a adjunct of the yards where the labourers dwell. Now there can be no possibl reason for not having all the yards on estates kept in thorough order so far a drainage is concerned. And yet I have found it extremely difficult to get thi done at times. Certain people seem to think that as soon as a few drains hav been dug, nothing further is required. All drains should be kept thoroughl

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 for 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 size and shape both in those occurring in different parts of 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 of 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 f ont.

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.

Semœomyia 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 *Semœomyia* 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. Kiefferi*, 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 varimaculata, 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 yel owish, there is a black line down the middle of the scutellum on the basal three-four hs. 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 ano'her

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 discoeubital 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 uniformily 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 metapleuræ. Post-petiole finely striated in the middle ; the second and third abdominal segments closely punctured. Labrum depressed. Front widely and deeply depressed. Temples wide, obliquely narrowed. Occiput deeply, widely depressed. An ennæ 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 *Ichneumoninæ ;* 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 interestitial. 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 areolet 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 deprsssion 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 lowe', extending on to the malar space, its upper half obliquely narrowed, basal ha f 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 disco-cubital 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, tegulæ, 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 bifnrcate 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 pallid

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 sprasely 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 metanotum 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 of 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 Metanotrichs, 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 Deniocerating 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, Ankylorynchae; 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 Megarhininae. Theobald.

Ankylorynchae. 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 chaëtae 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 ? (I) 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. *Sayi*, 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. *sayii* 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. Robinean-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) ante-dates 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.

Gnophodeomyia 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. 23.)

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 spots, 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 Aedine.

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.)

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*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.15 (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. Robinean-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 (Theob. Mon. Cul., I, 250, III, 327.) 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 libe 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 it 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 Sovereign 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 purchase; 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 la ge 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 Gove nment 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 abolition 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 authoritie 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 proposalwas 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 dicta or 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. Perry* 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. E. 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 he 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 Georgetown 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 regretted 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 I. 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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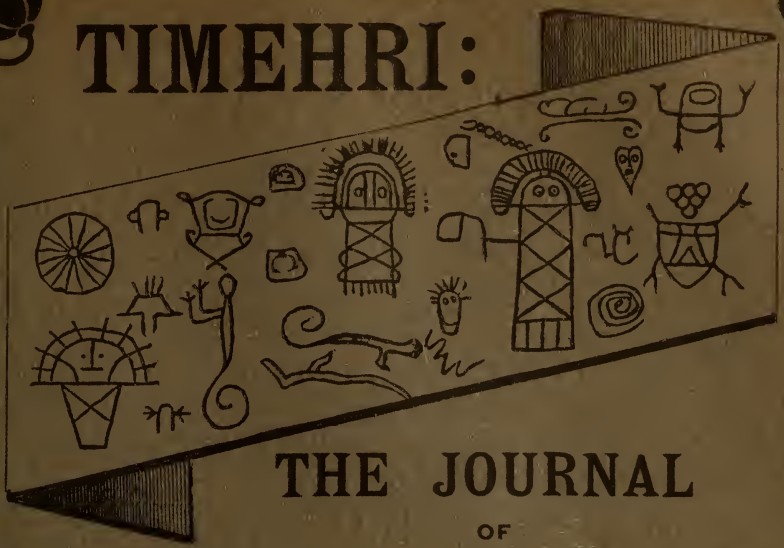

THE JOURNAL

OF

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OF

British Guiana.

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Editors { J. J. NUNAN, B.A., LL.B., President.
J. RODWAY, F.L.S., Assistant Secretary.

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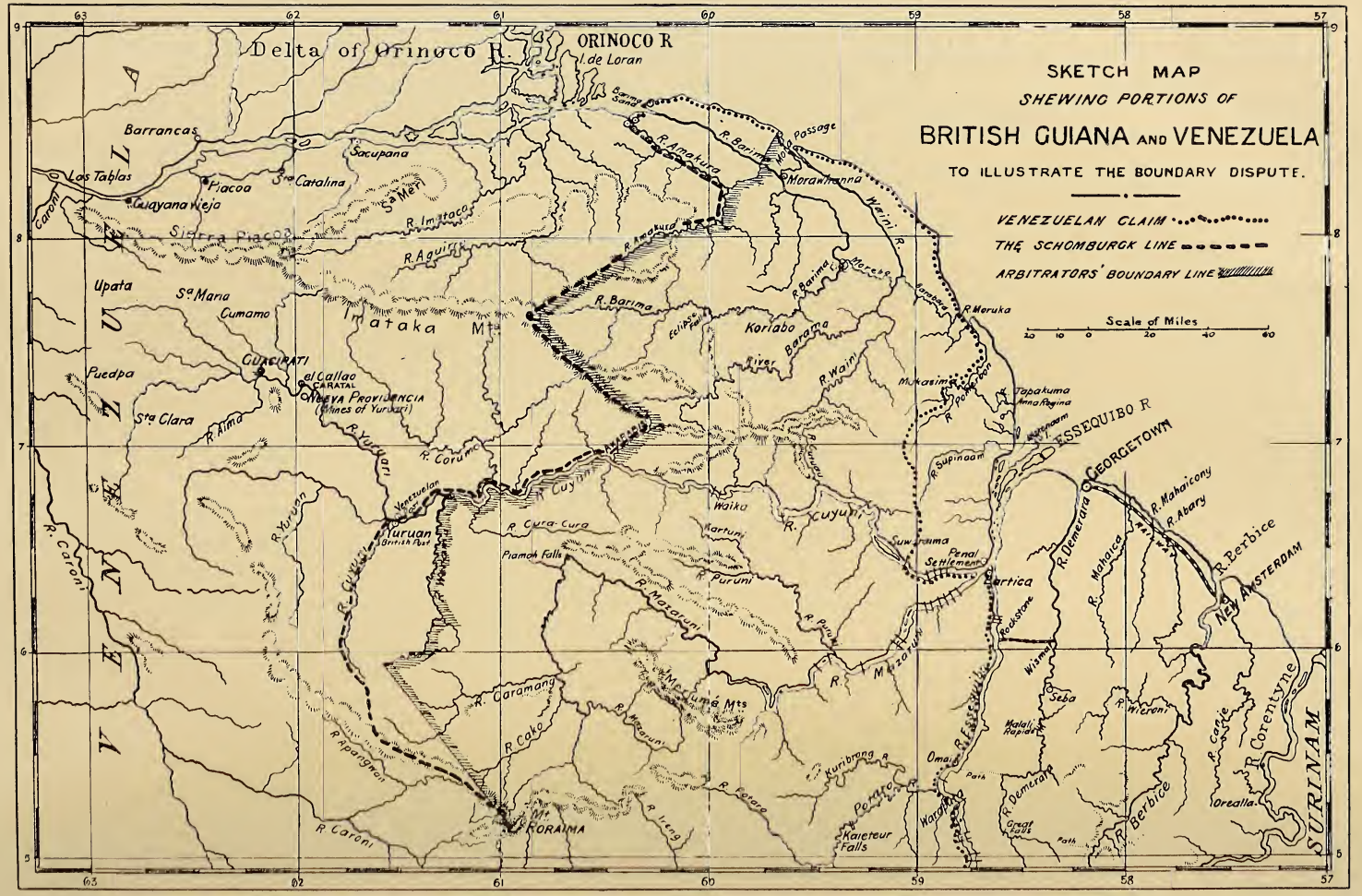
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BRITISH GUIANA AND VENEZUELA
TO ILLUSTRATE THE BOUNDARY DISPUTE.
VENEZUELAN CLAIM
THE SCHOMBURGK LINE
ARBITRATORS' BOUNDARY LINE
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ORINOCO R
I. de Loran
Barrancas
Sacupana
Los Tablas
Piacoa
Sta Catalina
Guayana Vieja
Caroni
Sierra Piacoa
Sa Maria
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Upata
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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 begun 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 snstain 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 o˚ 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 ives 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.

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.

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(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 seoond 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 virulent, 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 b'ood 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 *Tepiselaga 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 *Monedula 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 justice—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.

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 aoe 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 be 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 not 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	46
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-reaping.

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 frequented 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 leve!, 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 2½ 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 2½ 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 1½ 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 althogh 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 fitted 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, reahing 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 smooh, 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 shin ng, 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 becme 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 margigined. 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 bimaculata* 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 ; the legs 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 guyanensis, 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 trichiotomus, 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 was 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, subbornly 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 gentle man (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 Kinsale 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 of 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 invaders.

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 shou.d 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 intercourse 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 Roundhead 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 4,000 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:

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* "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 Moyle. 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.