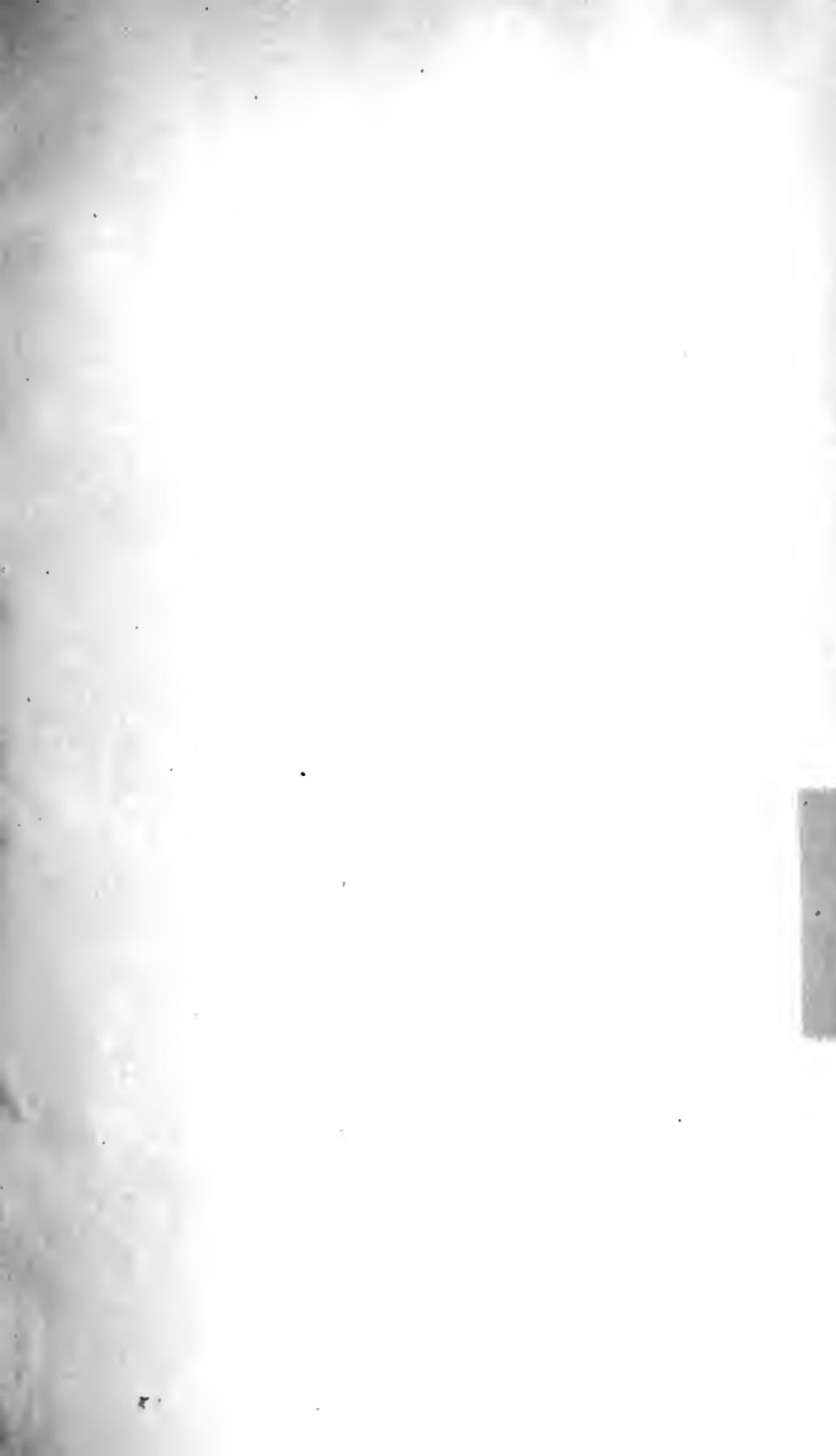




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~~Geog~~
Queensland Geographical
Journal

PROCEEDINGS

OF THE

Queensland Branch

OF THE

GEOGRAPHICAL SOCIETY

OF

AUSTRALASIA.

1st SESSION,
1885-6.

EDITED BY
J. P. THOMSON, M.A., C.E.,
Hon. Sec. and Treasurer.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. I.

Brisbane :
WATSON, FERGUSON & CO., PRINTERS, QUEEN STREET.

1886.

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NOTICE.

All Donations presented to the Queensland Branch of the Society are acknowledged by letter and in the printed Proceedings of the Society.

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The Geographical Society of Australasia.

QUEENSLAND BRANCH,

FOUNDED JULY 10th, 1883.

Vice-President :

THE HON. A. C. GREGORY, C.M.G., F.R.G.S., &c., &c.

Hon. Secretary and Treasurer :

J. P. THOMSON, M.A., C.E.

Council for 1885-6 :

THE HON. A. C. GREGORY, C.M.G., F.R.G.S., &c., &c.

J. P. THOMSON, M.A., C.E.

W. ALCOCK TULLY, Esq., B.A., F.R.G.S.

J. N. WAUGH, Esq., M.D.

W. H. MISKIN, Esq.

WILLIAM WILLIAMS, Esq.

W. M. LLOYD, Esq.

J. MUIR, Esq.

Society's Meeting Rooms :

MUSEUM LIBRARY

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CONSTITUTION AND RULES

OF THE

QUEENSLAND BRANCH

OF

The Geographical Society of Australasia,

FOUNDED JULY 10th, 1885.

1886.

CONSTITUTION AND RULES
OF THE
QUEENSLAND BRANCH
OF
THE GEOGRAPHICAL SOCIETY OF AUSTRALASIA,
FOUNDED JULY 10th, 1885.

THE QUEENSLAND Branch of the Geographical Society of Australasia was formed at a meeting held at the Town Hall, Brisbane, on the 10th July, 1885.

This Branch of the Society adopts for its general government the Constitution of the Geographical Society of Australasia so far as the same is applicable; with the following Rules for its guidance:—

Title.

1. "The Queensland Branch of the Geographical Society of Australasia."

INTERPRETATION—SOCIETY :

Whenever the word "Society" is used in the following Rules and Bye-laws, the same shall be read and construed to mean the Queensland Branch of the Geographical Society of Australasia.

Objects.

2. The objects of the Society are—

A—GENERAL.

- i. Scientific—The advancement of geographical science, the study of physical geography, and the exploration of Australasia, with the islands and seas adjacent thereto, and to obtain information upon their physical features, fauna, flora, geological formation, &c.

- II. Commercial—The study of commercial geography, natural and artificial products, and the manufactures of various countries.
- III. Educational—The dissemination of knowledge of physical, commercial, and political geography amongst all classes, by means of public lectures and publications.
- IV. Historical—The collection and publication of historical records of geographical interest, and of memoirs of men distinguished by the advancement of geographical science in Australasia.

B—SPECIAL.

- I. The collection of material for the compilation of a reliable Geography of Australasia.

Constitution.

3. The Society shall consist of Ordinary, Corresponding, and Honorary Members.

- I. Any lady or gentleman may become an Ordinary Member, subject to election.
- II. Persons of distinguished scientific attainments, who have promoted the objects of the Society, may be elected Corresponding Members.
- III. Honorary Members shall be elected from among such eminent persons as have rendered valuable service in the cause of geographical science.

Election and Privileges of Ordinary Members.

4. Every person desirous of admission as a member of this Society shall be nominated by two Ordinary Members; the nomination (to be in Form I. of the Appendix) to be delivered to the Secretary in writing, and submitted to the Council at its next meeting, and at the next ordinary monthly meeting thereafter the name of such person shall be put up for election by ballot, and two-thirds of the members balloting shall elect.

5. Every person so elected, shall upon payment of his entrance fee and subscription, and signing the obligation book (to be in

Form II. of the Appendix) either personally or by some person duly authorised by him in writing so to do, become a member of this Society; and shall be presented by the Secretary with a copy of the rules.

6. The Ordinary Members of the Society have the right to be present and vote at all meetings of the Society; to introduce two visitors at the general or ordinary meetings upon entering their names in the visitors' book; but no visitor shall speak unless specially invited to do so by the Chairman. Each member to be entitled to receive a copy of the Society's official publications, and to have access to the library and other public rooms of the Society.

7. Any Ordinary Member is eligible to be an officer or member of the Council of this Society.

Election of Corresponding and Honorary Members.

8. The Corresponding and Honorary Members shall be elected under the same conditions as laid down in rule 4 for Ordinary Members. They shall be exempted from the payment of fees, and may exercise the privileges of Ordinary Members; except that they shall not vote or hold office or seat on the Council.

Government by Council.

9. The government of the Society shall be vested in a Council consisting of eight (8) members to be chosen annually, to be elected as hereinafter directed. Three (3) members to form a quorum.

Officers.

10. The officers of the Society shall consist of a Vice-President, and Honorary Secretary and Treasurer, who shall be chosen annually, and elected from amongst the members of the Council.

Property.

11. The Council shall have the management of the affairs and property of the Society, and the disbursement of the funds.

12. The whole of the property and effects of the Society of

what kind soever shall be vested in the Vice-President, and Hon. Secretary and Treasurer for the time being, in trust for the use of the Society.

Election of Vice-President.

13. The Vice-President shall be elected by ballot, at an annual general meeting of the Society, and shall be eligible for re-election, provided that he shall not hold office for more than two (2) years successively. He shall preside at all meetings of the Society and of the Council, at which he may be present.

Election of Honorary Secretary and Treasurer.

14. The Honorary Secretary and Treasurer shall be elected by ballot at an annual general meeting of the Society, and shall be eligible for re-election.

Election of Ordinary Members to the Council.

15. The election of Ordinary Members to the Council shall be by ballot at an annual general meeting of the Society. The two members who have attended the least number of meetings of the Council shall not be eligible for re-election.

16. The President or members of the general Council, or the Vice-President or members of the Council of any associated branch of the Society, shall, when present in Brisbane, be admitted to the meetings of the Council with the privileges of Honorary Members.

Duties of the Council.

17. The Council shall meet once in every month for the transaction of business, at such time and place as may be appointed. Special meetings of the council may be convened at any other time on the authority of the Vice-President, or of three members of the Council. Due notice of all Council meetings to be sent to each member.

18. The Council shall prepare an annual balance-sheet, and a report on the operations of the Society for the preceding year, for presentation at the annual general meeting.

19. No business shall be transacted at any meeting of the Council unless three members of the Council are present; in case of equality of votes, the chairman shall have an additional or casting vote.

20. It shall be the duty of the Council to decide on the papers to be read at the monthly meetings, and to determine as to their publication, in whole, or in part.

21. Any member of Council personally interested in a question before the Council, shall, if requested to do so by the Chairman, withdraw during its consideration.

22. Any member of Council absenting himself from three consecutive ordinary meetings of Council shall be considered to have vacated office.

23. If, in the interval between two annual meetings, any vacancy in the Council occurs, as in the last preceding clause, or from any other reason, the Council may appoint some member of the Society to temporarily fill such vacancy until it is filled by election at the annual general meeting.

Duties of the Hon. Secretary and Treasurer.

24. The Honorary Secretary and Treasurer shall have special charge of all moneys and accounts, and shall see to the collecting of all moneys due to the Society, and shall submit, quarterly, to the Council a list of the names of such members as shall be in arrears with their subscriptions. He shall pay all moneys received into a Bank account to the credit of "The Queensland Branch of the Geographical Society of Australasia."

25. All accounts due by the Society shall be approved by the Council before being paid, and all payments shall be by cheque signed by the Honorary Secretary and Treasurer, and counter-signed by one of the Council members.

26. He shall prepare an annual statement of receipts and disbursements; to be audited by Auditors appointed at the preceding annual general meeting. Any vacancy occurring in such appointment to be filled by the Council.

27. This statement shall be submitted audited to the Council at its meeting prior to the annual general meeting.

28. He shall attend and take minutes of the proceedings of the Society and of the Council respectively, and see that all such minutes are entered in the several minute books, and shall keep a complete list of the members of the Society, with the name and address of each accurately set forth ; he shall conduct all correspondence and transact all the routine business ; and shall have charge of all property, books, maps, papers, &c., and shall see that the same are properly recorded and catalogued.

Fees.

29. Ordinary Members shall pay £1 1s. entrance fee, and subscribe £1 1s. per annum, payable in advance to the Hon. Treasurer, on or before the first day of the Session.

30. A member may at any time compound for future annual contributions, by the payment of the sum of £10 10s.

31. Members elected during the second half of the session (excepting the first session) shall pay half the usual fee for that year. No member shall be responsible for any expenditure beyond his annual subscription.

32. Any Ordinary Member who has not paid the year's contribution during the currency of the year, shall be liable to have his name removed by the Council from the list of members of the Society : Provided always that written application for the same shall first have been made by or on behalf of the Treasurer : And provided, also, that the Council shall have power to restore the defaulter's name at his request, and after payment of arrears. No member shall be entitled to vote or hold office while his subscription for the previous year remains unpaid, nor be entitled to participate in the other advantages of the Society if his subscription be six (6) months in arrears.

At the meeting held in September, and at all subsequent meetings for the year, a list of the names of all those members who are in arrears with their annual subscriptions shall be suspended in the meeting room of the Society. Members shall

in such cases be informed that their names have been thus posted.

Session.

33. Session shall commence in the month of July, and last eight calendar months.

Meetings.

34. The meetings of the Society shall be—

- I. Annual general meeting.
- II. Ordinary monthly meeting.
- III. Special general meeting.

35. The annual general meeting shall be held at the commencement of every annual session in the month of July, on a day to be fixed by the Council, to receive the Vice-President's address and the report of the Council on the state of the Society, and to discuss such subjects as may be brought forward relative to the affairs of the Society; and to make the elections for the ensuing year. If after the lapse of fifteen minutes, less than ten members are present it shall not be lawful for the meeting to proceed to business, except for the purpose of adjournment, and the meeting shall stand adjourned until a day and time then resolved upon.

36. The ordinary monthly meetings of the Society shall be held in each month of the session on such days, and at such place, as the Council may appoint. The business shall be conducted in the following order, unless otherwise decided.

- I. Announcement by the Chairman of the names of visitors present.
- II. The reading and confirming the minutes of last meeting.
- III. Balloting for new members.
- IV. Signing of obligation book by new members.
- V. The Secretary shall announce any donations made to the Society since their last meeting, and read any special communications.
- VI. Motions, of which notice has been given, to be considered, and notices of motion for the next meeting to be read.
- VII. The consideration of any special subject which members

may desire to bring forward, provided it be approved by the Chairman.

VIII. Any paper or subject notified in the circular shall then be read.

IX. The Chairman to invite discussion.

X. Notice of papers for next meeting.

37. No motions relating to the government of the Society, its Rules or Bye-Laws, the management of its concerns, or the election, appointment, or removal of its officers, shall be made at any ordinary monthly meeting.

38. Except as above provided, no paper shall be read at any meeting which has not been notified to and approved by the Council; and every paper read before the Society shall be the property thereof, and immediately after it has been read, shall be delivered to the Secretary.

39. No motion of thanks to the contributor of any paper or lecture to the Society shall be allowed at the meeting. But every contribution to the Society shall be acknowledged with thanks by the Secretary by letter in a formal manner.

40. A special general meeting shall be called by the Council when considered by them necessary, or when required by the requisition in writing of any ten members to do so; the requisition to specify (in the form of a resolution) the purpose for which the meeting is required to be called; and at the meeting the discussion shall be confined to the subjects mentioned in the notice convening such meeting. Ten members to form a quorum.

41. All meetings of the Society shall be convened by notice written or printed, sent by the Secretary to every member resident in the colony, at least seven days before the date fixed for meeting. The circular shall state as far as convenient the subjects to be brought before the meeting.

42. The Vice-President shall take the chair at all meetings of the Society; or, in the event of his absence, members present shall elect a Chairman, being a member of Council, if such be present.

43. No person shall, at any meeting, unless with the express permission of the Chairman, address the meeting otherwise than in a standing position.

Intercolonial Meetings.

44. The Council may appoint a member, or members, to attend intercolonial general meetings when deemed necessary.

Retirement of Members.

45. Any member may, on payment of all arrears of his annual contribution, withdraw from the Society, by signifying his wish to do so by letter under his own hand, addressed to the Secretary. Such member shall, however be liable to the contribution of the year in which he signifies his wish to withdraw, and shall also continue liable for the annual contribution until he shall have returned all books, or other property, borrowed by him of the Society; or shall have made full compensation for the same if lost or not forthcoming. Should there appear cause in the opinion of the Council to require the retirement from the Society of any member, a special general meeting shall be called by the Council for that purpose; and if three-fourths of those voting agree by ballot that such member shall retire, the Chairman shall declare the same accordingly; whereupon the name of such person shall be erased from the list of members.

Archives.

46. The archives of this Society shall be kept in Brisbane.

Quarterly Report.

47. A quarterly report of this Branch of the Society shall be published, and a copy transmitted to the Honorary Secretaries at Sydney for insertion in the annual proceedings of the Society.

Alteration of Rules.

48. Any repeal or alterations of the rules, or additions thereto, of the Society, shall not be considered unless a written notice

of motion, signed by not less than five members, shall have been given to the Council and read at three ordinary monthly meetings of the Society, and thereupon such motion may be brought forward at the next annual general meeting; or, if thought desirable, a special meeting may be convened before such annual general meeting to consider the resolution; and any resolution passed at such special meeting, altering or repealing the rules, shall be in force until the annual general meeting next following, and, if not then confirmed, shall thereafter be held void and of no effect.

Bye-Laws.

49. The Council shall have power to make Bye-laws for the conduct of its business and the business of the Society generally: Provided no such Bye-laws shall be repugnant to the objects of the Society, or to any rules or Bye-laws made by the Society at any of its general meetings.

BYE-LAWS RELATING TO COMMUNICATIONS TO THE SOCIETY.

1. Every paper which it is proposed to communicate to the Society shall be forwarded to the Hon. Secretary for the approval of the Council.

2. The Council may permit a paper written by a non-member to be read, if communicated through a member.

3. In the absence of the authors, papers may be read by any member of the Society appointed by the Chairman or nominated by the author.

4. No paper or communication read before the Society, shall be published without the consent of the Council.

5. The Council shall decide, not less than at its meeting next following the reading of a paper, whether or not it shall be

printed in the proceedings; and if not, such paper shall be returned, if desired, to the author.

6. All communications intended for publication by the Society shall be clearly and legibly written on one side of the paper only with proper references, and in all respects in fit condition for being at once placed in the printer's hands.

7. In order to insure a correct report, the Council request that the paper shall be accompanied by a short abstract for newspaper publication.

8. The author of any paper which the Council has decided to publish, will be presented with twenty copies; and he shall be permitted to have extra copies printed, on making application to the Hon. Secretary, and on paying the cost of such copies.

9. A proof corrected by the MS. shall be submitted to the author for revision.

Ratified by the Society at a special general meeting, held April 8, 1886.

A. C. GREGORY, *President.*

J. P. THOMSON, *Hon. Secretary.*



APPENDIX.

FORM No. 1.

THE GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND BRANCH.

CERTIFICATE OF A CANDIDATE FOR ELECTION.

Name,
Qualification or Occupation,
Address,
being desirous of admission into the Queensland Branch of the
Geographical Society of Australasia, we, the undersigned
members of the Society, propose and recommend him as a proper
person to become a member thereof.

Dated this day of 188

FORM No. 2.

THE GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND BRANCH.

I, the undersigned, do hereby engage to observe the Rules and
Bye-laws of the Queensland Branch of the Geographical Society
of Australasia as long as I shall remain a member thereof.

Signed,

Address,

Date,

PROCEEDINGS
OF
The Geographical Society of Australasia.

1st SESSION, 1885-6.

QUEENSLAND BRANCH.

MEMORANDUM

FOR THE RECORD

DATE: 10/10/54

TO: SAC, NEW YORK

FROM: SA [Name], NEW YORK

SUBJECT: [Subject]

Reference is made to [Subject]

[Text]

[Text]

[Text]

[Text]

[Text]

[Text]

[Text]

[Text]

[Text]

[Text]

[Text]

[Text]

[Text]

ORDINARY MONTHLY MEETINGS OF MEMBERS
OF THE
QUEENSLAND BRANCH.

12th January, 1886.

A paper, on the North-west Coast of Vanua Levu, Fiji, was read by J. P. Thomson, M.A., C.E.

2nd March, 1886.

A paper, on British New Guinea, was read by H. H. Romilly, Esq. A paper, by T. B. Moore, Esq., on Western Tasmania, was read.

1st April, 1886.

A paper, on the Islands of Torres Straits, was read by the Hon. John Douglas, C.M.G., F.R.G.S., &c., Special Commissioner for British New Guinea.

29th April, 1886.

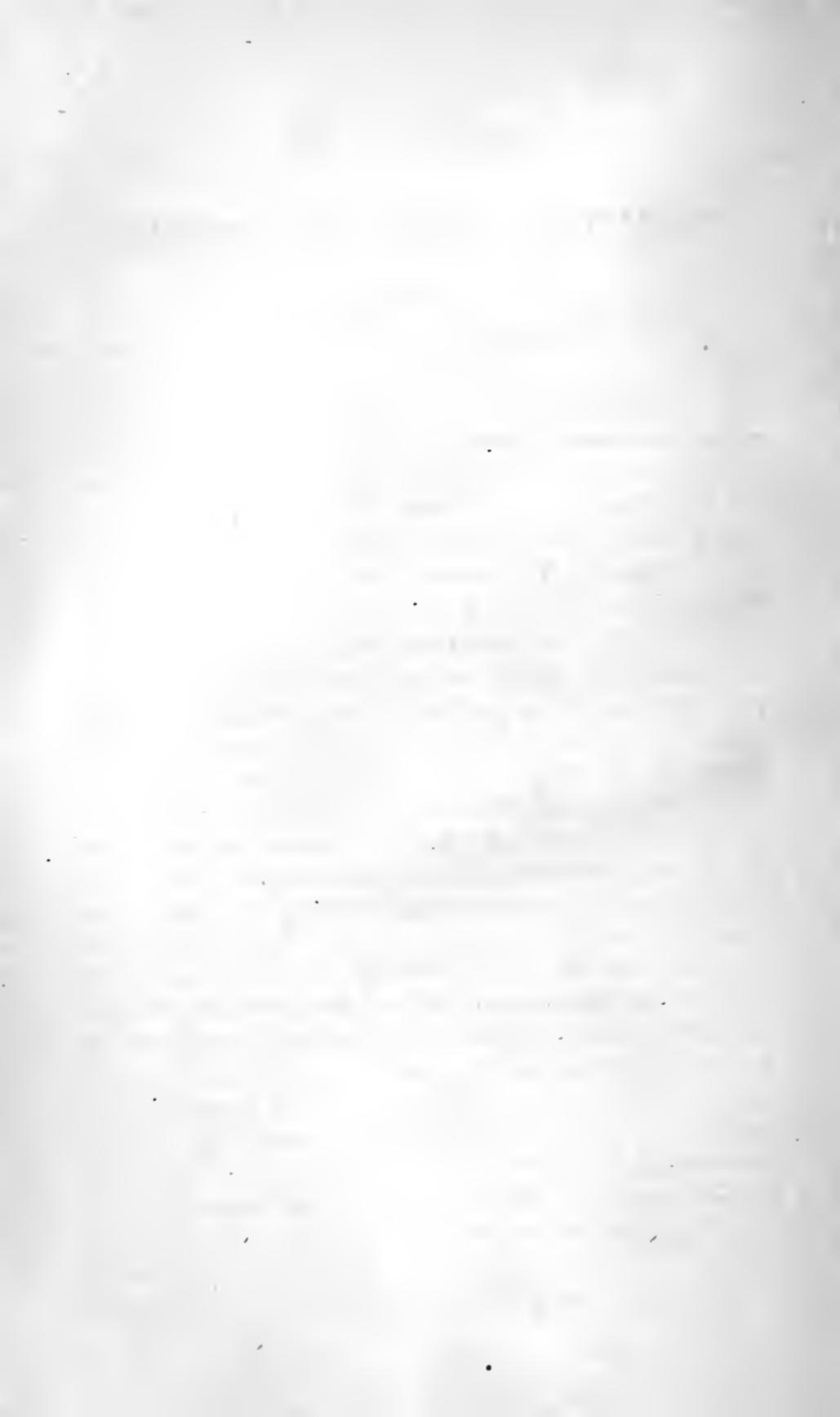
A paper, by E. J. Bennett, Esq., on Atmospheric Phenomena, &c., &c., was read. A paper, by Capt. John Strachan, on Explorations in New Guinea, was read.

27th May, 1886.

A paper, by A. A. Hull, Esq., on Progressive Queensland, was read. A paper, by Capt. J. M. Hennessy, on Experience in New Guinea, was read.

17th June, 1886.

A paper, on the Upper South Johnstone River, was read by W. H. Miskin, Esq. A paper, by W. L. Allardyce, Esq., on Rotooma and the Rotoomans, was read.



GEOGRAPHICAL SOCIETY OF AUSTRALASIA.

QUEENSLAND BRANCH.

ABOUT the commencement of the year 1885, Mr. Francis Gerard, the Hon. Treasurer of the Society in Sydney, communicated with Mr. J. P. Thomson, in Brisbane, with a view to organizing a branch of the Society in Queensland.

In response to Mr. Gerard's request, Mr. Thomson placed himself in communication with a number of gentlemen in Brisbane who were favourable to the project, with the result that, on the 10th July, 1885, a meeting was held at the Town Hall, Brisbane, to consider the subject. There were present: Mr. W. Alcock Tully, B.A., F.R.G.S., Surveyor-General (in the chair), Messrs. W. M. Davidson, W. H. Miskin, James Muir, E. J. Bennett, H. C. Luck, F.R.G.S., the Rev. George Woolnough, M.A., and others. Letters were read from Captain Heath, R.N., and Mr. Warde, the Swedish Consul, expressing regret at not being able to attend the meeting, and promising their co-operation with the movement. A telegram was also read from Sir Edward Strickland, President of the New South Wales Branch of the Society, intimating that the Administrative Council was delighted at the prospect of a branch being formed in Queensland, and they wished it every success. As soon as definite information was received of the Queensland Branch being formed a liberal supply of the volumes of the Society's proceedings would be forwarded.

The Chairman, in opening the proceedings, expressed regret that the attendance was not large; but he hoped they would be able to do good work notwithstanding that there were so few present. As Chairman, it was necessary that he should preface

the business with a few observations. He would refer first to the subject of geographical research. It was one that interested most men. Very early experience of geography disabused his mind of the idea that it was a mere category of names, and he soon found that geography in its wide sense opened up a large field. It embraced several branches of scientific inquiry, and it required trained minds to investigate all these. Its utilitarian side would most enlist the sympathies of the men who would unite in forming a Geographical Society here. Their object would be to collect all the information they could about our own continent and the islands that surround it, place the information on record, and distribute it amongst the people, so that the collection of information upon any one point might induce other persons, perhaps, to interest themselves in adding to it; and by these means advancing our comparatively small community, and enlarging its resources. That was one of the principal objects which the projectors desired to attain. The object they had in view this evening was the establishment of a kindred Society to that in existence in Sydney. They might establish an association with similar object, but independent of the Sydney Society. He did not think, however, they would gain any advantage by that. The Sydney Geographical Society had been looked upon as the parent Society by Victoria, where there was a separate branch. He did not think they could do better than establish a similar branch here. They had the advantage of having some trained men enrolled amongst the members in Sydney. By forming a connection with the old Society they could avail themselves of the rules which had been prepared for the furtherance of geographical research. They would, therefore, be able really to do far more by co-operating with the old Society than they could unaided by an association of their own. Several resolutions would be submitted to the meeting, and these would afford an opportunity for discussing the project. This meeting was only a preliminary one, for the purpose of establishing their principles of action. Mr. J. P. Thomson, who had kindly consented to act as Secretary until a proper organization was formed,

had placed on record some information with regard to the Society, which he would read to the meeting. (*Applause*).

MR. THOMSON, after reading over the constitution of the Society, said: In putting before you the Society's objects, it is desirable, in order that you may most clearly understand them, to give a few illustrations, and refer briefly to the work the Society has in hand, and its future contemplations. Many residents of this Colony, and, I may say, a great proportion of the world's population, have from school-day impressions a firm idea that the science of geography, in its literal meaning, consists almost purely of the formulation of scientific facts observable in the physical features exhibited on the surface of the earth, and the study of the general conformation of the globe and its physical divisions, with the numerous names thereon conveniently put together in a properly compiled form; but the curtain once lifted, and fanatical forms expelled—when the mind becomes enlarged, and visionary dreams of bleak school-rooms and massive University walls disappear—then vast fields open out, exhibiting endless paths of research in geographical science, not interesting alone to the scientist and traveller, but also certain success may be found here, in all commercial enterprises, and the true and sure foundation of national prosperity. Geography is the key to civilization and commercial development, which are so closely related to one another as to be absolutely inseparable. Geographical research penetrates into the unknown regions, and commercial enterprise and civilization follow after; indeed, its powerful effects on commerce cannot be over-estimated. Therefore it becomes the duty of nations and individuals to promote it in every way they can, being at all times a supporter of the bridge that has carried us *all* over.

The Society has at present two branches—one in New South Wales and the other in Victoria—and it is proposed to form a South Australian Branch as early as possible. Let it be clearly understood that the Queensland Branch will have the entire management of its own affairs, which will be governed by the

administration and advice of its Council. In establishing branches of the Society in the various colonies of Australasia, it will become apparent to all intelligent colonists that much good must arise therefrom, not only in the promotion of social intercourse amongst those interested in scientific and educational pursuits, and to the commercial section of the community, but the means of fostering that complete bond of union which ought to exist amongst all classes, and the encouragement of all enterprising colonists to take a deep interest in the future welfare of Australasia. The federation of nations and colonies may in various ways become complicated, but a complete federation in geographical science is the one step necessary to insure progression and harmony in the field of labour; so that in the event of any important work (such as the exploration of New Guinea, or the remote parts of Australasia) being undertaken, all the branches will be able to co-operate, thus making its members feel an interest in common, which will not only facilitate the work in hand, but impress the public generally with a greater feeling of certainty as to the satisfactory results of the Society's undertakings. The papers read at the monthly meetings, the reports and annual proceedings of each branch, will be compiled and sent to the New South Wales Branch, where all will be printed together in neat volumes; so that the members in Queensland will have the advantage of receiving the literature of the various branches, in addition to that of their own—an advantage which cannot fail to recommend itself to the favourable consideration of all intelligent colonists, and indisputable proof of the good that must arise from affiliation. It might be an easy matter for Queensland to form a Geographical Society of her own; but the advantages arising therefrom would be at the best but very meagre. All the literature on geographical science that any one branch could collect during the year would probably not be more than sufficient to make a good sized pamphlet; and although we ought not to judge the contents of the book by its cover, yet human nature very often has an inclination to do so. One of the great objects aimed at by the

Society is to circulate throughout the world a thorough knowledge of these great colonies, which are the choicest of Her Majesty's possessions—colonies which the rising generation ought truly to be proud of. I may also mention that the New South Wales Government have undertaken to print the proceedings of the Society, so that beautiful illustrations and good printing will be secured, and the members in Queensland will be granted the privilege of participating in the work already done by the Society. It is intended to hold Geographical Conferences in the various colonies. Last year the first was held in Victoria, and delegates were sent from New South Wales. Next year we shall probably have one in Queensland, when the members will be able to meet the delegates from the other colonies, which will give them an opportunity for interchange of ideas. It would be almost impossible for me to give a correct estimate of the valuable assistance rendered to the Society by the various Australian Governments. They have not only supplied valuable maps for the Society's use, but supplemented its funds for the equipment of the expedition to New Guinea. It must be evident to the gentlemen present that, of all the various colonies of Australia, Queensland stands most in need of a Geographical Society, for reasons which must suggest themselves to all who take an interest in the colony. First, because it is almost exclusively the only colony in Australia where extensive areas of country are left almost unknown and unexplored, probably abounding in untold wealth, which can only be brought to light by scientific investigation; and, secondly, every resident of Queensland must look on this colony as the twin sister of New Guinea, one of the largest and least known of islands in the world. No country in the world has a greater claim on New Guinea than Queensland. Nature intended that they should be allied to one another, as may be easily observed from the great similarities in their geological formation, and the resemblance in the general conformation of the two countries, and every one must feel that it is a duty incumbent on the men of this colony to take part in the investigation of New Guinea. Virtually it

is their own island; therefore it is their duty to make themselves acquainted with it, not only with a view to scientific research, but with the object of developing the commercial enterprises of this colony. New Guinea, no doubt, abounds in unknown wealth, and will in time become a very important colony, and one of Her Majesty's choicest possessions, which every true Queenslander will look on with pride, and rejoice in the noble efforts of her statesmen in their past endeavours to gain possession of the vast island. I have seen a portion of New Guinea, and, from several years' residence in the South Sea Islands, I had every opportunity of making myself acquainted with the various resources, capabilities, and general formation of the islands in the South Pacific. My observations impress me with a feeling of certainty that great wealth lies buried in New Guinea. You are all aware that the Royal Geographical Society of England and the Geographical Society of Australasia have sent an expedition to New Guinea with a view to exploring the vast island. The last named Society's expedition is under the command of Captain Everill, and is better equipped than any hitherto sent to the island. Looking at the expedition in a practical point of view, we ought only to consider it as an initiatory step. Still, not only the colonies, but the whole world, will look forward with deep interest to the results. Owing to the wet season of a tropical country, the expedition is bound to a limited time—that is, six months—and, during that short space, a portion of the vast island will be investigated. It is, however, the intention of the Society, if possible, to carry their investigations over the whole of the British territory, which will occupy a long time. The Society has a most gigantic work before it, and I am sure there are many gentlemen in this colony who would be proud to take an active part in the investigation of a land so closely connected with their own. Queensland is well able to join in any exploring expedition, because many of her old residents rank first amongst the explorers of the world, and a great many of her colonists are gentlemen of the highest scientific attainments; therefore

she ought to take an active part in the investigation of Australasia, and more especially New Guinea and Queensland. Having so far given you a brief sketch of the Society's undertakings, its objects, and an illustration of the deep interest it takes in investigating and developing the geographical and commercial resources of Australasia, I would beg to draw your attention to certain facts regarding the advantages which other countries have in geographical science over the colonies, and the limited knowledge some people possess of Australasia. Let us first give a glance at Japan. There we will find a well established Geographical Society, and the people in possession of an accurate knowledge of the geography and resources, not only of their own country, but of all Europe, excepting the Australian colonies. In Quebec, Buenos Ayres, Central Africa, and Lima, we find Geographical Societies established, and the people far advanced in geographical science, bringing their countries into prominence, and thereby developing their commercial enterprises. Let an Australian gentleman go to India, China, America, and the Continent, in all of those countries he will find a great ignorance prevailing amongst the people as to the geography and industries of Australasia. Indeed, in some of those countries many of the people regard part of Australasia as the habitation of savages, and positively unfit for European life. Indeed, we may even go to England, and there we will find the majority of the people are but poorly enlightened on Australian geography. They possess a more accurate knowledge of the Soudan, Russia, Central Africa, and India, than of the Australian Colonies. Doubtless there are several business gentlemen in this city who have noticed the ignorance displayed by people in other parts of the world (otherwise well educated) in addressing communications to persons in this colony, especially to inland towns, in such a manner that, were they sent as per address, they would in many cases go in the opposite direction to the place they were intended for. On the other hand, let us take a glance nearer home, and just place yourself in conversation with some of the young men born in Australia, and you

will be very much surprised at the limited knowledge they possess of the geography, resources, and capabilities of their own native country. Surely every one must feel that such a state of affairs can only be a source of regret. It is every one's duty to inquire into and make themselves thoroughly acquainted with the capabilities and resources of their own native land, and it is also every man's duty who possesses valuable knowledge, either of his own native colony or other countries, to hand down his knowledge to posterity, thereby giving those who have not had the same advantages as himself an opportunity of acquiring knowledge. It is every man's bounden duty to do so. Each individual owes a debt to the race, and it is his duty to serve it. We are all indebted to our forefathers for the knowledge we cultivate, and moral laws demand that we improve it and hand it down to those who come after us. I am sure all parents must feel proud to see their offspring advance in learning, and more particularly in an accurate knowledge of their native country; and I am certain every intelligent colonist of Queensland will willingly assist in having the resources of this great colony thoroughly investigated and brought before the world. Certainly the people of other countries can consult school atlases when they require information about these colonies; but capitalists desire more accurate information than they generally supply, and would bring more capital and invest more fully if they were supplied with reliable data from a well established Geographical Society. Once the branch is established, there are many experienced gentlemen in Queensland who will be glad to become members and contribute to the Society, and I am sure they will not be backward in supplying the information they possess regarding the geography and resources of the colony. (*Applause*).

Mr. E. McDONNELL proposed, that it is desirable to establish a Queensland Branch of the Geographical Society of Australasia. He said the objects of the Society had been lucidly set forth in the paper which had just been read. There were certain matters in the paper regarding which he might differ

from Mr. Thomson's views, but this was not the time to go into them. The object was a good one, and deserving of support.

Mr. W. M. DAVIDSON, seconded the resolution, which was carried unanimously.

On the motion of Mr. JAMES MUIR, seconded by Mr. H. C. LUCK, it was resolved that a Committee consisting of the following gentlemen be appointed to examine and report upon the applicability of the rules of the parent Society to the Queensland Branch:—The Chairman, Messrs. E. McDonnell, J. P. Thomson, W. H. Miskin, Hon. A. C. Gregory, and the mover and seconder.

On the motion of Mr. W. M. DAVIDSON, seconded by the Rev. GEORGE WOOLNOUGH, M.A., it was resolved that the meeting be adjourned until a day to be fixed for receiving the report of the Committee, and the election of officers.

The proceedings terminated with a vote of thanks to the Chairman for presiding, and to His Worship the Mayor for the use of the hall.

COMMITTEE, AND PUBLIC MEETING.

THE Committee, appointed at the previous initial meeting, met in the Surveyor-General's Office, Brisbane, on Tuesday afternoon, the 14th July, 1885, at 4 o'clock. Mr. W. A. Tully occupied the chair, and after careful consideration it was resolved that, as there appears to be nothing exclusive in the Constitution of the Geographical Society of Australasia, the same is applicable to a Queensland Branch. No further business was transacted, beyond appointing Mr. J. P. Thomson to arrange for a public meeting, which was held in the Town Hall, on 21st July, 1885,—present, Mr. W. H. Miskin in the chair, and a number of other gentlemen. The Chairman in opening the proceedings apologised for the absence of Mr. Tully through indisposition, and explained that the objects for which the meeting had been convened were to proceed to the election of the officers of the Society, and to consider the recommendations of the Committee appointed at the previous meeting with regard to the adoption of the rules of the parent Society, in so far as they were applicable to the local branch. Mr. J. P. Thomson (Hon. Sec. *pro tem.*) read the minutes of the previous meeting, which were confirmed, after which the following gentlemen were elected officers of the Society for the ensuing year:—Vice-President, Hon. A. C. Gregory, C.M.G., &c., &c.; Administrative Council, Messrs. W. A. Tully, B.A., F.R.G.S., W. H. Miskin, Wm. Williams, Jas. Muir, W. M. Lloyd, and Dr. Waugh; Hon. Secretary and Treasurer, Mr. J. P. Thomson, M.A., C.E.

Mr. THOMSON, in returning thanks for his election, reviewed the objects of the Society, and the benefits which would be derived by the scientific and commercial community, from its formation, as previously described at the initial meeting held in the Town Hall. He said that hitherto all the detailed work connected with the formation of the branch had devolved on

himself, but now he felt sure, that in future his duties would be made comparatively light by the assistance of the able and energetic gentlemen appointed on the Council, whom he was glad to welcome as co-workers. Now that the branch was properly organised, he intended to communicate with several gentlemen who were likely to become members, and he felt certain that the meeting would give their hearty co-operation with the object before them, and he had no hesitation in saying that the colonists of Australasia would have been much more advanced if a Geographical Society had been started before. There were many people in the colony who had made valuable researches into the resources of the colony, and the results of those researches were in danger of being lost, but for the presence of some central institution that could collate and put such information into shape, so that the world generally would be benefited thereby. (*Applause*). At the instigation of Mr. E. McDonnell, a discussion took place as to the advisableness of doing away with the entrance fee, but the matter dropped, on the Hon. Secretary pointing out that such a step would be inconsistent with the Constitution of the parent Society, which it was proposed to adopt.

It was resolved on the motion of Mr. JAMES MUIR, seconded by Mr. H. C. LUCK, that the rules of the parent Society be adopted, in so far as they are applicable to a Queensland Branch.

The Chairman, in inviting new members, pointed out that all who joined the Society at this stage were entitled to be recorded in the proceedings as founders of the Society, while those seeking to become members in future would have to be balloted for in the usual way. At the conclusion of the meeting several new names were added to the list of founders, and several subscriptions handed in, and after the usual vote of thanks to the Chairman for presiding, and to the Mayor for the use of the hall, the proceedings terminated.



INAUGURAL MEETING.

THE Inaugural Meeting of the "Queensland Branch of the Geographical Society of Australasia" was held in the Town Hall, Brisbane, on the evening of the 8th December, 1885, and presided over by the Honourable Sir Charles Lilley, Kt., Chief Justice of Queensland. There were seated on the platform, the Hon. A. C. Gregory, C.M.G., F.R.G.S., &c., President of the Queensland Branch; Mr. W. A. Tully, B.A., F.R.G.S. (Surveyor-General); Mr. W. H. Miskin, Mr. W. Williams, and Mr. J. P. Thomson, M.A., C.E. (Hon. Secretary and Treasurer), members of the Administrative Council; and in the body of the hall there were Lady Lilley and a very fair attendance of ladies and gentlemen.

SIR CHARLES LILLEY opened the proceedings by calling on the Hon. Secretary to read the correspondence.

MR. THOMSON then read a letter from the Private Secretary to His Excellency Sir Anthony Musgrave, stating that, under other circumstances, the Governor and Lady Musgrave would have had great pleasure in being present at the meeting, but that neither His Excellency nor Lady Musgrave expected to be in Brisbane on the evening of the 8th December; also a telegram from Sir Edward Strickland, President of the New South Wales Branch, conveying congratulations on the inaugural meeting, heartily wishing every success, and stating that certain prominent features, discovered by the Society's explorers in New Guinea, had been named after some of the Queensland statesmen or public men.

SIR CHARLES LILLEY then addressed the meeting as follows:—

Ladies and Gentlemen,—You are aware that we are met to-night for the purpose of inaugurating the Queensland Branch of the Geographical Society of Australasia. I have observed one or two statements in our local newspapers, from which it would appear that the authors are under the impression that this is a branch of a Society peculiar either to New South Wales

or Victoria. My impression is, that the Societies in Melbourne, Sydney, and Adelaide, are simply branches, just as this is a branch, so that there is no loss of dignity and position in being associated with the general Society, which has as its primary the whole of Australasia, of which Queensland forms a very considerable part. You are not met to hear me to-night, but one much better qualified to give general information upon geographical subjects than I can possibly do. Our old friend, Mr. Gregory, has kindly consented to deliver the inaugural address. (*Applause.*)

The Hon. A. C. GREGORY said: I fear the inadaptability of this hall for hearing, together with the noise of passing vehicles, will prevent many of you from hearing what I am going to say. However, those that do not hear me will, I trust, take advantage of reading to-morrow morning's *Courier*. I will now do my duty in reading the address which I have prepared:

Most things have a history, and in the case of the Geographical Society of Australasia it may be convenient to recite its history, however brief:—The Geographical Society of Australasia has been the offspring of the Royal Society of New South Wales, which established several scientific sections, one especially devoted to geographical research. This section did not, however, make any substantial progress, and some of its members came to the conclusion that the subject was one requiring an independent association which could enter more directly into communication with the public than was practicable with a subsection of a society having so wide a scope of research in other directions as the Royal Society. The result was the foundation of the Geographical Society of Australasia—Australasia, not New South Wales, because the subject was not one of provincial but general interest to all Australasians, and demanded federal action. Victoria has followed in the wake of her elder sister, and formed its branch of the Society in Melbourne, and now you are asked to assist in the inauguration of a similar branch in this colony; and I trust that though Queensland, like many other youthful scions, may deem itself quite

capable of affording instruction to its elder progenitor, yet, when a good example is set, it is not above adopting wise counsel. That the Society is not intended to simply discuss matters of abstract science, has been shown by the active steps taken to carry out its views in a practical manner, by the despatch of the expedition to the Fly River, in New Guinea; and Queenslanders may be proud of having been the first and foremost in going to its rescue on the report of disaster to the crew of the "Bonito"—a report which happily proved to have no foundation except in the fertile imagination of aboriginal guides, who had fled from prospective danger.

I shall not now enter on a recital of what has been done in the way of Australasian exploration, or give a list of those who have been engaged in developing the geography of the continent and islands, as these matters are well known to many of you, and if any desire further information as to details there are many works which give the history better than I can relate it, especially Tenison-Woods' "History of Australian Exploration." In no department of scientific inquiry has greater advance been made during the past half-century than in geographical exploration. Central Africa has, by the exploration of the Zambesi, Upper Nile, and Congo rivers, revealed its hidden secrets. On the map of Australia the inscription of *terra Australis incognita* has given place to the names of towns, rivers, and stations, while railway trains speed across localities which were at one time conjectured to be occupied by a mysterious inland sea. But now the geographer has his labour reduced to the compilation of the measurements of the surveyors. Thus, with the exception of the Polar regions, New Guinea presents the only remaining field of any magnitude to tempt the ardour of the present generation of explorers, who, as a class, will probably cease to have existence with the present century for want of new fields for investigation. Fortunately for the Geographical Society of Australasia, New Guinea is so situated that we occupy as it were the key to the position, and there can be no doubt that our Society will have many opportunities of

furthering the great work of developing its resources by encouraging the exploration of that land in a systematic manner, and the collection and codification of information, not only as regards the purely geographical features of the country, but also of the character, traditions, and language of the inhabitants before their social condition becomes modified by contact with a more civilised race. It is not that any special reliance is to be placed in the traditions of aboriginal tribes, but that, even if received as fables which have had long currency, or if merely the immediate creation of the narrator, the general construction and tenor give a more correct clue to the social condition than the most elaborate description of manners and customs as seen by travellers. So far as we are acquainted with New Guinea, the character of the country differs materially from the greater part of Australia, having greater resemblance to the limited area between the main range and sea coast between Cardwell and Cooktown than any other part of the continent. Therefore, exploration will have to be conducted on very different principles to that to which we have been accustomed. Tribes having permanent habitations, and practising agriculture, must be conciliated and employed as guides, carriers, and pioneers, to open up routes through mountainous country, dense forests, and thick jungle, which cannot be traversed, like Australia, by parties of horsemen, whose movements are scarcely restricted by any serious obstacle besides the difficulty of obtaining a supply of water. In the first instance the rivers must be surveyed and settlements established as a base of operation for land expeditions to work out further details. Leaving these tropical lands, there is yet another region in proximity to Australia which may eventually prove a source of great scientific if not practical interest. I allude to the South Polar region. You will, perhaps, ask, What interest have we in masses of ice which occupy the Antarctic Circle? But it may prove that the condition of that ice may really be found to be the element which governs the periods of rainfall and drought in the Southern Hemisphere. Hitherto attempts to formulate cycles of seasons having coinci-

dence with periods of astronomical phenomena have not resulted in the discovery of any but accidental accordance, and it is obvious that the causes of variation must be sought in some other direction. Now, it has been observed that on the east coast of North America the seasons are greatly modified by the quantity of ice which drifts southward, and also that the snow and ice on the coast of Greenland accumulates to such an extent in excess of the melting in summer that, in about twelve years, it crushes its foundation and slides into the ocean, and, floating south as icebergs, creates such disturbances of temperature as to materially affect the seasons on the American coast, producing a recurrent series. As the Southern Polar regions are not closed in by land to the same extent as obtains in the northern, it may be expected that the breaking up of the southern ice would set free much larger masses of floating ice, and affect the climate to a far greater extent; and though we may not hope to discover means of controlling the natural forces, yet it is possible that a careful study of the geographical positions of the southern islands, depths of ocean, and larger accumulations of ice, may enable us to forecast the general character of the seasons in Australia. As the chief objects of our Society are in the future, I have not adverted to explorers or expeditions in past times; but there was one whose fate yet remains unsolved. I allude to Dr. Leichhardt. That great explorer was last communicated with near Mount Abundance station in 1848. From this his camps have been traced to the Barcoo River, near Mount Inniskillen, beyond which nothing certain is known; and though it is scarcely to be hoped that he or any of his party can have survived the interval of thirty-eight years exposed to the vicissitudes of savage life, yet it would be a matter of great interest to discover any trace of the progress of the party. Our Society should, therefore, carefully watch for any information with regard to the discovery of any fragments of instruments or equipment in possession of aboriginal tribes on the probable line of their route. Although the course Leichhardt proposed to travel was through the centre of the continent to West Australia, yet he

contemplated turning to the north if the direct route were impracticable. We now know that the character of Central Australia was not practicable for the party, and the northerly route was the only one available, which would take him nearly to the line of his previous journey to Port Essington, and I have little doubt that the white man's camp found by me on the 13th July, 1856, on Elsey Creek, a southern tributary of the Roper River, was one of the Doctor's. This camp has been constructed on the same pattern as practised by Leichhardt on the Barcoo and Burdekin rivers—a hut formed of branches resting on a horizontal pole fixed in notches in two standing trees, a fire being made in front with long parallel pieces of wood, and not placed radially, as is the aboriginal fashion. Several trees, from 6in. to 5in. diameter, had been cut down with iron axes, in fair condition, while the mass of ashes indicated an occupation for several weeks. If this were one of Leichhardt's camps, he reached a position west of the telegraph line to Port Darwin, and further traces must be sought on the north-west coast—on the Victoria, Ord, and Fitzroy rivers—localities which have been so recently occupied that communication with the aborigines is yet imperfect, and it will be through them that any relics of the party are likely to be traced. Though the published records of exploration are available both in the original details and many well-arranged compilations, yet there are a few episodes not so generally known, and therefore interesting. For instance, on 4th June, 1629, Captain Pelsart, in the ship "Batavia," was wrecked on the Abrolhos, in lat. 28°, thirty miles off the west coast of Australia. Leaving the greater part of the crew and passengers on the islands, he proceeded in the longboat to Java, and, having obtained a fresh vessel, returned to their rescue. During his absence a plot was formed to seize the vessel in which Pelsart was to return to their relief, and then to become pirates. The mutineers, having murdered 125 of those who disagreed to the scheme, then established themselves on one island, and the loyalists on another. When Pelsart returned the loyalists reached the ship first, and advised him of the mutiny; and

when the mutineers came alongside they were greeted in a friendly manner, but as each ascended the side he was secured. Then justice was administered, and many were hanged or shot; but some 220 either escaped to or were put ashore on the mainland. So ended the historical part of the affair. And now for the results:—In 1848 I explored the country where these Dutchmen had landed, and found a tribe whose characters differed considerably from the average Australian. Their colour was neither black nor copper, but that peculiar yellow which prevails with a mixture of European blood; their stature was good, with strong limbs, and remarkably heavy and solid about the lower jaw.

Their dialect was scarcely intelligible to the tribes farther south. Socialism in a modified form and cannibalism prevailed. The women were far better treated, or, rather, they have emancipated themselves from the extreme condition of social slavery which generally prevails. I have, for instance, known the queen of the district give her consort the king a sound thrashing with a yam-stick, and then escape being speared for such an assertion of co-ordinate authority. They had their landed estates, the boundaries of which were better defined than many of the squatters' leases now are. The daughters inherited landed estates as well as the sons. I have heard an aboriginal lady say to her husband, "What are you? Why, before I married you your land only comprised that miserable range of hills which are not fit to feed an emu. It was my dower which brought you that fine valley, with its yams and springs of water," &c. Was this history repeating itself, or was it a trace of European civilisation derived from Dutch ancestors? They were a bel-ligerent race, and on one occasion maintained the battle with their spears and boomerangs against our firearms for more than four hours. I have subsequently met my antagonists in peaceful camps, and discussed the merits of the attack and defence, and they have pointed out scars resulting from our personal encounter, and given the details of how some came to grief, the recital being with less trace of national or individual feeling of

hostility than usually attends the discussion between Englishmen and Frenchmen regarding the battle of Waterloo.

Agricultural science seemed to have made some progress, as they never dug a yam without planting the crown in the same hole, so that no diminution of food supply should result. Are we equally advanced when we destroy our forest trees and never replant? But though these and many other traces of their origin exist, it is singular that no trace of knowledge of the arts of civilised people remains; there is nothing in their weapons, erection of dwellings, or ornamentation of their persons or belongings which is not common to the greater part of the Australian tribes. Now we will turn to another phase of Australian exploration. In 1792 the French expedition, under Admiral d'Entrecasteaux, visited the west coast, and while in Geographe Bay landed a party, including M. Vasse, the botanist, who, having strayed from his companions, was absent when the boat returned to the vessel, and as in the night the wind freshened they put to sea, and never took the trouble to return for their scientific associate. In 1835 the aborigines had a tradition that a white man had resided in that locality for many years, and he used to ascend one of the highest sandhills every day and gaze to seaward for hours, and then descend to his hut and weep. How he came there or what eventually became of him they did not know. Whether this white man was M. Vasse or one of the crew of a vessel, the wreck of which was found on that part of the coast, but the construction of which indicated a very early date in naval architecture, there is no data to guide us in conjecture; but in either case it must have been a miserable fate to vainly spend one's day in looking for some sail to come to the rescue, and then to retire to a wretched hut by the margin of a swamp, and eke out a bare subsistence on the roots of bulrushes. In conclusion, I feel assured that our Society has a useful future in prospect, and trust that the energy displayed by those who have assisted in its inauguration will continue to mark our future labours.

Mr. W. H. MISKIN proposed a vote of thanks to the President for his address, and moved that it be printed.

Mr. W. A. TULLY, in seconding the motion, expressed a hope that the Society, now that it was inaugurated, would find a suitable field for its labours, and stated that Queensland occupied a position peculiarly adapted to geographical research.

The motion was carried by acclamation.

Mr. GREGORY, in returning thanks for the kind way in which his contribution had been received, expressed a hope that on a future occasion some members of the Society would endeavour to contribute a little of their knowledge and experience, either of the aboriginal inhabitants, or the geographical condition of Australia or Polynesia. There were several members who, no doubt, possessed some information which might be put together in a short paper, which would prove interesting. He proposed a vote of thanks to Sir Charles Lilley for his kindness in taking the chair.

The Rev. GEORGE WOOLNOUGH, M.A., seconded the motion, which was carried by acclamation.

Mr. W. WILLIAMS proposed a vote of thanks to His Worship the Mayor for the use of the hall, which was carried.

SIR CHARLES LILLEY, in acknowledging the compliment, said it had given him a great deal of pleasure to be present. He had already expressed his opinion with regard to the name of the Society, and he thought it was a very hopeful beginning that they should aim at federation in these colonies in the promotion of scientific knowledge. He hoped the time would come when, for scientific purposes, we should have Australian commanders of an Antarctic expedition, and that the enterprise and courage of our native boys would be hereafter displayed in that line of research which had been indicated by Mr. Gregory. (*Applause.*)

Mr. R. A. RYAN claimed for science that there was a community of feeling amongst its workers—a perfect commonwealth; that this branch claimed perfect equality with the other branches, and that we are in no less independent position than our elder sisters in New South Wales, Victoria, and South Australia.

Mr. E. McDONNELL desired some information as to the real position of the Society here as regarded those in the other colonies.

Mr. GREGORY, in reply to Mr. McDonnell, explained that the branches of the Geographical Society of Australasia were not branches of the New South Wales organisation, but independent societies which would work in harmony together. The consequence would be that whatever proceedings were presented by any one of the branches, would be placed at the disposal of the others. It was not a question of the central association in Melbourne or Sydney, but of each having power for independent action, yet occupying a federal position.

The proceedings then terminated.

FIRST ORDINARY MEETING.

THE first Ordinary Meeting of the Queensland Branch of the Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of Tuesday, the 12th January, 1886. The Hon. A. C. Gregory, C.M.G., F.R.G.S., &c., (President), in the chair. There was a large attendance, and among the visitors present was Mr. McDowall, District Surveyor, Toowoomba.

THE HON. SECRETARY read the minutes of the two previous meetings, which were confirmed, also telegrams from the N. S. Wales Branch of the Society in reference to the Queensland share of the collection made by the Society's Exploration Expedition to New Guinea; also telegram from Hugh H. Romilly, Esq., Special Commissioner for New Guinea, stating his inability to be present at the meeting to read a paper he had promised.

The following gentlemen were then elected Honorary Members of the Society:—The Hon. John Douglas, C.M.G., F.R.G.S.; The Hon. Francis Thomas Gregory, F.R.G.S., &c., &c.; The Rev. J. E. Tenison-Woods; W. O. Hodgkinson, F.R.G.S., &c.; and William Landsborough, Esq. Also the following gentlemen were elected as Ordinary Members:—A. A. MacDiarmid, Edward Sayce, Robert F. Hassall, E. M. Waraker, and J. W. Potts. The following paper was then read by the author:—

Macuata, the North-west coast of Vanua Levu, Fiji, from Dreketi River, to Cape Udu, and around the Cape to Wiamotu, Natewa Bay.

By J. P. THOMSON, M.A., C.E., Hon. Sec. and Treas.

“Vanua Levu”—as its name implies—is the second largest, and one of the most northerly islands forming the Crown Colony of Fiji: a group of islands—numbering in all about 225—

situated in the South Pacific Ocean, and bounded between the parallels of $15^{\circ} 30'$ and 21° south latitude, and $176^{\circ} 30'$ east, and 178° west longitude.

The north-west coast of Vanua Levu is, according to Fijian orthography, called Macuata. And in the beginning of 1880, I was commissioned by the Government to carry out the survey of the coast—a task accompanied by many hardships and met by various obstacles. However, sailing from Levuka in the cutter “St. Omer,” with a staff of Polynesians, we landed at Naduri—the native capital of the Macuata province—and after forming our head depôt, started down the coast to the mouth of the Dreketi River and there commenced operations. The natives were not long in making themselves acquainted with the nature of our visit, and by way of introduction christened me Na Turaga Dauvakaraunavanua Vaka Matanitui (the Chief who Measures the Land). All our movements were closely watched and regarded with the greatest suspicion; and so opposed were they to the measurement of their coast line, that it was only through the agency of a letter from His Excellency the Governor to the Roko (chief) of the Province, that I was able to procure the services of two natives to accompany me in order to give the necessary information of the various localities, &c. Having given a brief introduction, I will endeavour to describe, from personal observations, the topographical features, physical conditions, and resources of the Macuata province and coast.

Starting from the mouth of the Dreketi River, in latitude $16^{\circ} 32'$ south and longitude $178^{\circ} 51'$ east, a continuous chain of ranges extends up along the coast to the back of the native town of Niurua (where a break occurs), and back from the sea shore, at distances varying from one-half to two miles. The land bounded between the sea shore and the top of the range is of a very poor quality, and almost destitute of timber. About two miles back from Niurua there is a mountain called Koro Navuta, about 1,500 feet high, rising like a pyramid from the lower plain, and, owing to its history, is looked on by the natives with much pride. On the very top there is a strong fortification,

and in the old feudal days when the Tongese came in their war canoes to invade that portion of the coast, Retova, then provincial chief, assembled all the people of the district on the top of the mountain, and despite all the energy and skill of the aggressors they were unable to take the position, and had to retire with heavy loss. From Niurua to Naduri there is an unbroken chain of ranges called Nawavi, from 1,200 to 2,000 feet high, and running almost parallel with the coast line, at distances varying from one to two miles from the sea shore; they form the western watershed of the Dreketi River, and act as a complete barrier on the ocean side. In several places the sides are simply perpendicular rocks, leaving one or two places of access by a zig-zag path through very narrow ravines. The sides and top in several places are covered with timber and dense vegetation; and the land between the base of the ranges and the shore, although of a rich quality in many places, is only covered with patches of reeds and scrub, while a small portion is utilised for native cultivation.

A Government road winds up the valley from Naduri, skirting the eastern side of the Nawavi Range, and stretching across the island in a very circuitous form along the base of Narara—a peak 2,420 feet high—comes out on the other side of the island in Savu Savu Bay. All the country between the Nawavi Range and the Dreketi River is undulating, and gradually opens out in an extensive valley, presenting large areas of forest intermingled with patches of reeds and jungle. The soil is rich volcanic, and from 5 to 6 feet deep in many places.

After passing Naduri and rounding Muaniumo Point, the country opens out, presenting extensive valleys, through which flow in magical winding the troubled waters of the Tabia, Qalowaga, Wailevu, Labasa, and Qara rivers. The Labasa Valley is bounded on the south-west by Muaniumo and on the north-east by Gagaravi, a bold headland rising abruptly from the sea shore to a height of nearly 1,300 feet, and barricaded on the south-east side by high rocky precipices, affording a very favourable resort for wild goats. The greater portion of the

valley is open country, and embraces a greater area than any other in the province; several portions of its surface are covered with dense reeds and in some places with belts of timber. The locality is very picturesque, commanding a view of high ranges in the centre of the island, whose sides are covered with vegetation producing all the variegated tints so peculiar to the islands of Fiji.

After passing Gagaravi another large valley opens out, through which flows the Tamici, Korovatu, and Bucisawa rivers. This valley is also very picturesque, being covered in many places with long belts of timber, and having high peaks rising like pyramids from the centre of the island.

From Vunitaravau to the Mouta River the coast line is very tortuous and the country broken, and a short distance back from the sea shore the soil is very poor, and the surface covered with dense scrub and jungle. About ten miles (by track) from the mouth of the Mouta River, there is a small lake with an island floating on the surface of the water. This island, according to Fijian tradition, was, in the old days of cannibalism, the Kalou (god) of the district, and worshipped by the tribe with all the ceremony and display peculiar to a heathen race. Rites were performed in the presence of their island god; vast quantities of native property were presented for his use; his highness was consulted by the priests in the time of war and in the days of peace. It was he who told them when to sow and the time to reap, and his wisdom was so great that he could always tell the tenderest man or woman in the district to cook for the chief's dinner. I once paid a visit to the lake, accompanied by my staff of boys, the chief of the district, and about forty natives, and on arrival at the native village in the locality we requested the old priest to accompany us. I found the water very dark, owing to contact with a deep black soil, and the great quantity of vegetable matter falling therein. The surface of the island was from one quarter to half an acre in extent, and floated over the surface of the lake at the mercy of the wind, and from what I could observe, it must have been at first formed from the accumulation

of fallen timber, scrub, reeds, and particles of soil. This process of formation must have gone on for a great number of years, each season adding a portion to the primary. The oldest men in the district speak of it as existing in the days of their great-grandfathers, so we may fairly assume that it is a good old age. Sometimes during a long continuation of fine weather, it comes in contact with the banks of the lake, and the ever active roots of the shrubs, taking hold of the friendly soil, keep it in a fixed position; but as soon as one of the heavy blows occurs the island is again let loose and sent on its watery course. On a close approach and examination I observed the old priest and his followers watching me very closely, and evincing strong signs of suspicion and aversion. In olden times, by way of illustrating their supernatural power, they used to go to the leeward side of the lake, and, before all their followers, call on the island to come towards them, which of course it did by the force of the wind. The chief who was with me scoffed at the old priest, telling him to go to the weather side of the lake and make the island move towards him, at the same time trying very forcibly to impress on his mind that his island was no god, and telling him that "Sa dua bau na Kolo mo lewa na vuravura ogo" (there is only one God who governs this world). No one was ever supposed to dive under the island and come up alive, but the chief soon showed him that it was an easy matter to do so.

The country in the vicinity of the Mouta and Nasava Rivers is very broken, and continues so right up the coast to Bekana Harbour, where the north-west and south-east coast ranges meet at a point where the island is only two miles and a half in width, forming the remaining north-eastern portion into a peninsula, with a continuous mountain range rising from the sea shore and varying from 560 to 1,580 feet in height, running right up the centre to Cape Udu, being the most extreme point of the island, in latitude $16^{\circ} 9'$ south, and longitude $179^{\circ} 56' 30''$ west. The north-western watershed of the peninsula is dotted with patches of timber as far up as Domole, and from this place all the remaining parts of the point is open country, being covered with

long grass, and admirably adapted for a cattle run. On the south-east side of Cape Udu is Natewa Bay, bounded on the south-east by Kabalau Point. This bay is fifty miles deep, and is exposed to the full force of the south-east trade wind, and the Ringgold Sea. All the country from the point to Nakula presents a very wild aspect, the range rising abruptly from the sea shore presenting high precipitous rocks, with deep ravines and long narrow fissures, contorted in every conceivable shape and form, showing many indications of upheaval. Between Nakula and Waimotu, the south-east coast range stands out in bold relief, and, diverging slightly from the sea shore, continues in one unbroken chain right along the coast to the other end of the island. All the south-eastern slope from Nakula to Waimotu is very rich soil, covered with dense forest from the shores of the bay to the extreme top of the range. At Waimotu I connected to Mr. Reilly's survey of the south-east coast, thereby completing my section, comprising over two hundred miles of coast line.

Before particularising the various resources of the country herein described, I should desire to draw attention to one particular physical condition which exists, not only on Vanua Levu, but all over the colony of Fiji and many of the islands in Polynesia. I refer to the forest and jungle. All the south-east side of Vanua Levu is everywhere covered with dense forest and jungle, whereas the northern and north-western half is only dotted with very limited areas of forest. This appears to be owing to the fact that all the south-east side is exposed to the temperate trade wind which prevails from that quarter during two-thirds of the year; and the coast range following close to the sea shore, and rising very abruptly, attains a greater elevation on this side of the island, thereby intercepting the trade wind in its course, collects all the moisture and chemical matter in the atmosphere, giving great vitality to the soil. The greater part of the rainfall finds its way to the north-west coast, where the rivers and creeks are more numerous and of greater magnitude, the south-eastern coast being drained by small creeks only.

MARINE CONDITIONS.

Like all the islands in the Fiji group, the shores of the Macuata coast are protected from the fury of the ocean by two complete barriers, viz., the Great Sea and Shore Reefs—the former extending along the coast, at distances varying from one-half to twenty-five miles from the shore,

On whose huge walls the breakers play,
In frantic form both night and day,

with numerous passages, large enough to admit the largest ship in the world; the latter fringe the shore at distances varying from half a chain to half a mile, and is dry at low water. The waters of the ocean inside these reefs, assume a form of perfect tranquility, and present the aspect of one vast lake, adorned with the grandeur of submarine architecture, and varying from two to forty fathoms in depth. Although a vessel of any size may easily float, yet, owing to the complete network of coral patches, the art of navigation becomes dangerous, and can only be accomplished by exercising the greatest care. Vessels always anchor during the night, and in the daytime proceed on their course, having a man stationed at the mast-head piloting clear of patches; owing to the numerous narrow passages in the reef, and between islets and the shore, together with the complication of coral patches, and mouths of rivers, the current in many places is very strong, and magical in its windings, and all tending to increase the danger of the mariner. These coral reefs, produced by the activity of a species of marine zoöphytes, consist almost purely of carbonate of lime, and which is extensively used by the natives, who, by the agency of heat, reduce the solid secretion to a white caustic substance (oxide of calcium), and use it for building purposes, and for cleaning the hair of their heads. It is perfectly enchanting to sail along the reef, leaning over the side of the vessel, and looking down in the water; every conceivable species of submarine life presents itself to the eye, keeping the observer spellbound. All the sea shore, between high and low water mark, is fringed with dense tiri and doga (*ægiceras majus*) belts, varying from half a chain to two

miles in width, the greater density and width occurring in the vicinity of rivers and deep bays. Mud flats are also very numerous, and in many places the deposits are so deep and soft that it is a matter of impossibility to walk over them. On the south-east side of the island, in Natewa Bay, the coast line is very clean, owing to the absence of rivers, and having the Great Sea Reef in close proximity to the shore.

ADJACENT ISLETS.

Macuata is very gracefully adorned with little islands; all along the coast-line being dotted over with those beautiful appendages. In giving a brief description, I will take them consecutively as they are placed on the accompanying map, their relative position being determined by triangulation from the mainland. The first in order is Nakuci, off the mouth of Dreketi River, and distant therefrom three miles. Its surface is only slightly elevated above the sea level, and destitute of fresh water. It is covered with good sandy soil, and gracefully adorned with the cocoanut palm, and owned by a European, but not inhabited.

Tuvu is very small, having a surface area of about two acres, and situated off Nagasudrei Point, being connected thereto by the shore reef which is dry at low water; it has an elevation of about 100 feet, and covered with poor soil, bearing a long coarse grass, and a few balawa trees (*Pandanus caricosus* and *P. furcatus*), and tenanted by a few goats, which seem to thrive well.

Nukubati is situated off the town of Nagumu, and separated from the mainland by a deep channel, distant therefrom about one mile, having a surface area of about seven acres. The northern end is elevated about seventy feet above sea level; and about two-thirds of the surface is covered with fine soil, yielding an abundance of cocoanuts; the remainder is very poor and covered with stunted shrubs and nokonoko trees (*Casuarina equisetifolia*). It is owned by a European, and periodically inhabited.

Macuata, which appears to derive its name from the province, is the third in size of the islands on the coast, and situated off Vunirara (the estate of Jacob Steiner), distant therefrom about one and a half miles; its central position is a mountain rising with a sharp elevation from the shore; the greater part of the soil is good, and all along the shore is thickly covered with the cocoanut palm; the central section is covered with reeds, scrub, and nokonoko trees. It is the property of Buli Macuata, the subordinate chief of the province, and son of Retova, late provincial chief; it is thickly peopled by natives. Macuata has been the scene of many a foul deed, in olden times, when the word of the chief was the law of the land.

Mavuva, Seweyaga, Matua, Tarari, and Kia, are all small islets situated off Naduri. The former is very pretty, with a rich sandy soil, covered with the cocoanut palm and a few moli trees (*Citrus bergamium*). It is owned by Jacob Steiner, and occupied by a caretaker. The next three are simply tiri islands, with a few straggling cocoanut palms over their surface, and not suited for either cultivation or occupation. The last named is, however, of more importance, and is a very picturesque islet, with a very high central elevation rising in precipitous rocky terraces from several portions of its shore, and situated right on the edge of the Great Sea Reef, distant from the main land about twelve miles. Its south-eastern slopes are beautifully decorated with all the variegation of tropical vegetation, and all along the shore rises the tall cocoanut palm in stately grandeur. The soil is rich volcanic, yielding abundance of vegetable food, and thickly peopled by natives, who are celebrated for their skill in canoe sailing. The oldest residents of the province have never known a canoe sailed by Kia men to capsize (a great deal to say for canoe sailing); while the women are historically noted among the people, owing to a certain circumstance which occurred, illustrative of the many wonderful deeds which the fair sex can really do when necessity calls them to action. It appears that, in olden times, some trading vessel left a large cannon with them, which the men were very anxious to mount on the top of

the natural fortification in the centre of the island; accordingly they all collected together and made several attempts to do so, but had to give it up, whereupon the ladies mustered together, and in the first attempt succeeded in placing it right on the summit of the island, where it stands at the present day.

Yanuca and Mali are situated off the mouth of the Labasa River and Gagaravi Point. The former is right in the middle of the tiri belt, and dry at low water; it is covered with reeds and a few cocoanut palms, but not suitable for cultivation. The latter named island is the largest on the coast, with a high ridge running through its centre in a north-easterly direction, whose slopes are covered with reeds, nokonoko, and balawa trees; along the shore are thick groves of the cocoanut palm, uto (*Artocarpus incisa*) and moli trees (*Citrus decumana* and *C. bigaradia*). The soil in general is very poor. The island is peopled by natives, whose chief tradition is connected with a fabulous sea serpent that was once cast ashore, and after being cooked in the lovo (oven), proved such a monster in size that all the people on the island were unable to consume it at one meal.

Korovatu, Madua, Matanitui, Tivi, Nukuloa, Vatubalawa, Tutu, Yanuta, Gevo, Drudru, Korovau, Tuvu, Namukalau, Tili-gica, and Bekana, are islets with no special history, nor presenting any features of special interest, and may therefore be passed over. There is, however, one remaining islet which is wrapped up in antiquated tradition, and may prove interesting. It is called Qaranicikobia, and situated at the head of Bekana Harbour, and distant from the shore about five chains; it is small and elongated, and composed of sedimentary coral, covered with a long coarse grass. It is supposed to form the mouth of a long subterranean passage which extends right under the bed of the ocean for a distance of thirty-two miles to Cikobia, an island lying due north from Cape Udu, and distant therefrom about twenty-two miles. The spirits of the dead are supposed to enter the passage and communicate with their friends on the distant shore.

HARBOURS.

Although the whole of the inside of the Great Sea Reef may, under ordinary circumstances, be looked upon as a harbour, yet, during what is called the hurricane season, there are deep bays which, owing to their natural position, afford more shelter and a safer anchorage, and among these the principal ones are:—Navuta, Naduri, Tibece, Bekana, and Thomson. The former, although not presenting any special features, is considered a good harbour, owing to the absence of strong currents and having the advantage of a good holding bottom, and being well sheltered from the south-east and south-west gales by the Nawavi range on the one side and Nagasudrei Point on the other. The next in order is Naduri, which has a better landing place and more natural advantages than any other on the coast; it is free from strong currents, and sheltered on the south-west by the Nawavi Range, and on the north and north-west by the adjacent islands. Canoes, boats, and other vessels from all parts of the group call here, and, owing to the capital of the province being situated on its shores, it offers great attractions.

Tibece Harbour forms the entrance of the Nasava River, and although sheltered on the north, west, and south by the island of Namukalau, Silivakatini Point, and the coast range, and on the east by Mataivadra, yet is subject to the force of several cross currents, and can only be considered safe under favourable circumstances.

Bekana offers more favourable advantages than the foregoing, owing to the absence of strong currents, and may be considered perfectly safe under all ordinary conditions; it has a good holding bottom, and is sheltered on the north by the island of Bekana, on the east by Udu Peninsula, on the south by the coast range, and on the west by Vuni-rasa Point, and commands a very wild scenery.

Thomson is a very small harbour, and nearly landlocked, affording fine shelter for small cutters and boats, which may ride in perfect safety during all changes of weather. The vegetation all around the shores is most luxuriant, and the scenery

very beautiful. It is named after the writer, who was the first to examine its shores and give a written account of it.

RIVERS.

The rivers and creeks on the coast are very numerous, and, in proportion to magnitude, there are probably no other islands in the world so plentifully watered and thoroughly drained by rivers and creeks as the islands of Fiji. These give rise to a multiplicity of obstacles, and, in many places, great danger to the land traveller, who, in order to perform a journey, must certainly be able to swim; indeed, partially owing to these obstacles and the want of properly made roads, there is very little land travelling in Fiji.

All the rivers and creeks on the Macuata coast are affected by tides which have a rise and fall of about four feet, and, in the vicinity of their mouths, are dense tiri belts and extensive mud-flats, abounding in great varieties of crabs and shell-fish.

The Dreketi may be considered the largest and finest river on the coast. Taking its source from the centre of the island, at a place nearly due south from the mouth of the Waileru, it winds in serpentine form through beautiful tracts of fertile country, and, draining all the water from the south-east and north-west coast ranges, empties this vast body of water into the ocean; its entrance is obstructed by a mud bar, thus debarring vessels of deep draught from entering; vessels drawing six feet of water can navigate the river for a distance of about fifteen miles, but beyond that the water is too shallow for them. From the mouth of the river to Kanacagi the bottom is composed of dark sand and mud, but all above that point is a formation of shingle and boulders; and shell fish are so plentiful that the natives dive down with small baskets and scoop them in with their hands. Like all other rivers in Fiji, it is subject to floods during the hurricane months, but, owing to the elevation of the surrounding country, no damage is done further than the submerging of the low-lying country near the mouth, which may be considered to derive a benefit by the rich alluvial deposits carried from the interior.

All along the banks are extensive flats covered with a rich alluvial soil from three to seven feet deep; several of these are cultivated by Europeans, and yield sugar-cane and cotton. The surrounding scenery is beautiful; the sides of the valley, being skirted with long chains of ridges covered with dense timber and vegetation exhibit the most beautiful foliage and tints. The Dreketi natives were formerly a distinct tribe from those of Macuata, and several attempts were made by the latter to bring them to subordination, and though the days of warfare are now long past, yet in many places along the banks of the river there are clearly defined traces of their battle-fields and fortifications. The small island of Naivuke, inside the mouth of the river, used to be their strongest fort, and acted as the key to the position; there is a strong circular wall of stones round it, and inside are numerous graves piled on one another. On removing some of the stones and earth and examining the graves, I found muskets, bayonets, clubs, spears, tomahawks, slings, and all sorts of war implements. Some of their weapons must have been made from a most durable wood, as several of them were in a perfect state of preservation, after being under ground for probably over thirty years.

The Labasa is another important river. Taking its source from the foot of the south-east coast range, it drains the water from the central portion of the island, and, winding in magical form over a tract of the richest country on the island, empties in Labasa Bay. Its mouth is also obstructed by a bar, and covered on each side by the most extensive tiri belt on the coast. Small cutters can navigate it for about seven miles, and boats can float for a considerable distance in the interior. The whole of the valley through which it winds is covered with alluvial soil of the richest quality; wild food and sugar-cane grow plentifully, and man might live his natural lifetime in the locality without planting anything. The surrounding country is more level than the Dreketi, and I consider it would undoubtedly make the finest sugar estate on the island.

The last river of importance is the Nasava, which takes its

source from the centre of the island; flowing in a north-east direction to its mouth, it winds through very broken country, and, draining the water therefrom, empties in Tibece Harbour. Its principal drawback is a mud bar at the entrance, but inside a greater depth of water may be found than in any of the other rivers on the coast. All the surrounding scenery is of a wild nature, and near its entrance there are larger dogo trees (*Ægiceras* tribe) growing below high-water mark than in any other locality on the coast.

HOT SPRINGS.

There are, I think, three hot-springs in the province; two of them are situated at the back of the coast range, about four miles inland from the native village of Nagumu. The other was discovered by me, and named "Gracie"; it is situated, below high-water mark, at Vatuloaloa. The temperature of the water is about 140° Fahr., and is said to contain many valuable healing properties. One or two springs on the south-east coast emit water hot enough to boil the natives' food.

CULTIVATED PRODUCTS.

Owing to the absence of white population, extensive areas of country remain in a wild state, which nature plants lavishly, and, after exhibiting wondrous freaks, gathers back to her bosom and reproduces at will. There are, however, small areas under cultivation producing results proving satisfactorily that the soil and clime are equal to any tropical country in the world for yielding the various products which I shall herein describe. The soil may be classified as follows:—The greater portion, a rich alluvium; on the banks of the rivers and creeks, loam; on the slopes and low ridges, volcanic, of the richest quality; and, at the base of hills, dèbris which is brought down by natural agencies from the mountain sides, yielding by cultivation:—sugar (*Saccharum officinarum*), cotton (*Gossypium Barbadense*), coffee (*Coffea Arabica*), cocoa (*Theobroma cacao*), cinchona (*C. calisaya*), tea (*Camellia thea*), pepper, rice (*Oryza sativa*), vanilla (*V. planifolia*), cocoanuts (*C. nucifera*), maize (*Zea mays*),

tobacco (*Nicotina macrophylla*), arrowroot (*Maranta arundinacea*), cassava (*Manihot utilissima*), and peanuts (*Arachis hypogæa*); also the uvi (*Dioscorea alata*), kawai (*Dioscorea aculeata*), kumala (*Dioscorea hastifolia*), dalo (*Colocasia antiquorum*), and various tropical fruits. The sugar-cane grows most luxuriantly on the flats along the river banks, and is ripe in fifteen months from planting; ratoons in eleven. The production is about 45 tons of cane to the acre, which yields about 2½ tons of sugar, the juice of which indicates an average density of 10° Baumé.

The coffee trees flourish on the high land of the interior; and from two year old trees a production of about 450lbs. per acre may be obtained.

Large areas are covered with the cocoa-nut palm, which produces the first crop of nuts in seven years from planting; the husk of the nut is manufactured into fibre, and the dried kernel, called copra, after going through a certain process, yields a fine oil, thereby producing two valuable articles of export. The imperfect knowledge of curing has hitherto prevented people from taking an active part in the cultivation of tobacco, thereby leaving the industry almost in the hands of the natives, who are content to cultivate enough for the payment of their taxes and local consumption.

NON-CULTIVATED PRODUCTS.

In addition to those already described, there are various products which grow in abundance without the art and attention of man, and those most worthy of consideration are:—The vico (*Sponia orientalis*), yabia (*Maranta arundinacea*), uto (*Artocarpus incisa*), tivoli (*Dioscorea nummularis*), kawai (*Dioscorea aculeata*), dalo (*Colocasia antiquorum*), lauci (*Aleurites triloba*), iri (*Inocarpus edulis*), and the dilo-nut. The oil of the latter is considered by both whites and natives to be a certain specific for rheumatism. Bêche-de-mer (*Holothuria*), vegetable-ivory, pearl-shell, tortoise-shell, and turtle are also valuable articles of export.

TIMBER.

The forests contain a great variety of useful timber, which

deserves more attention than has hitherto been bestowed ; and, without attempting a systematic classification, I may herein mention the following kinds :—Dakua (*Dammara vitiensis*), vivi (*Serianthes myriadenia*), damanu (*Calophyllum burmanni*), buabua, asi (*Santalum yasi*), kausolu, vesi (*Afzelia bijuga*), and kamoï—all very good timber for house and ship building.

WHITE RESIDENTS.

Prior to 1872-4 there were a number of white settlers on the Macuata coast, chiefly carrying on cotton planting, but since then, owing to the great fall of price in the cotton market, together with the destruction caused by the great hurricane, the coast has been almost deserted, and now all who remain are Peat and Moore, who are engaged extensively in the manufacture of copra and fibre at Udu ; Martin May, a native trader at Lakeba ; and Jacob Steiner, who owns a beautiful place at Vunirara, which he cultivates extensively, growing large fields of cotton and cocoa-nuts. There are also one or two white settlers on the Drekeri River engaged in sugar growing.

NATIVE TOWNS AND VILLAGES.

There are about sixty-four native towns and villages on the coast, the principal one being Naduri, which is situated at the foot of the valley separating the Nawavi and Sasa ranges. In olden times it was protected from the assaults of hostile tribes by dikes and deep ditches, which were so constructed as to form a very effective fortification, and although the hand of nature has wrought many changes since their construction, yet they can be plainly traced, and are well worth examination, as they afford ample proof of the constructing capacity of the Fijians in their heathen days, and may suggest to the observer that probably there were very few steps between those people and the various races who peopled England near the time of the Norman Conquest ; however, the town now presents all the features of modern civilisation, having a court-house, a gaol, a school, and a Wesleyan church, all of which are most religiously patronised, especially

the two latter. There is also a nice square in the centre, adorned on one side by the Provincial Court. The houses are all built in proper order, and the roads laid out in a systematic style. Various local industries are carried on, such as the manufacture of fibre, cloth, mats, and oil, all of which supply local wants and form articles of commerce. The people are kind and hospitable to a degree, and charity in all its purity reigns supreme in their homes, while that formality to strangers, so peculiar to Europeans, is entirely unknown to them; the women are strictly virtuous, and may be looked on as nature's own children. The lali is sounded every night at 9 o'clock, summoning everyone to their houses, where they all join in prayer; after that hour no women are seen outside, and even in the daytime they never walk by themselves. They are all subject to the English marriage and divorce laws—the latter, however, being seldom required.

CLIMATE.

During nine months of the year the climate is dry, and although very few clouds appear to intercept the direct rays of the sun yet the heat of the solar beam is considerably modified by the balmy south-east trade winds during the day, and the nightly radiation by the humid land breeze. During the remaining three months the weather is very unsettled; thunder storms, heavy downfalls of rain, and hurricanes, is the order of the day; and at times the wrath of the elements is so great as to make one imagine that the world had come to an end, and the atmosphere is so damp that clothes soon get rotten, the binding of books gives way, and household furniture, put together with glue, falls to pieces. The climate is humid, and, as tropical, it may be considered very good. Malaria is absent and dysentery of rare occurrence, and European children appear to thrive well. An occasional change to a cooler region is, however, desirable, as climatic influence has a very strong tendency to destroy the energy, and create a feeling of languor in the system.

In this paper I have endeavoured to give a faithful sketch of the topographical features, physical conditions, and resources of

a province wherein I have spent several years of my life. On some future date I intend preparing a paper descriptive of the Rewa River, which is the great sugar district of Fiji, and will then endeavour to describe more fully the flora and sugar industry of the colony. In conclusion, I may add that I shall consider my labour well repaid if I have helped to contribute a little information to the Queensland Branch of the Geographical Society of Australasia. (*Applause.*)

On the motion of the PRESIDENT, seconded by the Rev. G. WOOLNOUGH, a hearty vote of thanks was accorded Mr. Thomson for his paper, which was ordered to be printed.

Mr. W. H. MISKIN referred to the usefulness of the map, and Mr. W. A. TULLY (Surveyor-General) kindly offered to have it reduced by photo-lithography, as he wished to assist the Society as much as he could.

The PRESIDENT thanked Mr. Tully for his kind offer, and announced that, at the next meeting, a paper would be read on "Western Tasmania" by Mr. T. B. Moore, and that papers had been promised by Messrs. Romilly and Hodgkinson.

The meeting then closed.

SECOND ORDINARY MEETING.

THE second ordinary monthly meeting of the Queensland Branch of the Geographical Society of Australasia was held in the Museum Library, Brisbane, on Tuesday evening, 7th March, 1886. Mr. W. A. Tully, B.A., F.R.G.S., occupied the chair; and there was a good attendance of ladies and gentlemen.

The HON. SECRETARY read the minutes of the previous meeting, which were confirmed, and announced the receipt of a valuable map of Tasmania, presented to the Society by Mr. C. P. Sprent, Deputy Commissioner of Crown Lands, through the instrumentality of Mr. T. B. Moore.

The Rev. G. WOOLNOUGH desired to know whether the Society intended subscribing towards the Forbes' Exploration Fund?

The CHAIRMAN said that a subscription list had been opened by the Royal Society of Queensland with a view to assist Mr. Forbes in his exploration in New Guinea, and thought that the Queensland Branch of the Society might subscribe.

Mr. W. H. MISKIN said that he considered Mr. Forbes was to some extent the servant of the Geographical Society of Australasia, inasmuch as he was subsidised by the New South Wales Branch of the Society and was under formal agreement with them, and he was not aware that Mr. Forbes had solicited assistance from the Royal Society of Queensland.

The CHAIRMAN said it was, he thought, the act of the Secretary of the Royal Society rather than of the Society itself.

Mr. MISKIN thought that the subject of assisting with subscriptions would be a matter for the consideration of the Geographical Society of Australasia generally.

Mr. J. P. THOMSON said that the Secretary of the Royal Society had communicated with him regarding the subscription list opened on behalf of Mr. Forbes, but the communication being informal had precluded its presentation to the Council, and from communications he had seen between Mr. Forbes and Sir Edward

Strickland he thought that some misunderstanding existed between the former gentleman and the Society, and quite agreed with the last speaker, that any assistance should be a matter for the consideration of the Geographical Society of Australasia collectively.

MR. H. H. ROMILLY, on the invitation of the Chairman, said he had no doubt that Mr. Forbes required assistance, and what Mr. Thomson had said in reference to a misunderstanding between Mr. Forbes and the Society was perfectly true, as he had conversed with Mr. Forbes on the subject.

No action being taken in the matter, the subject dropped.

The following paper was then read by the author:—

New Guinea.

By H. H. ROMILLY, Esq.,

Special Commissioner of British New Guinea.

I DO not propose to bore you with a dry list of names of coast and inland districts, names of tribes, &c., but to describe as well as I can some of the principal features of the country, the peculiarities of its inhabitants, and the possible future of the Protectorate.

There is but little that I can tell you of the work which has been done by the different exploring parties which have been organised by this Society and by private enterprise, which you do not already know. Though a considerable amount of information has been gained by them, they have been on the whole disappointing. D'Albertis added considerably to the list of known birds and fishes, but he discovered no geographical facts of any importance, and the rough map he made of the course of the Fly River has since been proved to be very incorrect. The collection, too, which he made was allowed to go out of the country, though his expenses had been defrayed almost entirely by New South Wales.

In his book he hardly mentions, if he does so at all, having passed the mouth of the river ascended recently by Captain

Everill. One of the members of his expedition told me some years ago that there was much discussion at the time as to which stream they should ascend. Most of them were in favour of going up the Strickland, but D'Albertis decided on the other stream. I think he must have exaggerated the number of miles he ascended, as he was not an accomplished navigator. I have found, myself, while ascending rivers, that one is very apt to exaggerate the distance travelled. Perhaps the greatest results were obtained by an expedition of miners in 1877. Very little was said or known of them at the time, but they penetrated some forty miles into the interior from Port Moresby, in a north-easterly direction, till they were stopped by the enormous Owen Stanley Range. Forty miles sounds very little; but a great part of that distance was cut through the dense jungle at the rate of about a mile a day. Many of them died, and they returned disheartened to the coast, having failed in the principal object of their expedition, but having succeeded in holding friendly intercourse with some of the natives of the interior and having ascertained that there was inland a splendidly watered, rich country.

The explorer from whom I anticipate the best results is Mr. Forbes. He is, as you know, partly supported by the Royal Geographical Society. He is a man, as he has shown, of immense resource and pluck, and he is always cheerful under misfortune. He has a most comfortable camp now at a place called Sogere, situated about forty-five miles north-east of Port Moresby. It is about 1500 feet above the sea level, and is on one of the spurs of the Owen Stanley Range. From it he can explore in every direction. It was where I left the country within ten miles of the furthestmost point reached. It is supposed that the natives from the north coast occasionally visit Sogere, and, if this is the case, the day must be near at hand when we can shake hands across the boundary with our neighbours the Germans. Mr. Forbes originally intended to be quite independent of the natives of the country, and accordingly he engaged the services of a number of Malays to accompany him

and to act as carriers, but he soon found that they were a source of trouble to him, as the inland natives refused to hold friendly intercourse with them. The principal reason assigned for this was that the Malays refused to eat the pork, which was offered them on their arrival as a mark of high respect. He has now got rid of nearly all of them, and intends to carry on his work with the assistance of the natives of the country. It had been my intention to ask Mr. Forbes to accompany me in the expedition which was organised in November of last year for the purpose of ascending the Mai-Cassa and Aird rivers, but the melancholy death of Sir Peter Scratchley necessitated a complete change of plans. These two rivers, more especially the Aird, we know very little of. Mr. Chester (at present police-magistrate at Cairns) and Mr. M'Farlane were the first to ascend the Mai-Cassa. Mr. Chester has described it to me as a salt water creek, and not a river. It is probably connected with the Fly by swamps. It has been ascended nearly a hundred miles, till the shallowness of the water prevented any further progress. On its banks many varieties of fine timber are to be found, and at the present moment some enterprising timber-getters are getting cedar there. The extensive swamps which extend from this part of the coast many miles into the interior make the country very unhealthy and very difficult to work in. On the other hand, the banks of the Mai-Cassa are very thinly inhabited, and the white men have nothing to fear from depredations or attacks by natives. Of the Aird River I may say that we know absolutely nothing. For eight or nine months of the year the south-east trade is blowing, and the numerous sand-banks and bars, with heavy breakers on them, close this river even to whaleboats. But in the north-west season it is supposed to be possible to enter it. There can be no doubt that it is a river well worth the attempt, and my disappointment at having to give up all thought of it last year was very great. We have a few native accounts of it, and through them it would appear to be a very rapid clear river, magnificently timbered on the borders. We know, also, that the banks are densely populated with powerful and savage tribes.

Our knowledge of the country west of the Mai-Cassa is very slight; in fact, with the exception of a few pearl-shellers, it is unvisited by anyone.

The natives of this part of the coast are probably the true aboriginals of the country. They have little of the Malay type about them, while both east and west of them their neighbours grow fairer skinned and smaller in stature. Their language, too, differs greatly from those of the eastern and western tribes. Their nature is fierce and treacherous, and they are, on the whole, very awkward people to deal with.

Following the coast to the eastward from the great Papuan gulf, we find a succession of fine rivers, harbours, and roadsteads, which is unequalled, I should imagine, by any country in the world. Every few miles a river discharges its waters into the sea. Many of them would be called fine rivers in Australia.

On the banks of these rivers, after passing the inevitable belt of mangroves, are plains densely covered with the tough cane grass which grows only on rich soil. With the exception of the country round about Port Moresby, the whole of the south coast appears to be entirely fertile, and at South Cape, where the Government have acquired a large tract of territory, the richness of vegetation cannot be surpassed.

It may be interesting to compare the country comprised within the limits of the British Protectorate with the German territory. While on the south harbours and rivers abound, on the north they are not nearly so plentiful. In fact, Finsch Haven, on the north, is the only good harbour they possess. The rivers are small and not very numerous. The mountain ranges, which run parallel with the coast, are so short a distance inland that it would be impossible for any very large river to exist. The country from Mitre Rock—the point of departure of our boundary line—to Astrolabe Bay, appears to be rocky, barren soil, and is evidently but thinly inhabited by natives. It changes in appearance very much, however, below Astrolabe and Humboldt bays. I visited that part of the coast some five years ago, and made short excursions inland at several points, and I

was much struck with the magnificence of the country and the friendly character of the natives. I had at that time just left the Admiralty and New Britain groups, where the natives are as savage as in the Pacific, and the contrast between them and the Papuans of Astrolabe Bay was very great. In fact, the Russian explorer (Maclay) named the islands in Astrolabe Bay the "Archipelago of Contented Men." He lived with them for two years, and, though they treated him rather badly at first, eventually they got on very well together. As not much is known of the natives of the northern coast, it may be interesting if I read an extract of a journal kept at the time of my impressions of them five years ago. I was at that time visiting all the various groups of islands south of the line. Commodore Wilson had kindly placed H.M.S. "Beagle," Captain Matusin, at my disposal. New Guinea at that time was inclosed in the Western Pacific district. We coasted from a spot about one hundred miles north-west of Astrolabe Bay, as far as Dampier Straits, when we were turned back by heavy southerly gales and adverse currents.

EXTRACT FROM JOURNAL.

"June 11th, 1881.

"Up to Saturday night we had almost dead calms, only making about twenty miles a day. We got a rain squall on Thursday night, however, in which we made another fifteen miles.

"When it cleared up we found land all round us. However, till next day, Matusin could not determine his position. On Friday we found that they were Lottin, Crown, Long, and Dampier islands; we could also see the New Britain coast, and straight ahead of us rose the coast of New Guinea, at that particular spot some 12,000 feet high. This morning we were close up to it, and it was certainly a most magnificent sight to see this land rising straight out of the sea to such an enormous height. In the afternoon, about two o'clock, we came to an anchor in a tiny little cove with only just room to swing in, but very deep water. Maclay had called it Port Constantine, and it was his headquarters while he was staying in Astrolabe Bay.

"We saw a few canoes putting off to us, but they seemed rather shy at first till I shouted out the magical name of 'Maclay,' when they came up as fast as they could. They had all got very powerful bows and enormous canoes. By the help of the few words Maclay had written down for me I was able to inform them that he would come back to them soon, that I was his brother, and that I wanted to see their towns. They at once became extremely friendly and kept on telling each other that I was

Maclay's brother. I then asked for the principal men of the villages by name, and they promised that they should come off next day and would then take me to their towns. In the evening Matusin and I went ashore to look for water. I took my gun in the hope of shooting some birds, but though I heard plenty the bush was so thick I could not see one. We looked about for some time and found a little creek with good water, but we did not explore it very far as it looked a most likely place for alligators.

"In the morning a crowd of canoes came out to us to trade. They seemed to have nothing but bows and arrows and spears of rather a rough description.

"A few of them asked for tobacco, but they evidently did not care much about it. Knives and beads were in great demand, but they had so few things of any interest that their trading was not carried on with very great vigour. Matusin and I had settled to visit Gorendu, which is the biggest village here, after divisions in the morning. As soon as they were over a native told me that "Sa-ul," the chief I had asked for, was coming off in a canoe, so we determined to wait for him. When he came alongside we lowered the boarding netting for him, and he came on board after some persuasion, as he was evidently in a great fright. We took him down to the cabin, where we showed him anything we thought likely to take his fancy. Oddly enough he seemed much more pleased with the masks and spears, etc., which we had brought from the other islands than with anything else. The poor old man then attempted a feat manifestly beyond him, though he had evidently tried it before—namely, smoking a clay pipe filled with trade tobacco. After a few draws he dashed up the steps of the cabin and was violently sick. When he came back he roared with laughter for some time. The steward gave him a piece of bread and jam, which he gravely licked with his vermilion tongue, and then handed it to the other members of his staff, who all did the same. No one, however, thought of eating the bread till it came to a small boy who made the attempt. He was not, however, allowed to swallow it as the elder members of his family, when they saw it was good to eat, made him disgorge it, after which it was handed round from tongue to tongue in the most convivial manner. We then made Sa-ul some small presents, which seemed to delight him hugely, and proposed that we should go to Gorendu. Before he left the cabin, however, he was destined to suffer a severe shock to his nerves. He was pulling everything about in a great state of astonishment, and finally came to a seltzogene, the handle of which he pressed. Of course it at once discharged a stream of sodawater into his face, and poor Sa-ul tumbled down as if he had been shot.

"After this we got him into the boat and started. We began our walk to the town from a point about a mile along the bay from where we were anchored. There was a capital path leading us through two walls of bush into which we could not see a yard and which came together about twenty feet over our heads. Along the sides of it were any number of ferns and crotons, and there were innumerable festoons of orchids hanging down all round us.

“It was a luxuriance of vegetation I had never seen before and had not imagined possible. I had been in hopes of shooting some birds, but such a thing was quite impossible.

“The orchids I had not seen before anywhere, and there were several sorts of crotons quite new to me. Unfortunately there was no room on board the ship to carry cuttings. After walking some time we heard shrieks and the sound of people running, and then we came to a clearing in the bush, with a few wretched bamboo huts in the centre of it. This village, the name of which I have forgotten, was entirely deserted, evidently on account of our arrival. We could hear the people talking, no doubt discussing us, quite close in the bush, but we could not see one. As there were no points of interest in the external appearance of this village, and as in the absence of the owners I could not enter any house, we started off again. After walking some time we came to another large clearing and a larger number of huts, which, Sa-ul informed us with a proud air of proprietorship, was Gorendu. We heard the same shrieks there and retreating footsteps, but this town was not absolutely deserted.

“An aged lady, totally devoid of clothing, no doubt owing to her extreme anxiety to get away, as it is not the habit of the women to go naked, was discovered sitting on the ground, in the middle of the town, and one by one they began to come in. Only one woman, however, made her appearance, perhaps owing to the fact that she possessed a garment of grass which came down to her knees. After the people had come in there was a great deal of patting and pinching to be endured which could have been dispensed with, as they had all got skin diseases. I went into Sa-ul’s house, but he seemed to have hardly any property in it. There were some very rough earthenware cooking pots and a few spears and bows, but nothing else. Sa-ul was perfectly civil to us all the time we were on shore; but it is rather remarkable that, though I gave him a good many things, he never offered me anything in return. In the Admiralties, where they looked infinitely more savage than they do here, the chief insisted on making me presents in return for mine to him.

“After walking about for some time round about Gorendu we turned back to the boat with a crowd at our heels, and got back to the ship about two o’clock. At all the places we called at before going to New Guinea I made inquiries about an interpreter for Astrolabe Bay, but at no place could I hear of anyone who had been there. I made out that two ships had been at Port Constantine, both English, but how long ago I could not find out. I believe the only foreigner of any country who has stayed with them and can speak their language is Maclay. I could see no signs of European implements, beads, or cloth, which there probably would have been had they mixed with foreigners.”

Maclay says every yard of land is owned by someone and every fruit-bearing tree has its owner. There may, no doubt, be scented woods on the mountain ranges, but we saw no signs of them. Tobacco, I should say, there certainly was not, as we

not only saw no signs of it in the towns, where it most probably would have been planted, but the natives did not at all seem to care about ours, though some of them did know the use of it. As far as the appearance of the people goes, I imagine Wallace must be wrong when he says that the Astrolabe natives are not true Papuans, but a colony from another place. They are utterly unlike the New Britain, New Ireland, or Admiralty islanders, and where else they could have come from I do not know. They are copper-coloured instead of black, and have Jewish features. There is none of the flat-nosed, thick-lipped type about them, and their heads are better shaped than those of any of the natives round about. If they did not all suffer from skin diseases they would be a very fine looking people. It is possible they were more civil to me than they would have been to anyone else, owing to the fact of my acquaintance with Maclay, which I made the most of. They seem to fight very little among themselves. None of them were scarred like the Solomon islanders, and the bows they sold us had evidently been out of use for a long time, and had all new cane strings. There seemed to be very few weapons of any sort in any of the houses I went into.

No doubt there must be very fine land up the rivers. Indeed, up the valley of the Gabina River we could see plains stretching for some twenty miles or more.

The natives of New Guinea vary very much in appearance and language. It may be roughly said that in the east and west they are fair-skinned, small men; and that in the centre they are powerfully made black men, probably the true aboriginals; while their neighbours are colonists from other places. They are always fighting amongst themselves, and, as a rule, the black men have the best of it, as their weapons are superior and they keep themselves in constant practice.

I have found, also, that the black men are more to be trusted than their fair-skinned neighbours, in spite of their being cannibals, which the others, as a rule, are not.

The population of the country has been estimated at between three and five millions. Some parts of the interior are densely

populated by wandering tribes, so that it is difficult to form anything like a correct estimate. Mr. Chalmers, who should know more about the country than anyone else, believes the population to be about three millions. In conclusion, I must apologise for the rambling nature of this paper, and thank you once more for the honour you have done me in asking me to read it.

The CHAIRMAN referred to the lucidity of Mr. Romilly's paper and the pleasure it had given the members in listening to its reading.

Mr. J. P. THOMSON said that, after the reading of a paper it was usual to invite discussion, and thought it was very desirable to do so, as it made the subject more interesting to the members and more satisfactory to the author. Referring to that part of the paper which described the natives of New Guinea, he had travelled over a great portion of the South Sea Islands, many places frequented by the author himself, and had associated much with the natives, and, being a keen observer of human nature generally, he had taken great interest in studying the habits of the natives, and considered that, while they could be trained to make excellent servants when away from the influence of their own tribes, they are naturally inclined to be treacherous when influenced by a close association with their own people, and could not be trusted like a European.

IN the absence of the author, the HON. SECRETARY read a Paper entitled

Western Tasmania.

By T. B. MOORE, Esq., New Norfolk.

ALTHOUGH Tasmania ranks as the second settled colony in Australia, yet it is only within the last few years, owing to mining enterprise, that the western portion of the island has become permanently populated and partially explored. I avail myself of the opportunity, this evening, to give a sketch obtained by personal observation of the physical features, resources, etc., of this comparatively unknown region.

In 1876 Mr. C. P. Sprent, Deputy Commissioner of Crown Lands, then district surveyor, on behalf of the Government, led the first expedition to Mount Heemskirk, from the north coast *viâ* Mount Bischoff and the Parson's Hood, the extreme southermost termination of the Meredith Range. Mr. Sprent made many interesting discoveries, and reported favourably upon the mineralogy of the country, which naturally excited the minds of the enterprising spirits, and in the following summer three expeditions were formed to explore the *terra incognita*. Two of the parties proceeded by small sailing crafts, and landed their effects at the Pieman River and Macquarie Harbour, where they commenced their explorations, the vicinity of Mount Heemskirk being the centre of attraction. The third one, under my leadership, had the honour of first crossing the island from the south *viâ* Lake St. Clair, the Eldon Range, and Mount Dundass. Along this route, endowed by nature's most lovely charms, discoveries were made of numerous small picturesque lakes, dashing torrents, and high rugged mountains. Minerals were discovered and land selected by each party, the result of these finds being an influx of population and the permanent settlement of the coast generally.

Western Tasmania is divided from the other portions of the island by continuous chains of high mountain ranges, commencing in the north in the granite peaks of the Meredith Range, followed by the conglomerate-capped silurian heights of the West Coast and Elliot ranges, and terminating in the white cliffs of the Wilmot, Franklin, and Arthur ranges. These insurmountable barriers attain heights of between three to four thousand feet above the sea level, and run parallel within fifteen to twenty miles of the coast line.

Owing to the inaccessible nature of these massive piles of rock only three practicable routes for overland communication have been discovered. One in the northern part taps the important gold deposits of the Pieman district, and has a commencement at Mount Bischoff *viâ* the north end of the Meredith Range. A central track leading from the vicinity of Lake St. Clair I had the honour to discover in the summer of 1883, when exploring for the Government. This passes between Mount Lyell and Mount Sedgwick, through the only accessible saddle in the West Coast Range, and, after following a dividing spur situated along the auriferous zone of the King River gold-fields, terminates at the Macquarie Harbour.

The most southerly one to Port Davey starts from the township of Victoria, and, after following the course of the Huon River for a considerable distance, passes through a splendid opening between the Franklin and Arthur ranges.

As yet horse traffic has only been attempted on the Pieman route, the other proposed lines of communication being merely used by explorers, no roads or horse track having as yet been constructed; but an expenditure of public money is voted for opening out the central thoroughfare during the coming summer.

By examining the map other ranges may be observed to be charted within a short distance of the coast. The first of these, north of the Pieman River, are the quartzite and conglomerate rocks of the Norfolk Range; south of that stream the granite slopes of Mount Heemskirk; and between Macquarie Harbour

and Port Davey the slate, schist, and quartzite formations of the D'Aquilar, Junction, and De Witt ranges.

RIVERS.

This densely timbered and mountainous tract of country is intersected by large rivers flowing from the interior, which, after passing through lofty precipitous gorges in the coast ranges, traverse the lower-lying country in deeply cut channels and ravines. All the entrances to these streams, with the exception of the Gordon River, are obstructed by sand bars. The Arthur and Henty rivers, at certain seasons, are so completely blocked by these treacherous barriers that a traveller with sufficient caution can cross dry-footed, yet not without experiencing the feeling that he is sinking to eternity. The Gordon and Pieman are the only navigable streams. The latter, emptying its waters into the Indian Ocean, is exposed to the prevailing westerly and north-westerly winds; it has also the disadvantage of a difficult entrance, with a bar covered by only two and a half fathoms of water, over which, in boisterous weather, it is impossible for vessels to pass; but this dangerous obstacle once overcome, deep reaches, in places one-quarter of a mile wide, extend inland for twenty miles, where ships of any tonnage might safely float.

Further along its course, its channel being shut in by precipitous banks from two to four hundred feet in altitude, the flood waters caused by torrents of rain and thaws of snow on the inland mountains have not sufficient outlet, thereby raising this river, and many others on the coast so situated, sixty feet above the ordinary level, and sometimes leaving the boat of some unhappy prospector thirty or forty feet high and dry in the fork of a tree. The Gordon flows into the south-east corner of Macquarie Harbour, and is navigable for thirty miles. It is, without exception, the grandest and most picturesque river in the island, for the monotony of the densely timbered high banks of the other streams is varied by large pine and blackwood covered flats, beautiful cliffs of black limestone intersected by veins of

calcspar, small wooded islands, and lovely views of distant mountains.

HARBOURS.

The coast line bears towards the south-east, and is formed of successions of soft sandy beaches, backed by stunted scrub-covered dunes; craggy cliffs of quartzite, slate, serpentine, limestone, and granite rocks, ranging from fifty to one hundred and fifty feet in height, sometimes found jutting out into the sea, with huge isolated detached masses, boldly defying the angry ocean; and, scattered here and there, high ranges stand out in bold relief a few miles from the shore. Toward the southern part the outline is even more rugged, where barren hills rise perpendicularly from the waters of the ocean. Here there are two large indentations—namely, Macquarie Harbour and Port Davey. The latter is the only harbour on the coast where large ships can enter. It is a magnificent sheet of water, completely landlocked and sheltered by high quartzite ridges. Near the entrance to the Davey River, located in the north-east portion of the harbour, a settlement was formed many years ago by men engaged in pine cutting; but, owing to the exhaustion of that valuable timber in places of easy access and an inhospitable climate, all that now remains of that busy settlement is a deserted village, with decayed and desolate huts, and once well kept gardens grown wild. About a quarter of a mile from the narrow rocky entrance of Macquarie Harbour the soundings average two fathoms; but as this ocean bar is protected by a long point formed by Cape Sorell, small steamers are able to cross and enter in unless the weather is exceptionally stormy. The harbour extends twenty miles towards the south-east, and its northern shores are formed principally of raised beaches and upheaved submerged forests, where, embedded in blue clay, may be found huge trees of semi-lignite containing impressions of existing plants. Here we do not find the bold outline or the grand scenery of Port Davey; yet beautiful bays and inlets covered with flocks of black swan, jutting promontories, small timbered islands, and distant views of prominent mountains everywhere delight the eye of the traveller.

On Sarah Island, situated in close proximity to the outlet of Birch Inlet, and lying opposite to the steep spurs of Mount Sorell, the extreme southernmost point of the West Coast Range, a penal settlement was formed in 1822, but, after twelve years, was disbanded, and now ruined dungeons, decayed log-constructed docks, tall fruit trees clad with the Macquarie Harbour vine (*Muehlenbeckia adpressa*), half hidden by luxuriantly growing raspberry canes and English rye-grass, are the only indications and monuments of prison work, and of the first population on the west coast. For a lapse of over forty years the natural beauties of this lovely spot remained undisturbed by civilization until the mineral discoveries at Mount Heemskirk brought enterprising miners and citizens to Long Bay and Swan Basin, who have erected two small townships on a large area of land now reserved and surveyed by the Lands Department for the future town of Strahan.

Trial Harbour is a small open rock-bound bay, exposed to the prevailing winds, therefore impracticable for navigation except in extremely fine weather. Being only two miles distant from Mount Heemskirk, it served as the main depôt for landing the heavy plants used in classifying and crushing the tin ores of this locality, and, consequently, saved mining companies a large expenditure, which would have been entailed if their machinery had been brought over the soft beaches and treacherous Henty River from Macquarie Harbour.

The only other inhabited port is the Pieman River, settled immediately after the stanniferous discoveries at Mount Heemskirk. Yet there are other slightly known inlets in which fishing and piners' smacks frequently anchor with sufficient safety in stormy weather, and there is little doubt that these small havens will eventually become as useful depôts to future mining districts as Trial Harbour has been to Mount Heemskirk.

TIMBER AND SCRUBS.

The coast line is fringed by stunted scrubs of ti-tree and banksia matted closely together, but the lower-lying broken

country for the most part is covered by forests of myrtle (*Fagus cunninghami*), sassafras (*Atherosperma moschatum*), celery, top pine (*Phyllocladus rhomboidalis*), and many species of the eucalyptus, with an undergrowth of dense scrubs or shrubs of many different genera, some bearing lovely blossoms and foliage, or berries of all hues. Of these the wharata (*Telopea truncata*), native lilac (*Prostanthera rotundifolia*), climbing heath, and native laurel (*Anopterus glandulosus*), are the most lovely. The heath adds brightness to the sombre gloom of the woods, and of the above-mentioned plants it is the only indigenous one to this part, and is found covering with bright green leaves and clusters of long scarlet flowers tall decayed stumps or fallen giants of the forests. Twined together in a close network, defying the passage of mortal man without the aid of his axe or billhook, these forests are surrounded by impenetrable thickets of horizontal (*Anodopetulum biglandulosum*), ti-tree (*Leptospermum lanigerum*), native rose (*Banera rubioides*), scrubs forming barriers so harassing and detrimental to surveying and exploration.

Long strips or patches of useless button grass (*Gymnoschæus sphærocephalus*) country, in many localities, take the place of the scrubs. These open areas must not be taken for pastoral land, for not only is the soil of an unproductive nature, but the coarse herbage unfits it for any use. The button grass consists of round tussocks from two to four feet in diameter, and one to five feet high; it is found at all altitudes, in wet swampy flats, or dry barren ridges, or on the summits of high ranges.

Before being burnt the locomotion is excessively tiring for the traveller, who must either spring from tussock to tussock or sink deeply in the soft black slush, or when wending his way on the higher lands has to wind his course between the tussocks, so as to avoid being tripped by the entanglement of long wiry leaves. The prospector hails the sight of this country with delight, for when fired it burns furiously and sweeps the scrubs of hated banera, always found adjacent to its edge for miles, and gives a freer passage and a sight of mother earth to the

searchers of mineral wealth, besides freeing the land of destructive pests and venomous snakes.

Along the large flats and banks of the rivers, the graceful white blossomed pinkwood (*Eucryphia billardieri*), the pyramid-shaped pencil cedar (*Athrotaxis selaginoides*), and valuable blackwood (*Acacia melanoxylon*), King William (*Athrotaxis cupressoides*), and Huon pine (*Dacrydium franklinii*), beautify and add wealth to this barren country, for more durable woods for ship-building and furniture-making cannot be obtained in Australasia than the far famed logs of blackwood, King William and Huon pines, exported during the last half century from the western streams to the other colonies.

Of late years the Government have altogether restricted the wholesale slaughter of the pines, supposing that the supply would soon be exhausted by the reckless destruction of young timber. In this respect the conservation was a wise legislation, but the absolute restriction is a mistake, because it has been a crushing blow to the development of mineral wealth. Formerly small crafts could afford to bring necessary supplies at cheap rates, if a return load of pine was obtained, thereby saving the exorbitant dues now paid for the charter of steamers, who are obliged to return homeward bound empty laden. It is also a mistaken idea to imagine that the pine is on the eve of extinction, for on many of the rivers and their tributaries I can vouch from personal knowledge of the existence of extensive beds of *Dacrydium franklinii*.

In a country so excluded and shut off from the settled districts by the want of overland communication, the Governmental powers ought rather to have fostered the principal resources than put obstacles in the way of development, which might have been easily obviated by forming stringent regulations and insuring sufficient supervision to prevent the wasteful cutting of timber and needless destruction of small trees.

Many of the mountains are completely hidden by the variable foliage of alpine shrubs. The one most peculiar to this district is the *Fagus gunnii*, the deciduous tree indigenous to Aus-

tralasia; its habitat is on the snow-covered heights of the Western Ranges, where it grows in dense patches, attaining an altitude of four to twelve feet. No other locality in Tasmania produces a more beautiful variety of rare ferns; notably among these is the *Aspidium hispidum*, growing in greatest profusion in the gullies of the Pieman district; it was first described as a new species in Tasmania through the instrumentality of Mr. George Lefroy, but discovered years previously to his visit to the West Coast. The Macquarie district wholly claims the delicate *Lindsaya trichomanoides*, which is found in the sunshaded chasms of the West Coast Range, and occasionally met with south of the harbour in deep valleys.

Two of the rarest filmy ferns, new to Tasmania, were brought from this locality into the settled districts by myself in 1883. I had hoped that one of the species might have proved a new discovery to the world; fronds were forwarded to Baron von Mueller for determination, and the illustrious botanist concluded that the first was the rare *Hymenophyllum marginatum*, one of the smallest filmy ferns, hitherto only known in localities in the neighbourhood of Port Jackson, New South Wales. The other, a tomentose little fern, gathered from the bark of the King William pine, proved precisely identical with *Hymenophyllum malingii*, hitherto only known from New Zealand.

AGRICULTURAL LAND.

Western Tasmania is destitute of any extensive areas of agricultural land, and the Government, instead of encouraging settlement, have unwisely reserved the whole district for mineral purposes, thereby shutting out the small farmers from selecting the patches of rich deep soil met with on the shades and banks of the harbours and rivers; and where there might have been comfortable little holdings, to be a help and stay to the mining industry, the lands lie untilled, and not one cultivated paddock can be found in this quarter of the island.

The existence of grass is only found on the sandy hummocks along the coast, growing in rough tussocks, quite unfit for pastoral purposes, even if the areas were more extensive.

The rivers are stocked with a plentiful supply of fresh water fish, although the variety is not numerous; and those fish only worthy of notice are the eel, herring, lobster, and black fish. Three species of eels abound in all the streams, and to estimate the quantities that can be caught may be instanced by the fact that a friend and myself have bagged eighty, weighing from one to four pounds each, during a few hours' fishing in the evening. This haul was made during a time that Mr. O. Meredith and myself were the only inhabitants on the West Coast. We had made our way overland with the expectation that a vessel which had preceded us with men and supplies would be able to cross the Pieman bar; but, owing to severe westerly gales, she did not perform her mission until two months had elapsed. During six weeks of this time we had to invent means to secure food, and subsisted almost entirely on eels, crawfish, and black swans. Although living like aborigines in this precarious fashion, many a pleasant evening was spent on the river fishing, or, with a punt full of waddies, excitingly chasing and pulling down the flapping moulting swans, or spending a happy day in the seaweed gulches of the coast, capturing an abundant supply of crawfish. We both agreed that the eel had the most sustaining and nourishing properties, and, instead of tiring of their constant use, we became excessively fond of them; and hooking a large one of six pounds weight on Christmas eve, as a treat saved it for our dinner next day, and relished it with perhaps as much gusto as if we had been feasted on the national dish of old England. The herring (*Protocroctes maræna*) is the most delicate and delicious fresh water table fish in the colonies, and affords excellent and exciting sport to anglers. They frequent the shallows and rapids of the large rivers, and may be seen, especially in the early morning and evening, swimming in large shoals, and throwing their bright silvery bodies out of the water while in hot chase after an imprudent white moth, their principal food.

Since the importation of the English brown trout (*Salmo fario*), these beautiful little luxuries have become almost extinct in the once famous herring fishing streams of the south, and all

Tasmanians hail with delight the proposed scheme of Mr. Saville Kent, the inspector of fisheries, to artificially breed and restock these streams with the locally called cucumber mullet. The lobsters (*Astacopsis franklinii*) are not plentiful, and, as yet, have only been captured in the Arthur, Pieman, and Gordon rivers.

The black fish (*Gadopsis marmoratus*) was supposed to be confined to the northern rivers; yet one western stream, the Arthur River, has an abundant supply. They may be captured in the evening, in still pools, sluggishly swallowing the bait.

The flounder, sole, ling, skate, and rock cod frequent the salt waters of the harbours, and the excellent trumpeter (*Lartis necatelu*) and crawfish the deeper waters of the ocean bays.

ANIMALS.

The tiger (*Thylacinus cynocephalus*) and devil's (*Sarcophilus ursinus*) chief habitat is on the coast, principally in the undisturbed portion south of Macquarie Harbour, where they find sufficient prey in kangaroo (*Halmaturus Bennetti*) and wallaby (*Halmaturus billardieri*), only found in small numbers, picking up a living on the coarse grassed hummocks.

Tiger cats (*Dasyurus maculatus*) overrun the woods, and are the scavengers and most plucky animals of the forests, and, unlike the cowardly snapping tiger, fight bravely to the last. The sleepy wombats (*Phascolomys wombats*) roam over the button grass plains, making their domiciles under the shade of the thickly thatched tussocks, or burrowing long underground tunnels at the edge of the forests. They are numerous in all parts, and often prove good friends to the provisionless pioneer and miner. On one occasion, when my supplies were unavoidably delayed, myself and brother travelled over the Western Ranges and subsisted entirely for five days on roast wombat; and many other cases may be instanced where life has been saved by the use of their flesh, which is not to be despised, and surpasses the insipid preserved meats and soups so commonly used in the bush.

It is only within the last two years that many of the smaller animals of Tasmania found in the unpopulated regions have become known to the zoologist. Dr. Higgins and Mr. Petterd, of Launceston, undertook the work of description, and solicited collections of specimens from every locality in the island, and in many instances received entirely new species. Being on the West Coast at the time, and always anxious to forward any scientific investigations, I collected all the varieties of kangaroo rats, antechini, and rats that came under my observation. Four of them proved to be new species to the island, and described by Dr. Higgins in a paper read before the Royal Society, as follows:—Red kangaroo rat (*Potorous rufus*), *Antechinus moorei*, *Mus castaneus* and *Mus pachyurus*.

MINERALS.

Inferences may be drawn that this beautiful wild waste, with its limited area of rich soil and timber lands, will remain a natural wilderness, with a sparsely scattered population, unless the mineral resources are developed. The day will come, and not at a far distant date, when men of all nationalities will be enticed to the golden west in search of wealth. I speak from practical experience of the country, the result of extensive exploration; and have we not also the predictions of greater men, the renowned geologists, Count Stezlecki, Clarke, and Gould, who maintain that this will become one of the richest mineral parts of Australasia, but one of the last to be developed? The strata in the Pieman and Heemskirk districts has a strike of about 10° E. of N., but in the Macquarie and Port Davey portion about the same variation to the westward. The formation generally belongs to the silurian epoch, containing zones of productive auriferous country, highly remunerative in parts, but in others almost barren. Stanniferous masses of granitic rocks occur in many places bursting through the other strata.

The Pieman River goldfields commence a little north of the Long Plains, and are situated between the granite slopes of the Meredith Range on the east, and the quartz and conglomerate

cliffs of the Norfolk Range on the west. The auriferous belt is four miles wide, and extends for twenty-four miles S.E. to the Pieman River. At the base of these ranges two large streams (the White and Donaldson rivers) cut the surrounding strata in deeply worn channels. A third stream, the Savage River, flows through the intervening country, and between it and the White River a long dividing spur extends south to the Pieman River. This spur comprises a series of tertiary gravels of the pliocene epoch, resting on a micaceous schist bottom, and overlaid by a more recent quartz conglomerate, cemented together with a siliceous binding. These tertiaries or ancient rivers have partly been encroached upon by disintegration and denudation, and the auriferous deposits drifted down the present deeper cut and more recent watercourses. These gravels now form the secondary washes, mined at one time with such good results.

The more recent streams rise from the breaks, and furrow both sides of the dividing spur; and from these shallow, easier worked secondary deposits gold has been traced to the older tertiaries; but, owing to the little encouragement given by the mining regulations to prospectors when this field carried a large population of miners, little attention was paid to the heavier and more lasting auriferous deposits.

The quality of the gold of this district is of a high percentage of purity, and is dissimilar in character to any discovered in Australia. It is beautifully crystallized in dendritic plates of united crystals, or clusters of large crystals formed into nuggets. Associated with it are quantities of the rare minerals iridium and osmiridium, and at one time it was thought that these heavier metals exceeded the commercial value of gold; but samples of them being sent to England, the returns showed that, instead of increasing, it diminished its value, as the great weight and infusibility of the associates were detrimental to easy extraction of the precious metal.

Only two auriferous reefs have been discovered in this district, and, owing to the difficulty of road making, this more permanent branch of the mining industry has not as yet been fully

established. Besides the before-mentioned metals large lodes of specular iron follow the strata of the country; and smaller veins of carbonate of copper, asbestos, graphite, and galena, are occasionally met with, in quantities not sufficient to be remunerative.

The King River goldfields are situated in the same zone of silurian rocks, but considerably farther south, at the western base of the West Coast Range, and are at the present time absorbing most of the attention of the speculators and miners of this portion of the island. The zone follows the valley of the Queen River, and in this stream, and in many of its eastern and western tributaries, rich patches of alluvial gold, shed from quartz veins in close proximity, have been worked with satisfactory results. But, unlike the Pieman district, this field has not the promising indications of deep leads; yet there is every appearance of its becoming a rich reefing country, and, until there is further expenditure on the miserable tracks from Macquarie Harbour, it will remain undeveloped for as many more years as it has been since its discovery. In 1882 Mr. C. Lynch, the first discoverer, a most energetic prospector, succeeded in tracing the gold from the alluvial flats to a rich reef, from the cap of which one hundredweight of specimens was taken and forwarded to Hobart; on being assayed, a yield of nearly two ounces of gold to the pound of stone was obtained.

The principal stanniferous deposits occur in the granitoid rocks, porphyries, and metamorphic schists of the Heemskirk Range and surrounding hills. The tin ores are beautifully crystallized, and considerably associated with tourmalines and chlorites. They are found in impregnations, bunches, or solid leader masses in variable lode stones. Other minerals are found in small quantities associated with the veins of cassiterite. Principally among these are galena, copper, bismuth, and molybdenite.

Great excitement prevailed for a few years after the discoveries were made, and large syndicates were formed to work many of the multitudinous sections applied for and leased from the Government; expensive plants of crushing and classifying

machinery were erected before the mines were properly opened out or tested; a wild over-speculation ensued, and, before any legitimate mining was done or any of the lodes proved, a crash came and destroyed for a time the prospects of this grand stanniferous country.

The western granite base of the Norfolk Range and the north-eastern slopes of the Meredith Range have also been unsuccessfully worked for tin ores, but not in such an extensive or expensive a mode as the deposits of Mount Heemskirk.

Large lodes of galena, found within the last few years at Mount Zeehan, and reported favourably upon by the Inspector of Mines, promise to become a lasting resource to this district.

South of Macquarie Harbour is the least known part of the West Coast. Still here there are good indications of gold, silver, and copper country, and it only requires time, money, and a helping hand from the ruling powers to change this district and the whole of the West Coast from a sterile waste to the most populous and thriving mining territory of Tasmania.

The CHAIRMAN spoke in favour of the paper just read, and quoted many instances referred to therein from his own personal experience in Tasmania, when examining the gold mining features of the West Coast.

On the motion of Mr. J. P. THOMSON, seconded by Dr. WAUGH, a vote of thanks was passed to Messrs. Romilly and Moore for their papers, and the meeting then closed.

THIRD ORDINARY MEETING.

THE third ordinary monthly meeting of the Queensland Branch of the Geographical Society of Australasia was held in the Museum Library, Brisbane, on Thursday evening, 1st April, 1886, and presided over by the Hon. A. C. Gregory, C.M.G., &c., &c. (Vice-President). His Excellency, Sir Anthony Musgrave, accompanied by his private secretary and aide-de-camp were present, and a very large attendance of ladies and gentlemen.

The HON. SECRETARY read the minutes of the previous meeting which were confirmed, after which a ballot took place and the following gentlemen were duly elected ordinary members of the Society:—Captain Butcher, Messrs. W. Mune, A. Musgrave, D. J. Clarke, W. H. Timnor, R. G. McDowall, A. A. Spowers, W. R. Withrington, and W. Scarr.

MR. J. P. THOMSON said he had much pleasure in introducing to the meeting Captain Everill, leader of the Geographical Society's late exploration expedition to New Guinea, who was on a visit to Brisbane, and was now present. He was sure it would be gratifying to the members present to welcome him amongst them.

The CHAIRMAN in endorsing the remarks of the Hon. Secretary, said that he had much pleasure in meeting Captain Everill again, and he had no doubt the Society would join him in welcoming him. (*Applause.*)

Captain EVERILL replied that he was only too glad to be present at a meeting of the Queensland Branch of the Society, and he thanked them for the kindly manner in which he had been received.

The following paper was then read by the author :—

The Islands of Torres Straits.

By the Hon. JOHN DOUGLAS, C.M.G., F.R.G.S., Hon. M.G.S.A.,
Special Commissioner of British New Guinea.

Gentlemen,

I was asked, a few days ago, by your secretary to read a paper to you on the Islands of Torres Straits. I rather rashly promised to do so, for I have been a good deal occupied with business in connection with New Guinea, and have not had time to write anything really worthy of your acceptance.

However, Mr. Sandham, a gentleman in the Survey Office, has kindly supplied me with a sketch map of the islands on a tolerably large scale, and this will enable me to illustrate effectually what I have to say this evening.

Let us suppose, then, that we are approaching the Straits in an ocean steamer—a British India boat, or one of the numerous China steamers which call in at Thursday Island. It is a dark night, perhaps, and the captain is anxiously looking out for the Proudfoot Shoal. There it is! There is the lightship! The advance guard, as it were, on the Australian coast. If there is one thing the people of Queensland may be proud of it is the lighting of their coast. There is nothing like it, certainly, on the Australian coast; and considering that the people are but a handful, there is nothing better, in its way, on the face of the earth than the manner in which this coast has been lit up. One of the very best, and the most useful lights, is this one of the Proudfoot Shoal.

It is not a very enviable billet for the poor fellows on board who are condemned to this banishment. Out of sight of land, forty miles from Goode Island, and tumbling about in what is often a very rough sea. I don't envy Captain Cairncross and his men. They battle the watch, however, bravely. Sometimes, I am sorry to say, that they have been as much as three months without communicating with the shore; and the passing

steamers are particularly shy of going near them. I don't know why it should be so, for there is no light on the coast which is a greater boon to the anxious mariner approaching land from the Arafura Sea than the light on the Proudfoot Shoal. Captain Cairncross, however, has now been promised regular monthly communication with Thursday Island, and this he considers a considerable alleviation of his lot. I don't think any man should be asked to stay out on the Proudfoot for more than six months at a time. If he wishes it, he should then have an opportunity of coming in for a week or so into the settlement. There are some men, however, who do as much as a year, and eighteen months, on the Proudfoot without grumbling.

Well, passing eastward from the Proudfoot, we reach Booby Island—the old port-office of the Straits—a low-lying uninteresting island, some eighteen miles from the lightship. The glory of Booby has departed; there is no port-office on it, but there is going to be a lighthouse. It was considered doubtful for some time whether it would not be better to have a light on Goode Island, visible twenty-five miles off, which would include Booby in its radius. The steamers from the westward would have preferred it, but the Gulf trade had to be considered, and for vessels bound from Normanton Booby Island was the best guide. And here let me inquire if anybody knows where the old records of the Booby Island port-office are to be found? They are interesting historical memoranda; and allow me to suggest that some member of parliament might ask for the latest returns from Booby Island. They are somewhere, no doubt, carefully pigeon-holed.

Leaving Booby Island, we next sight the bold outline of the Prince of Wales Group—not very bold certainly, nothing over 700 feet, but still high as compared with the Proudfoot and Booby. There is the signal station on Goode Island; altitude at that particular point of 250 feet or thereabouts. Captain Powell presides at Goode Island—an old friend, and well known to some of us old hands. On that little mount of vision our signalman resides, and has resided for the last eight years. On

an income of £170 a year Mr. and Mrs. Powell have reared a family of thirteen children (not all born, I should explain, within the eight years); and yet with no schooling except their parents' teaching, these children have been well educated I consider. Besides the ordinary rudiments of the three R's, they read nature. They can tell you about all the birds and the beasts of the island, from the osprey eagles, which come over from the mainland, to the tiniest brightly-jewelled butterfly birds which flit about in the sunshine. They know a deal more than I do about the snakes and the beetles and the bugs of the island. I speak of the bugs, as a general term, after the manner of our Yankee friends, the tribes of "bugs" being infinite. I cite this family of Goode islanders as an example of what may be done, even in isolation, for the education of children. I would back them for general intelligence against many school-bred children.

Goode Island commands the Straits. Here you see, along its northern front, is the Prince of Wales Channel. Every large vessel passing round the north-eastern extremity of Australia passes through that channel. Of course there are other channels, but let the ship beware that tries them. There are several wrecks still to be seen—"frightful examples" of ships steered by adventurous seamen who went on exploring expeditions among the reefs.

But just at present let us pass inside of Goode Island. Here, round Quoin Point, we come in sight of one of the best pearling stations in the Straits. It is known as Captain Tasker's station, though I believe it has lately passed into the hands of Messrs. Kelly and Cousins. Here it is, in Bertie Bay, that Sir John Coade says must, some day, be a great imperial naval station. It will be a big thing, no doubt, when it is done; but there will be a good deal to do. It is designed to have a great breakwater to breast the roll of the waves which come sweeping in during the north-west monsoon. It is thought, I believe, that this work could be carried out, as the people of New South Wales are carrying out their works at Trial Bay, by prison

labour, and it would, doubtless, be a fine thing to do. There are plenty of fine gibbers on Goode Island to cast into the sea, and I daresay it will be done some day. But, as things are at present, vessels entering between Goode Island and Friday Island steam on up Normanby Sound. They generally signal for a pilot when they approach the Black Rock, a rugged little rocky island, separated from Friday Island by a narrow deep channel. It is at this point that we watch from Vivien Point for vessels approaching from the west, and often we see the tops of their masts above the Black Rock before we see the hull of the vessel. Between the Black Rock and Wai-weer, a picturesque islet occupied by the Queensland Pearl Fishing Company, lies the Gibber Rock, in the middle of the channel—a danger of course, but it is buoyed, and it is really no hindrance to navigation, for there is deep water on both sides. Admiral Tryon would utilise it, if he is allowed, to fortify Normanby Sound as a link in a chain of torpedoes.

Wai-weer is one of the prettiest little islands in Normanby Sound. The buildings on it are perched up on the rocky eminences, and the accessories of a flagstaff, a jetty, and a wharf add much to its scenic effect. Frank Summers, a well-known Torres Straits captain of industry, presides here.

Passing the Black Rock, the Gibber Rock, the Brisbane Rock, and rounding Vivien Point, where the channel between Thursday Island and Prince of Wales Island narrows greatly, the vessel in which we are navigating the Straits comes to anchor off Port Kennedy, in four fathoms of water.

There are three hulks here, moored in mid-stream—the “Star of Peace,” the “Baron,” and the old “James Paterson.” To one of these we make fast, and have time to look round. The harbour is completely landlocked, and especially is it protected from the force of the north-west blasts which sometimes sweep over the islands with furious vigour. They have never yet been known to work themselves up into the fury of a hurricane, such as is sometimes experienced in the China seas; but they are bad enough, though they are really rather fierce squalls than

tempests. The tides, too, are sometimes pretty bad, especially after a long prevalence of strong south-easterly winds; but on the whole Port Kennedy is one of the finest, if not the finest, harbours in Queensland, and will only be eclipsed for capacity when Bertie Bay is made a great imperial coaling station. There is room enough even now, without any mooring buoys, for the accommodation of half a dozen "Daccas" at least; so the harbour of Thursday Island, whatever may be made of Bertie Bay in the future, is not to be sneezed at. The Thursday Island people, however, are keen to have a jetty; and they hope, within the next two years or so, to have not only a jetty such as can be supplied for the shelling fleet at an outlay of £5,000, but such a jetty as could accommodate the British India boats, at possibly an outlay of £20,000.

These are pleasing visions of the future which float in upon the prophetic souls of entranced Thursday islanders, when they think of what they may come to be at an advanced stage of their existence.

Now, once more, we are in motion, having cast off from our hulk. If we are drawing not more than sixteen feet of water then we may steer on right through Ellis's Channel, round Horn Island, and so hold on straight for Cape York. This is the course of our coasting craft, and it might, with a little dredging, be made the course of almost all the steamers which frequent the port.

A cutting of ten feet for a distance of some 600 yards would, so I am informed, do the job. But it will be some time, I suspect, before Thursday Island can be attended to with a dredge. Normanton wants a dredge first, and, on the principle of those who have much always wanting to have more, what are the chances of Friday Island, when, instead of 600 yards of a channel, Normanton can triumphantly point to 6,000 yards straight on end, waiting for the beneficent scraping of half-a-dozen "Saurians" or "Gropers"? Ellis's Channel must, therefore, wait. As we are drawing twenty-two feet at least, we must go back out by the same entrance between Thursday Island

and Goode Island, round Goode Island, through the Prince of Wales Channel, past the Ippely Reef, past Hammond Rock and Hammond Island, round Wednesday Island on to Cape York and Somerset, through Albany Passage, past Albany Island, and so away down the coast, wakening the echoes of Albany Pass as we pass through with an unearthly scream from our steam syren. But, before we leave the Prince of Wales Group let me just show you the position of the cable which is to be laid, in a few months time, to connect Thursday Island with the mainland. This is Cape York, you see. Well, round the corner a little to the westward, in Endeavour Straits, here is Simpson Bay—that is to be the terminus of the land line. I was there a few weeks ago. The contractor's party—a strong one—had then cleared about eight miles from Simpson's Bay, and were pressing on with their work, hoping to be through with it before the end of the year.

Well, here is the line of the cable, about twenty miles in length, I suppose it will be, or probably somewhat less. It passes across Endeavour Straits, through this boat channel, and so on to Thursday. When it is once laid and open, then the shipping people will be able to have all their vessels reported from Goode Island. Allow me, however, to suggest, that they should be made to contribute to the cost of the line by a fair payment. It will be an immense convenience to the commercial world, and they ought to be prepared to pay a moderate percentage of the cost. I suppose, the next step will be a cable across to Manila, and so on to China.

Before we leave these islands, just let me say a word about Prince of Wales Island. It is quite a big little island, about twelve miles square. There is plenty of good water on it, and though a good deal of it is very rough stony ground, there is good grass in places, enough, I should say, for a herd of 1,500 or 2,000 head of cattle. I wonder why it has never been taken up. Let me suggest Prince of Wales to some aspiring selector. A herd of fifty cows would soon breed up to a respectable number. There is no scrub on the island—none to speak of at least. There is

enough grass, there is sixty inches of rain every year, and there is a fair market for beef at Thursday Island at 9d. per pound. I should call Prince of Wales Island a fair chance for a small squatter who wishes to live in a charming climate, with the certainty of sixty inches of rain in every twelve months. The blacks once upon a time were bad on Prince of Wales—very bad. There were some five hundred of them. Now there are about one hundred very peaceable creatures.

Now let us take a cast across the straits. You see these big islands, Mulgrave and Banks Island, with their satellites. Well, there is nothing much to be said of them. They are frequented by the native islanders, and there are a few native villages on them. The people on them fish and cadge about, growing a few pumpkins and sweet potatoes. They sometimes have come in to me with a scratch lot of pearl shell, which I endeavour to sell to the best advantage for them, buying them flour or tea with the proceeds.

The islands themselves are picturesque, but, to tell you the truth, I have never had a chance of landing on them. In this respect the loss of the "Mavis" was a serious let and hindrance to me. Jervis Island, or Manbiaz, as the islanders call it, is another of the islands, and rather an important one. I know a little about it, for I spent a couple of days on it. At Jervis Island there is a shelling station owned by Captain Brown (we are all captains in the Straits) and a very nice station it is—with a comfortable house nestling under pendulous palms and willows, with a stone pier, a work of some magnitude, and with all the appurtenances of marine stores, boats, cutters, and yachts—the "Lord Loftus" riding at anchor jauntily under the shelter of the pier. About three-quarters of a mile from Captain Brown's station there is the mission compound, consisting of a church and school-house, and several houses in which native teachers live. It was not far from the spreading beach on which were drawn up a dozen canoes with their fantastic ornaments. Immediately around the houses, their grass-covered roofs peeping out from among the cocoanut

palms, there was a nice sward of couch grass. It was something like a small Indian cantonment—the church on one side of the square, the houses of the teachers and of their *entourage* on the others; some open sheds on another side, while the fourth side was open—the whole being shaded by the graceful palms in full bearing. I spent two very pleasant days there—one of them was a Sunday. I daresay there were fully three hundred natives at church, all neatly clothed, and most reverent in their behaviour. The hymns went with a fine burst of rude melody, and I could not fail to appreciate the charm of this gracious influence which had transformed those savage men and women into cultivated human beings. I say cultivated, for in their whole attitude and demeanour there was a simple subjection to higher influences which could not but be recognised as most pleasing. Next day I wandered about over the hills and through their gardens in the intervening valley. We collected orchids and wild flowers, and in the evening there was a grand dance in which the young men displayed their choicest steps. They were draped with bright red and yellow flowers, and the whole scene was quite idyllic.

Jervis Island has its potentate in a chief, who has some real authority. He hoists a blue ensign with the Queensland badge on any important occasion, and he sports a blue coat with mother-of-pearl buttons, which His Excellency was good enough to accept from me. He has a prime minister and a commissioner of police, next in authority to himself, and the influence which those officials have is not to be despised. The law, such as it is, though it is not very accurately defined, is thoroughly respected, and it is founded on a code which is both simpler and older than that of Queensland.

From Jervis Island I went to Saibai. Here it is, close to the coast of New Guinea. It is a long, low island, fringed with pretty dense timber, though in the centre of it there are some fine open plains. At Saibai I found that the natives had scarcely risen to the standard of the people of Jervis Island. Many of them were quite naked, though the women whom I saw were all

more or less clothed. Some of the old fellows were evidently nature's own blackguards—merciless old rogues who would, a few short years ago, have eaten one without salt, and gloried in the act; and yet, now, these gentlemen belong to the bygone days—the young generation are too many for them. They affect trousers and shirts, and, above all things, they affect smoking caps. A bright, variegated cap is irresistible, and it sets them off handsomely. Well, at Saibai I saw enough to convince me that an immense change has come over these people also within the last few years. They, too, have their church and school; their houses are built on stilts, and are rather better, I think, than the houses of the Jervis islanders, who live in huts. But then their village is on a nice beach, high and dry. At Saibai it is different. The village there is built on a small ridge, between a muddy beach and a swamp—not an inviting conjunction. Nevertheless the Saibaians seem to be healthy and vigorous enough. They have their banana groves and their cocoanut plantations, and I think they might be taught to grow rice. They are anxious to learn; and if we could only get a man like Mr. Hartman, of Toowoomba (he was with me at the time I speak of), to go and live there for a few months, in order to show them how to grow rice, I am sure they would soon learn. The young chief is a man of intelligence, and he has a Winchester rifle, though this is quite on the quiet. He alleges, I was told, that this is necessary, because some of the wild tribes from New Guinea might come down upon them. The Winchester, however, is for “defence, not defiance,” and our chief at Saibai is quite amenable to discipline, and he is a respecter of law and order. I should like to be able to give him a good whaleboat. If I mistake not, his name is Amnoo. I have it down in my pocket-book, but it is not accessible here. The fact is that I have a long list of native names, but without actual reference to the record they are a little confusing. Our lord of Saibai, however, is worth cultivating, and, if I mistake not, there is a fund of £1,000 voted in last year's estimates, upon which I should like to make a modest demand for this purpose. These lords of

the isles are very fond of a bit of boating. A whaleboat is, of course, a great treasure, and Winchester rifles are not despised. Of course I cannot countenance rifles, though some of these men know both how to use them and use them with discretion.

Now, leaving Saibai, let us pass over for a minute or two to the mainland of New Guinea. Here is Katow—rather a miserable place on a river, with a bar across it, and not accessible for a craft of any size. Still Katow is the village on the mainland of New Guinea we know most about, and there is a prospect that there will be a good deal of cedar exported from Katow. Gamèa, the chief, is a very decent fellow—we have exchanged calls. He has been to see me twice at Thursday Island—wanted very much to get a horse and a dray from me, but I could not strain my friendship to that point. Then passing eastward there are these islands, Bristow, Darro, Bampton, and Mibu at the mouth of the Fly. Bampton used to be a terrible place for savages—still marked as such in the charts; now, however, the Bampton islanders are perfectly harmless if they are treated with respect.

Turning back again let us shape our course for Darnley. I call Darnley the most important island in the Straits. It is a fine high and dry island, plenty of good cultivation ground on it, and plenty of water. There are fine bamboo groves on it, and there are plenty of bananas, coconuts, and sweet potatoes; plenty of fish too to be had all round its shores. Present population I reckon to be about 300. There are three or four Europeans, and there are about fifty South Sea islanders. The rest are natives of the island and Bingi natives. “Bingi” is a term applied to the Australian aboriginal natives. The South Sea islanders often buy, or in some way acquire, “Bingi” women for wives. There is a mission station on Darnley, and “Jack,” the lord of Darnley, has rather a good house and a respectable establishment; but the South Sea men do not bow down to Jack, and his position is a somewhat embarrassing one. Still, his authority is to some extent respected, and he has his police constables who execute his orders. Darnley ought to be sur-

veyed. I regard it as the key to the whole coast of Western New Guinea. A trading station established on it could command the whole coast from the mouth of the Fly to the Ontrinato rivers. The anchorage off it is not very good, but quite sufficient for trading purposes. I should like the Minister of Lands to have a look at Darnley; or else, as I have said elsewhere, Darnley should be transferred to New Guinea. It is a fine point *d'appui* for the whole New Guinea coast.

Now, passing from Darnley, let us shape away for Murray Island in a south-easterly direction. Murray is a beautiful little island, volcanic and very fertile, but very much among the reefs, and the navigation to and from Murray will always be more or less dangerous until beacons are set up. And, talking of beacons, let me just refer for an instant to the beacon on Bramble Kay. That was a good piece of work accomplished by Captain Williams in the "Mavis," and it is a great help to mariners either going out through the Barrier Reef or coming in. I wish we had a few more beacons like that—a good up-standing mast it is, on a low sandy island abounding with turtle.

Let us, however, once more suppose ourselves safely at anchor off Murray Island. We are quite sheltered from the south-east. At the foot of the hills, along the beach, lies the native village, consisting chiefly of grass houses. A little above them, at an elevation of probably 100 feet, are the houses of the missionaries, the church and the various buildings occupied by the Papuan scholars being at a somewhat lower level. Behind the missionary establishment the hills rise rather abruptly until they culminate in a peak about 800 feet above the level of the sea.

The climb to the top is not very difficult, there being a good path all the way. The view from it is very extensive, and chiefly over an expanse of water—Darnley rather faint in the distance, and Bramble Kay still more faint. Immediately below, like a great amphitheatre, some 300 feet from the summit on which we are standing, there is a lovely sheltered valley, which is evidently not very much used by the Murray islanders.

There are a few gardens in it, but it is chiefly fern and undergrowth; and I think a portion at least of that valley might be laid out as an experimental garden. It is sheltered on all sides, and here, I fancy, might be grown the choicest fruits, flowers, and trees of the tropics. Murray Island is the centre from which radiates the light of the higher life for the inhabitants of New Guinea. Whatever good has been done in the Straits for the native inhabitants of the islands has come from this Papuan institute. Results have proved that the labour of the missionaries has not been in vain. It will continue, I hope, to be still more beneficial in the future in its action on these wild children of nature. Could we not assist the missionaries in their efforts by promoting industry in this form of garden cultivation? There are plenty of hands on the island to tend such an experimental garden. Harry, the chief, may, I think, be depended on to help us in this; and thus, from Murray Island as a centre, many useful plants may be spread abroad along the adjacent shores of New Guinea. I think we may depend upon the help of Mr. Soutter at the Acclimatization Society's Gardens. He has already supplied me with some seeds and plants for Murray Island, and I shall hope for more. Mr. Hartman also, from Toowoomba, sent a valuable collection of fruit trees; and, not long ago, I sent some valuable packets of tobacco which I received from Java. The soil of Murray Island is abundantly prolific. The "comalla," or sweet potato, is the favourite esculent of the natives. There are bananas and cocoanuts in profusion; and whatever is grown in the tropics could, I have no doubt, be grown there. Of bright shrubs there might be abundance. The few crotons and dracenas I saw were enough to show me what could be done if they were cultivated. Indeed, I cannot imagine a more delightful place to live in than Murray Island, for anyone who wished to shut himself out from the world, in

"Regions mild of air and serene calm."

He might grow crotons to perfection, live on cocoanut milk and comallas to repletion, and dine every day on fresh sardines

snatched in bucketsful literally from the coral strand. For the Murray Island people I have a favour to ask. The missionaries are most indefatigable in teaching the adults, or neophants of the institute, both male and female. These young men and women are taught to read and to write in the Murray Island dialect. Some of them are capital arithmeticians, and they are of course instructed in the fundamental principles of the Christian religion. They come from all parts of the Straits and from the coasts of New Guinea. They go back well instructed, not only in the literature of the Gospel, but they are often taught to work in wood or iron. Under the direction of Mr. Bruce, a Clyde yacht-builder, they have built a handsome little craft for the mission service. This is all most excellent. The little word, however, which I wish to say is for the Murray Island children. There are more than 100 of them of school age. Why should they not have a schoolmaster to teach them English? They are fine bright little people—obedient and well behaved. They get some schooling, but not enough, and I hope that the mission teachers will apply to the Education Department for a schoolmaster under the provisional school clauses.

There might be a good deal more to say for Murray Island, but I have already said more than enough, and I have said nothing of dozens of islands and reefs which you see depicted on the map. Here is York Island, an important bechê-de-mer station. Here is Stephens Island, another rich volcanic island. Here is Saddle Top, cocoanut island. Here are the Three Sisters. Here is Dungeness Reef, upon which the "Mavis" was wrecked, and since that the "Norman." All of them have their peculiarities, and my one regret is, in reference to them, that my duties in New Guinea will, I fear, call me away from the islands, unless we can induce the Queensland Parliament to agree to the transfer of them to New Guinea. That would give us a fine start, but in spite of all the pretty things I might say of them, would the Queensland people consent to part with such charming possessions? Who can tell? Do not kind parents give a good dower to their daughters when they start

them in life? And might not New Guinea hope for something of this kind from such an opulent and well-favoured country as Queensland?

In the course of some conversation that afterwards took place, Mr. Douglas mentioned as a likely division line between Queensland and New Guinea, the tenth parallel, which would make the islands of Murray and Darnley New Guinea territory.

The Rev. G. WOOLNOUGH proposed a vote of thanks to Mr. Douglas, remarking that his paper had been to him intensely interesting, both in respect to the facts put before them and the manner in which they were put. He did not know that Queensland was going to give up any of these islands to New Guinea; indeed, he did not know that Queensland had yet decided to give up New Guinea itself.

Mr. W. A. TULLY seconded the vote of thanks to Mr. Douglas, which was carried unanimously.

Mr. DOUGLAS, in acknowledging the vote of thanks, said he was glad to see that some notice was taken of his proposal that the children of Murray Island should be taught English. They were Queensland subjects in every respect, and entitled to the privileges of our educational system. He omitted to mention in his paper that there were some interesting remains of great fishing weirs on Darnley Island—great walls which had been built up for catching fish. The present natives could not tell anything about them. They had been built by some previous generation, of which the records were lost now.

On behalf of the Society, the CHAIRMAN thanked his Excellency for his attendance, and wished him a pleasant voyage on his approaching visit to Europe.

The proceedings then terminated.

FOURTH ORDINARY MEETING.

THE fourth ordinary monthly meeting of the Queensland Branch of the Geographical Society of Australasia was held in the Museum Library, Brisbane, on Thursday evening, 29th April, 1886. Mr. W. A. TULLY, B.A., F.R.G.S., occupied the chair, and there was a good attendance of ladies and gentlemen.

The HON. SECRETARY read the minutes of the previous meeting, which were confirmed, and announced that a valuable donation had been received from the Hon. the Premier of Queensland, consisting of the atlas accompanying the tertiary history of the Grand Cañon District of the United States of America, and several books relating to scientific subjects.

The Rev. G. WOOLNOUGH, M.A., read a paper entitled, "A Few Thoughts on Natural Phenomena—Heat, Light, Electricity, Atmospheric Disturbances, Barometer," &c., prepared by Mr. E. J. Bennett. The writer dwelt earnestly on the leading subjects of his paper, which he had taken great care in elaborating, and referred to the rain-fall on the eastern seaboard of Queensland.

Mr. J. P. THOMSON then read a paper entitled

Exploration in New Guinea.

By Captain JOHN STRACHAN.

THE large amount of interest evinced in matters pertaining to New Guinea; the noble efforts of the Queensland Government to secure as a heritage for Australia's sons and daughters the major portion of that fair land; the recent annexation of the smallest, but to us the most valuable portion, by the Imperial Government; warrant me in premising the account of my own explorations by a brief description of the physical and general conformation of that great island. The shape of New Guinea nearly approaches that of a bird; the N.W. part being considered the head; McCluer's Gulf the mouth; that portion separating Gluvink Bay on the north, from the Arafura Sea on the

south, the neck; while from the Amberno River to the Astrolabe Gulf on the north, the Dourga Strait to the Papuan Gulf on the south, the body. Then taking the long peninsula tapering away to the south-east as the tail, and the islands of Talbot and Saibai for the feet, we have a most interesting *rara avis*. Longitudinally the distance from the extremes of N.W. to S.E. is about 1,200 geographical miles, by 480 miles north and south at its extreme breadth. Rising near the head and stretching along the neck are the Charles Louis Ranges, a mountain line which I contend will yet be found to extend right across the centre of the island as far east as the Astrolabe Gulf, where, breaking off in detached patches, form the Mount Owen Stanley and other small mountain ranges studded over the south-east peninsula; while from the centre successive ranges rise towards the southern sea, towering heavenward no mortal as yet knows how far. North of Frederick Henry Island is supposed to be a smaller range running from S.W. to N.E., connecting with the main ranges inside the 4th degree of south latitude, near the centre of the island. The intervening space to the west forming a huge coniform plain, through which runs a large river, which debouches into the Arafura Sea between the 5th and 6th degrees of south latitude, and at the conjunction of these ranges on the south-centre will be found the source of the Fly River, to which, or from which, the many rivers intersecting the great southern slope of New Guinea, in my opinion flow.

The immense volume of water carried off by the watercourses of the Fly and its tributaries can, I think, be readily accounted for, from the fact that Central New Guinea lies directly under what is in physical geography known as the rainbelt. The many waterspouts also which rise in the Arafura Sea, and burst upon the mountain tops, filling the lakes or freezing into snow, which, again melting, has to find egress to the ocean by the Fly and its tributaries to the south, the Amberno to the north, and the river already mentioned as flowing to the west, to me sufficiently accounts for New Guinea being one of the best watered countries in the universe.

My own interest in New Guinea began so far back as 1869, when, examining some old Dutch charts in Japan, I saw on what I have described as the S.W. Range the site of several active volcanoes, the existence of which I have never been able further to trace; permission to explore in the territory of the Dutch having been refused me, unless I was prepared to reside in Netherlands-India, and take out papers of naturalisation. Had I done so I would not have been the first disreputable Scotchman who has made a very decent Dutchman.

Although many attempts have been made during the past few years to lift the veil which has so long obscured this fair land, the success which has attended the various expeditions has, I think, been very partial, more especially such as have essayed to explore from Port Moresby. The non-success of these expeditions did not, however, prevent the explorers from supplying column after column of most unreliable matter to the public press—matter which has wrought much harm to the people of these colonies, because it was from such data the Imperial Government were led to believe that New Guinea contained a population of ten million (10,000,000) industrious inhabitants, who owned and tilled every foot of the soil. This made the annexation of the unclaimed portion of the island too serious a matter as regards expense to be undertaken by a Government ruling an already overtaxed people. (This was positively written by the Lord Chancellor of England to a well known New South Wales Statesman.)

On the return of one of these expeditions I was induced to lead a small expedition, and chose that portion of the country situated between the Papuan Gulf and what now forms the western boundary of British New Guinea, as being least known, and likely to afford easy access into the interior by some of the western tributaries of the Fly. Having reached a point distant about 100 miles from the coast and explored 140 miles east and west by the Prince Leopold and Wallace rivers, it was deemed necessary to return, when, being attacked by an overwhelming force of warlike natives from the west, I decided to abandon

the little craft and march overland, which journey, after many hardships, was successfully accomplished, but having the misfortune (through no fault of my own) to lose the best man of my party. The expedition, which in the short space of six weeks had penetrated over 100 miles into the interior, found twelve new rivers, and covered 620 miles of river navigation, and travelled in a direct line to the coast 110 miles, was voted amongst the failures.

The activity of the New South Wales Branch of the Geographical Society having, in the early part of last year, again directed public attention to New Guinea, it was suggested to me by Captain Trouton, the manager of the A.S.N. Co., that I would be advancing the interests of the commonwealth were I to organise and equip an expedition with the object of opening up the country for trade and settlement. The matter having been carefully considered, and the project finding favour with and a strong support from the Sydney press, I applied to the late High Commissioner for the necessary permits, together with certain concessions, which were only obtained after great difficulty. Then the matter of ways and means had to be taken into consideration, only £800 being available. For this sum I had to provide a suitable vessel, also a strong crew of eight officers and men, and to find accommodation and provisions for eight gentlemen, each of whom had subscribed £100, which sum entitled them to accompany the expedition and share in its results. This sum being totally inadequate, many of our most prominent citizens were applied to for assistance, but without success; so that it seemed to me the expedition would have to be abandoned, when two personal friends (gentlemen of moderate means) were induced to guarantee the further expense of the expedition. Consequently a suitable vessel, the "Herald" (schooner), 53 tons, together with a small steam launch, were bought, equipped, manned, and provisioned as frugally as possible, and Sydney Heads cleared *en route* to New Guinea on the evening of the 17th September, 1885. On the twentieth day out we made Port Douglas, the residents of which vied with each other in extending hospitality

and kindness to the whole of the party—Mr. Knight (the Sub-collector of Customs), the Pilot (Mr. Mathews), and the gentlemen connected with the Post and Telegraph Department, rendering us every assistance in their power; so that when, after a stay of forty hours, we were again *en route*, considerable surprise was expressed by members of the party that so thoroughly respectable a community as is contained in Port Douglas should be found so far north. Five days' sailing from Port Douglas, including stoppages, brought us to a safe anchorage under Cornwallis Island (or Dowan, as it is called in the vernacular), seven miles from the coast of New Guinea. This island is not only remarkable from its natural features, which differ from the islands adjacent (such as Saibai, Talbot, and Bristow islands) and the coast of New Guinea, but also from the fact that it is, I believe, an outcrop of a volcanic wave which, extending from the mainland of Australia across the Torres Straits, again crops out in New Guinea at Mabudowan, which is 192 feet high, and from this island bears N. by E. by compass, distant about twenty miles, and is the beginning of a small range of hills which run inwards towards the Fly River. The island is triangular-shaped, each angle or side being from a mile to a mile and a half long. It rises to a height of 750 feet, huge boulders being piled one on top of another. On the low lands near the beach the soil is very fertile, and extensive cocoanut groves surround the island. There are at present only twenty souls inhabiting the island, which was one of the first stations of the London Missionary Society on this part of the coast of New Guinea. A plentiful supply of excellent fresh water can be obtained here at all seasons of the year. The central position of Dowan, together with its close proximity to Thursday Island, from whence it is distant only seventy miles, renders it one of the *very best places* which could possibly be selected as a central station of deputy control for that portion of New Guinea extending from the Fly River to the western boundary, and for which purpose it was strongly recommended by me to the late High Commissioner; and now, through the medium of the Queensland Branch of the Geographical

Society, I would again recommend to the favourable consideration of that gentleman's successor.

That portion of the sea to the west to which we were bound being unsurveyed, I made an endeavour to induce some of the people from the adjacent island of Saibai to accompany us as far west as the village of Baigo, situated on the north extreme of Talbot Island, so that I might avail myself of their local knowledge of the numerous reefs and sandbanks which stud this coast and will ever render its navigation dangerous. As the mission vessel "Mary," with Mr. Macfarlane, was daily expected, I found it impossible to induce any of the natives to accompany the expedition, unless I was prepared to wait until after Mr. Macfarlane's visit; as this would have been a mere waste of time, I gave orders to get under weigh at mid-day on Thursday, the 21st October, and running down before a strong south-easter we cleared every danger, and reaching Baigo, anchored off the mission house at dusk. This passage being made over unexamined sea rendered great caution on our part necessary, we therefore ran down against a strong ebb tide, the lead which was kept constantly going indicating depths varying from ten feet to seventeen fathoms. Off the east end of Talbot Island a bank extends fully three miles, along the edge of which was found an unvarying depth of fourteen feet, while in the channel, within fifty yards of the bank, depths of eight and ten fathoms were shown. In this channel were many heavy tide ripples which all tended to increase our anxiety. So soon as we had anchored a canoe came alongside bringing the mammoos or head man of Baigo, Garougi, also his son Auiti, and three other natives. Having presented Garougi with a tomahawk, and his companions with tobacco and pipes, notwithstanding the lateness of the night, I landed and paid a visit to Pino, the mission teacher, who, with others, came to the rescue of myself and party some eighteen months previous, and for which service I owed a debt of gratitude which I took the opportunity of, in some measure, repaying, and soliciting his good offices in persuading some of the natives to accompany the expedition in the capacity of inter-

preters, returned to the ship. At daylight on the following morning all the canoes of the village came alongside; and by Pino I was informed, that Garougi and Auiti were willing to accompany the expedition, if I would promise not to keep them away from home too long. Arrangements as to payment, &c., having been completed, the two interpreters went ashore to take a farewell of their wives, and returning in about an hour we got under weigh, and winding through the intricate channel between the reefs made the fairway into the Mia Casa, the lead giving a depth of five fathoms until we entered the mouth of the river when the water deepened rapidly to eight fathoms, which depth is found nearly all the way up the river until its juncture with the Prince Leopold. The Mia Casa, or Baxter River, has a width of from one mile and a quarter to a mile and a half at its mouth, the land on both sides is moderately high and carries heavy timber scrub, with dense undergrowth in places, and the soil is in many places excellent, but somewhat patchy. A strong S.E. wind blowing, we determined to sail right on into the interior. Five miles from the mouth of the river we passed a large tributary setting down from the eastward, which, on a previous occasion we had named the Gregory, after Mr. Edmund Gregory of Brisbane, opposite which, and in mid-channel of the Mia Casa, is a very dangerous rock covered by only two feet of water at low water. For the first fifteen miles we steered north half east, when the river turns away to the N.E., then west, the two courses covering a distance of eight miles, when we steered north and opened out another tributary setting down from the N.E., which had been named the Neill, after Mr. William Neill of Sydney, between which and the next tributary, the Takuda, is a dangerous whirlpool reach with a reef, which dries at low water, extending from the shore 150 yards from the Takuda. The general course of the river is W. by N., a distance of over twenty miles, and is fed by two other large tributaries setting from the northward, which were named the Broomfield and Curnow respectively. Where the Mia Casa and Prince Leopold rivers meet in lat. $8^{\circ} 40' S.$, long. $141^{\circ} 41' E.$, forty-eight

miles inland, the Prince Leopold, at its juncture with the Mia Casa, runs N.E. and S.W. nearly, but only for a very few miles. The general course to the northward, as a glance at the map will show, being to the north-west, to which we continued, anchoring for the night opposite a cocoanut grove, having sailed a distance of sixty miles into the interior of New Guinea in one day. The country passed during the day consisted for the most part of heavily wooded ridges and the soil in many places appeared good. On the following day we again continued until reaching the ninety-mile mark of the *Age* party, when, the river being blocked with snags, further progress became impossible. Fifteen miles from the junction of the Leopold and Mia Casa the Wallace, a large tributary, debouches into the main stream. This we followed to the N.E. until only distant ten miles from the Fly River, from which, I believe, all these rivers flow. The soil is in many places rich red volcanic ; in others, dark vegetable loam, but intersected by patches of very poor country—poor clayey plains, carrying only a few stunted honeysuckles, and hematite ironstone boulders. Returning towards the coast, we met the first natives on Strachan Island—the Washie people, who had never seen white men before. They were at first very timid, and it needed all Garougi's eloquence to persuade them that we would do them no harm. Having succeeded in gaining the confidence of the natives, we explored the whole of their country.

The Washies are a fine race of people; coal black, well-formed, lithe, and active cannibals, whose well-cultivated plantations, neatly fenced, show that they could be utilised as agriculturists, not only with advantage to the white settler, but to the benefit of themselves; because, although they have splendid plantations, they have neither home nor habitation, but wander from place to place in a state of terror, caused by the incessant attacks of the Dougara men from the west, who, pouncing upon them unawares, carry off men, women, and children, whom they devour. So incessant has been the attacks made on the tribes of Strachan Island that the whole island, which covers an area of

750 square miles, does not contain 200 human inhabitants, comprising four tribes—viz., Washie, Matta, Booji, and Daapa peoples. This I can vouch for, having counted the people of the tribes. The large tributaries flowing into the Leopold from the west were followed, but without any great result; in fact, the sameness of the country grows monotonous as one follows rivers after rivers with invariably the same scenery. Landing, it is the same—thick, almost impenetrable, scrubs extending from a few hundred yards to as much as five miles from the river bank, then open undulating forests, with here and there a thick belt of scrub. This is a fair description of the whole country from the western boundary to the Kawa River, between which and the Mia Casa are only two tribes of natives—the Beru and Daubo peoples—numbering in all about seventy souls, who are sole occupants of a territory containing over 1,500 square miles. Having explored Strachan Island on the east and the country to the west of the Prince Leopold, we make the sea at the mouth of that river, which is sheltered by the island of Matta Kawa, to the west of which is Forsyth Island and the Trouton Group. Shallow mud flats and reefs obstruct the navigation between these islands and the mainland to the westward. To the eastward I found a good channel, with a depth of four fathoms at low water, which would be perfectly safe for steamers or vessels running with a fair wind, but was deemed by me too narrow to run the risk of beating a passage through. I therefore returned by the Mia Casa, and explored the country to the eastward, where we met and established friendly relations with the Daapa, Matta, and Beru peoples. Having devoted one month to the exploration of this portion of the country, we again proceeded to the eastward, three Baigo canoes accompanying us a short distance on the way, we having succeeded in gaining the esteem and good will of these people in a marked degree. In fact, I may say without egotism that our visit to this part of New Guinea cannot fail to have impressed the unsophisticated savages with the idea that the white men had come amongst them as friends and benefactors, to whom they could look for assistance

and protection from the wild bloodthirsty cannibals of the west, and whose love of fair dealing could not but be to their (the natives) advantage. This, at least, is the impression I did my utmost to convey.

The south-east trade winds, which were in our favour coming, necessitated us beating a passage the whole of the way back, and so afforded an excellent opportunity of discovering any dangers which might exist in the route, and which were fortunately discovered by vigilance, rather than by mishap. So that in due course we brought our ship safely to an anchor between two reefs opposite the village of Saibai, where we made arrangements with the mammoos "Annow" for two canoes to accompany us to the mainland, where I purposed landing at a creek to the west of Mabudowan, and proceeding inland from Daubo; and for which service I was to give the men plenty of food to eat on the journey, and pay to each man ten sticks of tobacco on his return. This being considered liberal payment. On starting four canoes accompanied us, containing in all thirty-five men, being twenty more than I bargained for. On reaching the creek our track for the first two miles lay through a mangrove swamp, after which we crossed some good open country, and then emerged into excellent scrub land well and heavily timbered, and by midday reached a well-sheltered grove where we rested and refreshed ourselves with green cocoanuts. When again starting forward we had to struggle through much dense undergrowth, until making the open country; we passed many plantations, and our guides began to howl, a signal which was ultimately answered, when some of the Saibai men ran forward and returned with the chief, Emari, to whom I presented tobacco and pipes. We were then escorted to the camp or village which contained a population of thirty men, women and children, among whom were the representatives of what had a few years back been three powerful tribes, but who, from the incessant attacks of the Dougara men, have been almost exterminated; the village, if such it can be called, consisted of a number of bark sheilling, or mia-mias. The chief Emari, an

old experienced warrior, was exceedingly pleased to see us, and when, through the interpreters, it was explained that it was our intention to send plenty of white men to his country, he said there was plenty of land and no men to occupy it. While conversing with the chief, his son, a young naked savage of about twenty years old, came into the camp and was introduced to us by a vile name, given by some of the Saibai men. Although perfectly nude, never have I seen a finer specimen of manly beauty unadorned, nor a more honest prepossessing countenance; I was quite taken with the lad. Having, through the interpreters, had explained the vile meaning of his name, I changed it to Johnny Strachan, pronounced Tron, and succeeded in persuading the chief and his son to accompany us back to the ship, where we arrived next day. I then endeavoured to induce Johnny to remain and accompany me south, promising to return him in May next. But although the lad would have come, the old chief would not part with him, but promised that he would send him to Saibai some time, so that Jakobo, the teacher, might teach him English. I have written to Mr. Scott, the L.M.S. Superintendent, about this people, also the Daapa and Washie people, and have sold the curios I brought from New Guinea to the Sydney Museum for the purpose of assisting the mission, to send them help. To the Saibai men I paid 350 sticks of tobacco for their service on this occasion, and with which they were perfectly satisfied.

Having shifted the ship to Dowan for the purpose of replenishing our stock of fresh water, we proceeded in the steam launch to the eastward as far as the Katow River. Finding the country in this district very fertile, I left the party at the mission station, and returning to Dowan brought the vessel round to Mowatta, when, escorted by the mammoos, Tamea, and Annu the mission teacher, we proceeded up the Katow River, the luxuriant vegetation and varied scenery on the banks of which was very lovely. *En route* we pass many well-tilled plantations, until reaching a point fifteen miles from the coast the river branches or divides into two arms running from N.E. and N.W., the north-east

branch running through the Koonini country, and the north-west through the country of the Gona people. We secured the steam launch at the junction, and, landing, marched through some of the very best tropical country I have ever seen for a distance of eight miles to the village of Gona. On landing we were joined by a couple of lads, whose only clothing consisted of a number of bamboo hoops round their waist. As we proceeded on our journey the numbers increased, but only a proportion wore the distinctive badge or dress of bamboo, which, exciting curiosity, I inquired as to the meaning or significance, and was informed that these lads are used for the vilest of purposes, and that the bush tribes in this part, though not cannibals, are addicted to all the vile vices which caused the destruction of the Cities of the Plain.

On approaching the village we were met by the mammoos, to whom I presented a tomahawk. We were then conducted to a large house, in which was a huge ochre-painted idol named Seegur, and in front of which was spread the offerings of the people. Having explained the absurdity of worshipping a piece of wood which could be burned, I made offer to purchase, and after several days' discussion amongst themselves the natives at last consented to sell their god, which is now in the Sydney Museum, and the price, £20, given to the mission on their behalf. Unlike the cannibal tribes to the west the natives here live in substantial houses, and seem to have many luxuries and comforts not known in the west. They make large quantities of sago and arrowroot, cultivate extensively the taro, yam, plantain, and banana. Mangoes and other tropical fruits are also abundant. In colour the natives here are a dirty brown and some red, while the western men are invariably jet black. Cedar and other valuable timbers grow here in scrubs, of which we secured large samples. During the ten days spent in this part of the country we visited all the tribes in the neighbourhood, and parties travelled inland to a distance of thirty-three miles in a north-west direction from the junction. Everywhere we found the natives friendly, but somewhat timid at the first approach of the

white invaders, but after a short acquaintance became in some instances demonstratively friendly. Amongst other staples ginger, saffron, wild cotton, and a peculiar sweet-smelling lemon grass grows here in abundance. The soil is everywhere excellent, and could be utilised for the growth of almost any tropical product. Fresh water is also abundant and good, many fine springs being scattered over the land, which is only waiting for the introduction of Australian capital and Australian enterprise to become one of the most productive of our tropical possessions. On the 15th of December, as the season was far advanced, we bade adieu for a time to the fair land of New Guinea.

The native population of New Guinea has, I think, been vastly over-estimated, as, from my own observations and also from a careful course of reading, I have had little difficulty in persuading myself, at least, that New Guinea does not contain one single native to every hundred square miles of country. In McCluer's Gulf to the west, Hartog reports 12,000 native inhabitants, residing in forty villages on the shores of the gulf, at the back of which is impenetrable forest, with no human inhabitants. Hartog was a trader; and having something which the natives required or were eager to possess, which he was willing to give in exchange for something of equal value which the natives had to give in return, a brisk trade, he tells us, was carried on by barter with the natives, whom he found keen traders. As it is probable Mr. Hartog traded from village to village, it is but natural to suppose large crowds of natives from the adjacent villages followed him until their means of trade were exhausted, so that if Mr. Hartog made his calculations from the number of natives he found congregated in the villages with which he was trading, I am safe to say that the native population in that part of New Guinea does not exceed one-third of the number as estimated by him. A remarkable instance of this over-estimation of numbers attracted my attention when reading an account of the first trip of the mission schooner "Mary," as described by Mr. Macfarlane in *Sydney Morning Herald*. The inhabitants of Tann are given as being over 200, and of Saibai 500; while as a

matter of fact Taun contains not more than forty souls, eight of whom are men and the remainder women and children; Saibai, a large island, containing only 130 men, women, and children. In truth Mr. Macfarlane had fallen into Hartog's mistake of counting noses instead of residents. But to resume: Following the coast line towards the Dourga Strait the natives are found to be sparsely scattered along the coast; considerable numbers may be found at the mouths and on the banks of some of the rivers, such as the Nta-na-ta, but on the seaboard there are hardly any natives at all. From the Dourga Straits to the Papuan Gulf there is only one known powerful tribe, "The Dougara-men," and they have eaten out all the rest; while in the far interior I do not believe there are any natives. To the north, in the Dutch possessions, about the Amberno River and Gluvink Bay, the natives are not what can be called numerous, while as much as 100 miles of coast line will intervene between one cluster of natives and another. To the south-east there is a somewhat greater population on the coast, as also on the shores of the Papuan Gulf, but not sufficient to warrant the conclusion that New Guinea contains millions of human inhabitants. The climate, too, has been described more, I think, from a local knowledge of certain unhealthy spots, and is, I am positive, no worse than many parts of North Australia, and considerably better than some parts of Batavia or Timor, but which to us, the people of Australia, should be a matter of profound indifference; as to us New Guinea must, I fear, for long to come, be an expensive encumbrance—a fair land, from which Australian energy and Australian pluck are excluded.

The CHAIRMAN remarked that they had been very fortunate in having so many papers on the subject of New Guinea lately.

The Rev. G. WOOLNOUGH said Captain Strachan, in the course of conversation he had with him, mentioned that amongst the natives he found some who were full blacks, very different from the other coloured races. He was disposed to regard the blacks as the original inhabitants. Where they had come from he could not say, but they appeared to be wretched creatures.

It was impossible to say whether they had degenerated or not.

The CHAIRMAN remarked that probably their condition might arise from their habits of life and surroundings.

Mr. J. P. THOMSON regretted that the papers did not evoke more discussion, but thought the absence of discussion was probably owing to the members being unacquainted with the localities described. He had himself visited New Guinea, but not that portion of the island described by the writer of the paper. He referred to the river system on the southern portion of New Guinea as described by the writer, and thought it very improbable that all the water channels draining the extensive southern slopes of the island should derive their source from the locality at the head of the Fly River; and regarded Captain Strachan's theories in respect to the New Guinea mountains and rivers as improbable, believing that many of the water channels regarded by Captain Strachan as rivers were not rivers, but estuaries of the sea. He commented upon the suitability of the tropical climate of New Guinea for sugar growing. It might be said that there was plenty of land in Queensland suitable for the cultivation of sugar; but they had to look to the means for getting the sugar to the port of shipment and the machinery for crushing the sugar from the seaport to the place of erection. For that purpose river areas were necessary; and, although river areas might be extensive here, it must be remembered that the population of Queensland was rapidly increasing, and therefore the available land would decrease, and it would become necessary for sugar planters to look further afield for lands suitable for growing sugar. He considered the part of New Guinea over which Her Majesty's protectorate extends very valuable for sugar growing and for the growth of other tropical products, some of which might not be easily grown in Queensland, a part of which was a semi-tropical country. Coffee especially ought to flourish in New Guinea, owing to the high elevation and the richness of the soil. He believed with Captain Strachan that the population of New Guinea had been greatly

over-estimated, which was in a great measure owing to the statements of the missionaries located on the island. He believed that, in the higher lands, New Guinea was perfectly healthy; but malaria existed in the low-lying swampy grounds.

The proceedings then terminated.

FIFTH ORDINARY MEETING.

THE fifth ordinary monthly meeting of the Queensland Branch of the Geographical Society of Australasia was held in the Museum Library, Brisbane, on Thursday evening, 27th May, 1886. Mr. W. H. Miskin occupied the chair, and there was a fair attendance of members and visitors.

The HON. SECRETARY read the minutes of the previous meeting, which were confirmed, after which a ballot was taken, and the following gentlemen were elected ordinary members of the Society:—Messrs. George A. Tofft and W. N. Morcom.

Telegrams were read from the New South Wales Branch of the Society, from which it was learnt that Mr. H. O. Forbes had returned from New Guinea to Cooktown, and that the Victorian Branch of the Society had passed a resolution with regard to Mr. Forbes' probable future operations in New Guinea. An animated conversation took place, in which Messrs. W. A. Tully, J. Muir, Dr. Waugh, Rev. G. Woolnough, and the Chairman joined, regarding the nature of the telegrams and the question of contributing towards the assistance of Mr. Forbes with funds. The conversation thus indulged in did not, however, result in a resolution being put before the meeting.

In the absence of the author, Mr. G. W. M. HULL read a paper prepared by his father, entitled

Queensland, as it was and as it is.

By ALFRED A. HULL, Esq.

THE HON. SECRETARY,

Geographical Society of Australia, Brisbane.

Dear Sir,—You have asked me to contribute a paper to be read at one of the meetings of the Queensland Branch of the Geographical Society, and, although I am afraid that you will

find but little in what follows to interest the general public, it may serve to show that the country of our adoption is one in which progression has been both rapid and permanent.

I was a resident in Queensland from about 1862 until 1880, when I was induced to revisit my native land (Tasmania), and, after spending about seven years there, I returned to Queensland with my health ruined through the changeable and bleak climate of that otherwise beautiful island, and I was glad to return here. When I first arrived in Queensland Brisbane was but a small place compared with what it now presents to the new comers. Then Queen Street was the only one really deserving the name of *street*, and was not more than half as long as it now is; and though there were even then some fine buildings in the city, there were a great many more tumble-down little shanties than substantial houses, and many vacant spaces and rugged banks were to be seen even in Queen Street. Those were the days when Frogs' Hollow was a foul marsh in the middle of the city, and the croaking of the frogs prevented those (myself amongst the number) who were staying at the Royal Hotel from sleeping, making night hideous with their horrid noise. The old gaol was then in Queen Street, somewhere about where the post-office now stands, and formed a landmark, very conspicuous if not beautiful or attractive. I did not remain long in Brisbane at that time, but travelled on to Maryborough (then, as now, the second town in Queensland), to reach which place I remember that I was obliged to wait some ten days or more for a steamer going north. Maryborough as a town was then a very small place, and the inhabitants few. One bank, two lawyers, two doctors, two, or perhaps three, stores, a few public-houses, a sawmill, and some small dwellings, nearly all of wood, composed the rising town of Maryborough; and there seemed to be a chronic scarcity of almost everything beyond just the bare necessities of life. The leading storekeepers (afterwards wealthy merchants) thought it no degradation to drive their own drays to and from the steamers when any arrived from Sydney or Brisbane, walking beside their horses coatless

and heavy booted. In those days it was not an unusual thing for the stock of flour in the town to be reduced to a few bags, and then the advent of a steamer or sailing vessel was hailed with delight by all; and as there was no telegraph then, it was customary to post blackfellows at intervals along the river bank to give timely notice of the appearance of a vessel in the river. There was then but one solitary clearing on the river above the old town, and the banks were fringed with a dense growth of scrub for many miles; then the idea of cultivation was almost laughed at, and, with the exception of a little maize, none was attempted. At that time the English church was a slab building, tapestried with Indian matting to keep out the draughts; and people moved about at night with lanterns for fear of tumbling over the stumps, or falling into the holes and bogs with which many of the so-called streets were embellished, for there were very few yards of street formed then, and the long grass had to be burned from round the houses and along the sides of the tracks which did duty for streets as a necessary precaution against any accidental fires. I have seen a dray loaded with wool and with sixteen bullocks attached to it stuck fast in the mud in the very middle of Kent Street, which is now, as it was then, the principal street in the town. In those days the chant of the blacks at their corroboree floated over the town from a spot then all wild scrub, now densely crowded with houses and shops. Then it was not at all an uncommon occurrence for a cannibal feast to be held within little more than half a mile from the centre of the town, and the blacks were wont to settle their quarrels by having recourse to the knife even in the streets, or amongst the houses, when the horrified white women were forced to become spectators of a bloody warfare.

This was Maryborough only a few years (comparatively speaking) ago. Look at it now. How all this is changed! And the change, though so rapid, had its regular stages as it were. I think that it was the timber supply from the large scrubs on the river which gave the town the first forward impulse; then the gold discovery at Gympie—this did wonders for Maryborough;

then came that far more important discovery that the soil and climate were both eminently suitable for the cultivation and manufacture of sugar. This industry opened up thousands of acres of rich lands along the banks of the rivers and creeks in this district, until for many miles the river Mary now flows through waving canefields, dotted along its course with large and busy mills, substantial houses, and beautiful gardens, and bears upon its bosom steamers, sailing vessels, and punts, laden with the produce of that district which so few years ago bore nothing but dense scrub and gave subsistence only to a few miserable blacks. Sawmills now sprang up in many places, followed by other industries, such as foundries, brickmills, fellmongeries, soapworks, &c., until the town has spread far and wide over the lately wild bush and swampy marsh. These changes seem slow and gradual, and are taken as a matter of course by those who have been constantly living in or near a town like Maryborough; but to me it seems almost magical. Eight years ago the town depended for its water supply upon a waterhole and watercarts; now the water is laid on to almost every house, being brought from the falls on Tinana Creek, a distance of more than seven miles. In my time the town was more indebted to Paddy's lantern for giving light to the citizens than to any artificial method of lighting the darkness; now gas burns brightly at all points, and the rays from street lamps are reflected in grand plate-glass windows and shop fronts; and, to crown all, the railway whistle is now heard, and the long and crowded line of carriages takes the place of the lumbering old coach which used to do for (or nearly *do* for) those whose very unpleasant business it was to travel inland.

Before leaving this part of my subject I should like to refer briefly to the wonderful mineral discoveries in this district, and the great resources of this grand country in that line. I think that the ball was opened by the discovery of copper at Peak Downs; then followed Gympie with her fabulous wealth of gold; Kilkivan, Teebar, Gigoongan, Blacksnake, Mount Perry, Widgee, and many other places with copper and cinnabar;

Nearby with her antimony mines; Yarroll with silver; Rosewood, Crocodile, Canoona, New Zealand Gully, Calliope, Ravenswood, Charters Towers, Palmer, Ethridge, Cloncurry, the Johnstone, and several more with their store of the most precious of metals; Stanthorpe with tin; and the Downs with opals. Coal, too, is not wanting, and iron abounds in many places. Really this is a richly-endowed land, and must make a great name for itself in the near future.

Let me now carry you to a part of Queensland far away from civilisation only a few years back—namely, that part of the coast country lying between Cardwell and the Endeavour River, where the Murray, Tully, Hull, Johnstone, and Mulgrave rivers empty their waters into the sea; where the sound of an axe in the virgin forest was a thing unknown; where the cooe of the wild natives was answered by the booming of the cassowary, and the roar of the alligator alone broke the stillness of the deep and sluggish rivers as they wound through miles of dense tropical scrubs. It seems only the other day that I had the pleasure of being one of a party who were the first to explore some of these grand northern rivers, and I never saw such wildly beautiful scenery anywhere else; the tall scrub trees, cedar, pine, fig, nutmeg, plum, and many other trees, the names of which I was ignorant of, growing to the water's edge, festooned with bright flowering or bean-bearing creepers, while the wild bananas, tamarinds, plum, and cherry trees dropped their ripe fruit into the boat as we passed beneath their overhanging branches—where white man had not yet set his foot nor made his mark. And now what will you see there? Steamers lying at large and commodious wharves; towns in which thousands of white people ply a busy trade, where all the luxuries of civilised life can be had; the rivers are highways to large and flourishing plantations, where the shrill steam whistle of the sugar-mill startles the denizens of the still standing scrub; where the low of the oxen and the laugh of children has taken the place of the cry of the macaw and parrot; and life, energy, and busy trade, have changed this wilderness into the home of the refined and

cultivated race, for whom it was no doubt created. Anyone who has not seen the tropical growth in this part of Queensland can form no conception of what it is like ; the tall clean stems of the nutmeg trees, the broad bright green leaves of the wild banana, the graceful towering shafts of the palms, and above all, the grand masses of dark green foliage of the wild convolvulus, and the bright flowers of the hibiscus, combine to make this a very garden of Eden. To look forward for another ten years or so, when all this will have disappeared before the advancing stride of civilisation, when the axe of the woodman has done its work upon these beautiful scrubs, and man's energy and enterprise have changed the wild face of nature to waving cane and corn-fields ; when far up these noble rivers the plash of the steamer or laden punts shall disturb the long securities of the alligator, and the existence of that animal become almost a myth, like that of the bunyip farther south ; and in place of the stillness which reigned there so short a time ago, there will be the sound of church bells, music, and song. And this country is open to the working man—these scrubs teeming with fruit, the woods with game of every description, and the rivers with fish ; the earth only awaiting the hand of the cultivator, to produce liberally everything he requires, not only to sustain life but to enrich it. Surely there is room here for the poor starving families at home in the old country. Room ! Why, these scrubs extend for miles and miles, and the soil is the richest in the world. The climate, though now unhealthy in places, will become, as cultivation and settlement increase, far more pleasant than that of the southern part of Queensland, New South Wales, or Victoria ; and this part of the country never suffers from the long continuation of dry weather, which has proved such a drawback to farming enterprise in the south. Altogether, I think it certain that ere many more years have passed away, this rich and beautiful country will stand forth as the premier colony of Great Britain.

I am afraid I have allowed my subject to run away with me, so must ask you to pardon this rambling narrative.

In the absence of the author, Mr. J. P. THOMSON then read a paper entitled

A few months' Experience in New Guinea.

By Captain JAMES M. HENNESSY.

BEING but recently returned from New Guinea, where I have been since September, 1885, in the capacity of companion and assistant to H. O. Forbes, Esq., F.R.G.S., and having been desired to give my views concerning the parts through which I travelled, I now make such my pleasurable duty.

Considering how much has of late been written by gentlemen who have visited this hitherto mysterious land, I cannot promise you the prospect of anything new; but possibly the experiences of many, gained from however small a scope, will tend to give to those anxious to learn all they can of their great island neighbour a more correct idea of the country.

On nearing the New Guinea coast to the eastward of Port Moresby, whither the ship in which I was passenger was carried by a strong easterly current, the country presents a most imposing picture of hill rising on hill, even from the very coast to far back in the interior, and culminating in the towering peaks of the famous Owen Stanley Range, which Mr. Forbes has determined to make his goal. These hills were covered more or less with trees, whose foliage, of a rich green, presented a magnificent background; whilst in front lovely strips of sandy beach, fringed with multitudes of the welcome cocoanut palms, made up this tropical picture. On cruising westward, however, to Port Moresby, where I was to land with Mr. Forbes' Malays and the expedition sinews, I was struck by the rapid change both in the character and colour of the foliage, though the distance so traversed was but sixty miles. As we neared Port Moresby the prospect was one of bare hills whose verdure was

scorched by the excessive heat in the long absence of rain. I learnt after there had been no rain since April. The cocoanut was much scarcer here, as seem also to be all other trees.

After a short delay at the coast, our party made a start inland on the 25th September, and our route lay in a N.E. direction from Port Moresby. At the distance of about one mile from the sea there rises, fairly steep, the Moresby range of hills, and, these crossed, we entered on extensive plains lightly wooded with eucalyptus and acacias, and grown over with that species of grass known as sword grass, which grows to the height of seven feet or more; our party were completely buried in it. In traversing these plains, which extend to the width of about twelve miles, the heat is terrific, there being no breath of air to be got below the level of the grass. Our carriers, besides twenty Malays, were of the Motu tribe, and it was their delight to set fire to this grass occasionally, and then the air was almost unbearable. These plains (through which the river Laroki runs) being traversed, we come on a series of hills which form the outlying spurs of Mount Astrolabe. This mountain (2,000 ft.) is very precipitous, and therefore difficult of ascent. Both at its base and on top are met huge conglomerate boulders, consisting of all sizes of stones cemented together with sand and other matters. They seem to have come from the bed of some mighty stream and to have been placed where they lie by volcanic agency. The country on top of Mount Astrolabe is generally open wooded, the eucalyptus and gums being most prominent. By a gradual descent through sparcely wooded country, and through a few native villages (Sunasamgai, Narianouma, &c.), we come to the valley of the Laroki, which here trends to the westward. From the former village, on a clear morning, may be obtained a most magnificent view of Mount Owen Stanley proper, in a due northerly direction, and the height is increased from the fact that one sees it here from a standpoint fully 2,000 feet above the valleys beneath. By a little divergence from our route we reached the descent to the Kowna Falls, where the Laroki falls over a sheer precipice of about 1,000 feet in one

extensive sheet of spray. When I visited these grand falls it was during the dry season, so that the river was but small; but it was most curious to see how it flowed beneath a surface of rock, from the fact of the water having cut numerous channels through the solid rock and to such a depth as to become almost buried out of sight. The sides of the gorge through which this river runs, before it falls over the heights, are thickly grown with creeping plants, and here and there may be caught the glimpse of some lovely tree or ground orchids. Our guides down the precipitous sides of this gorge were two chiefs of the district, and they displayed wonderful agility and surefootedness as they hopped or dropped from one rock to another; and when they would be too far in advance of us they would lean against some rock and smile back at our poor attempts to keep up with them, with infinite pity expressed in their good humoured and much besmeared countenances. Flying about here in plenty are the proud looking Gaurie pigeon, with its large lavender crest expanded as it sails down into the valley beneath.

Our steps retraced, our route lay now through other native villages, in one of which I perceived a most fetid odour, and, on hunting up its cause, found that it emanated from a little house, between other dwelling houses; in this house two corpses were lying in the process of decomposition. These were the bodies of two of the chief's warra-warras, or cousins, and this keeping the corpses was a mode of showing honour to the dead. The majority of bodies are placed in caves, or, occasionally, in trees. I saw one suspended in a tree, and the juices were dropping out of it freely; while near, around, croaked a sort of vulture, disturbed from his feasting. In some parts of New Guinea these juices are saved in a vessel, and then a great feast is organised—pigs killed, &c.—and these juices are drunk. They possess the properties necessary to intoxicate people drinking them; and when the feast becomes far advanced, the bowls are produced and the whole party become frenzied under the influence of their loathsome contents. I noticed here the custom of widows in mourning to smear

their bodies all over with a sort of plumbago, also to wear, suspended by a cord round their necks, the jawbone of their late husband. This bauble the widow prizes very highly. I have known them refuse, what in their idea must be a large present—viz., three tomahawks and some tobacco for one of these delicate souvenirs. Should they again become wives these jawbones are no longer worn, but are suspended from their new husband's roof-tree. Accompanying the aforesaid signs of mourning the women, girls, and sometimes even the men, wear over their bodies, from the neck half-way to the waist, a sort of open network garment without sleeves, and their period of mourning lasts as long as this network will hold together—and it is very durable.

Leaving the villages where I noticed these peculiarities, our route lay, now through forest, now through open wooded country, and through the latter might be seen, hopping merrily along in pairs, kangaroos—identical with those of Australia. The forest, which abounds in such trees as oaks, firs, pines, gums, cedars, nutmeg, camphor, cinnamon, and many other species, bears, generally, a sombre aspect; but, to make up as it were for this, are seen hundreds of gaily plumaged birds hopping about the trees and making up altogether a pleasant aspect. The trees are almost all connected by large and small vines and creepers, which reach from tree to tree and from the branches down to the ground, and offer great opposition to forest travelling. After travelling for twenty miles through such country we come upon the Sogeri hills, which present the appearance of a vast amphitheatre with a considerable opening through which may be seen Mount Obree.

At the base of this opening, and extending for many miles farther on, lies the large district of Sogeri. This district is considered the largest held by one tribe of any in these parts; it consists of the country between four villages, and it was at Sogeri proper, the central village, that we ended our march and made the first fixed camp. We were met at some distance from the village by nearly all the tribes; in all, about

400 men, women and children, all bearing "welcome" expressed by their faces and gesticulations. They inducted us to the spot we chose for camp, and every night for a week, during which time we were erecting our houses, they camped all round us in a circle, thus offering protection from any unforeseen attacks. The natives willingly assisted us in building our houses, felling the timber, clearing the ground, and in roofing. These duties were done by the men, while the women were cutting and carrying the long grass necessary for the thatch.

Our house when completed was a very comfortable structure; it so struck the late Sir Peter Scratchley that he had it measured and surveyed with a view to having a similar one erected at Port Moresby for his own residence.

The range of hills surrounding this district resembles in shape that of a huge crater which would have been broken up by some heavy earthquake. They are now heavily timbered on all sides, and afforded us hundreds of herbarium specimens. The trees generally met with are those mentioned above, and on their branches are found, in profusion, specimens of lovely orchids of every hue. The view from the summit of this range shows just a succession of hill after hill, so close together as to leave little room for any expanse of plain between. Owen Stanley bears from here N. by W. about twenty miles in a direct line, though to reach its base over all those ranges will mean a journey of about seventy or eighty miles.

The soil in this locality is of great depth and of a rich chocolate colour. It is very prolific and will grow almost any crops. Such seeds as peas, beans, maize, wheat, and vegetables generally prosper very well and send up sprouts in a very short time; while the natives grow sugar extensively and with no trouble.

NATIVES.

The natives here are of middle stature, wiry build, and of a lighter shade than the coast tribes, and speak a different language—in fact every district has its own language, and they differ considerably from each other. Already we had heard three different languages during the short journey thither.

They are a happy, idle race; that is to say, they are idle because of their surroundings; having all they want close at hand, they have very little necessity to work. Their intellect is generally keen, as evidenced by their power of imitation of anything which pleases them. Their senses of sight and hearing are most highly developed, as seems to be the case with most aboriginal races. They have a habit of shouting from village to village, and it seems incredible that, at such distances, they can make themselves heard and understood. To give the voice more power in this shouting they elevate their arms over their heads, to allow, I suppose, a greater inflation of the lungs. When the distance is greater than usual, they generally select a youth of about fourteen years of age to do the shouting, as the voice at this age is the most penetrating.

The dress of the men consists in a piece of string or a young creeper passed round the waist and thence through the legs. For ornaments they wear generally a nosebone through the septum, earshells, and a circlet of dog's teeth round their forehead over the roots of the hair, and very well this latter looks. They dress their hair, which is long and frizzy, in a sort of bag formed from the inner bark of a tree, stretched into a species of cloth, and this is kept in its place by the head-scratcher or long-pronged comb stuck through this hairbag into the hair. Their heads are infested with insects; and it was the only disgusting practice which I noticed among them—that of hunting through each others heads and eating the “game.” Round their upper arm they weave tightly a band of fern hair, and this forms a sort of purse or hold-all for tobacco and the like. They are all inveterate smokers, they use the bamboo pipe, and these are sometimes highly ornamented by burning various designs on them. In addition they carry a little bag of network to hold such articles as betelnut, chunam, and the accompanying spices and herbs.

Dandyism is to be found here among the men, its chief feature being a belt of rattan cane plaited round the waist, so tightly that I have seen the flesh bulging out on both sides of it very

considerably. Besides this tight lacing propensity, a dandy will have armlets, kneelets, and anklets, of plaited rattan, and stuck in each one of these he will have bunches of feathers of many colours, plucked from a variety of birds, or of some particular feathery foliage, intermixed with flowers. These gentlemen generally carry an elaborately carved chunam gourd which finishes off their costume. These dandies are, however, generally those who have distinguished themselves for bravery in some skirmish with the foe, and with a little consideration a comparison might be drawn between these so-called savages and other more civilised peoples. The men generally smear their faces over in peculiar patterns with plumbago, which custom makes them look very ludicrous.

The women, who are generally a shade less tall than their lords and masters, are the hard workers of the community. They seem to have stronger limbs than the men, and are certainly much stronger physically. Their carrying power is truly wonderful. I have seen frequently women carrying a bag of rice (56lbs.), a bag of yams (which will certainly weigh another 20lbs.), a bag containing a baby, and on top of all this a dog, and with this load they will march for days in succession, while their lords walk beside them carrying a *spear*. All the weight comes on the crown of the head by their way of carrying everything in bags suspended across the head, and in course of time the head gets quite a depression in the skull across the crown. The women do all the work in the plantations, save felling the timber and clearing and fencing, which are done by the men. The women's dress consists of a rami, or grass petticoat, which covers the body from the waist to the knee. This, on the young women, is a most graceful garment. Their ornaments consist chiefly in armshells and earshells. They do not wear nosebones. When young they are mostly very pleasant looking, but they age very quickly after a few years of married life, on which they enter at a very tender age. Polygamy does not obtain here save in a few cases, and then it is only the chiefs who practise it. The women are very fond of their children,

whom they carry in bags when very young, and on the hips when a little older. A curious and disgusting custom prevails amongst them, that of suckling young pigs at their breast, it being no uncommon sight that of a woman suckling a pig at one breast and her baby at the other. These young pigs follow the women who suckle them like dogs, and will not go near their own mothers. When away from their villages the women always keep to themselves, never mixing with the men, and altogether seem to be just the slaves of their husbands simply.

The people as a whole are an honest, good natured lot, with very correct ideas of morality in general. Stealing is not reckoned an accomplishment here as in other countries. They are very hospitable, as far as it lies in their power to be, and a white man never enters one of their villages without receiving some kind of present in the way of food. They are very inquisitive and imitative to a degree. As a rule, they are clean in their habits, and they keep their houses and village squares well swept and tidy. More than all, they are independent in the true sense of the word, knowing no inequalities of rank, and all being on the same footing. They certainly all bow to the dictum of their own chief, but his authority is rarely shown, save in times of war, when he arranges the lines of attack and defence. It is a rare thing to see a frown on their faces, and I have never heard a single cross word exchanged amongst them. Their arms consist of the spear and club, with the former of which they are very sure shots at the distance of fifty yards. There is a great variety of clubs, the heads of some being carved into the shape of a star fish; others are round and flat with well bevelled edges; others, again, are simply egg-shaped stones pierced for the handle. The bow and arrow is not used here, but the natives trade with other tribes to the westward occasionally for them, and they soon become great adepts in their use.

FOOD.

Their staple articles of food are yam, taro, sweet potato, banana,

sugar-cane, pumpkin, and bread fruit. These are all grown in their plantations, which are generally strips of virgin forest cleared and fenced to keep out the numerous dogs and pigs which share their villages. New pieces of ground are taken every year, and so it comes to pass that one meets with hundreds of disused and weed-grown gardens all over the country. There is, I believe, a sort of tobacco indigenous to the soil, but they have never used it for smoking. Prior to the advent of white people they smoked herbs and the leaves of certain spice trees.

They grow several kinds of ginger which they chew with the betelnut. Edible fruits are not numerous; in fact, they are very scarce. I only having met with banana, a species of guava, and a kind of melon. There is here also a very luscious cucumber.

LIVING.

The site generally chosen for a village is the summit of a hill where are growing several high trees. The huts are built about six feet above the ground, and contain but one room and generally a verandah, this latter being the squatting place of the family. To get on to this verandah requires no small amount of agility, as there is no approach more than a pole with which to spring up. A village generally consists of about thirty of these huts and about four tree-houses, or huts built in the branches of the aforesaid high trees. These tree huts, which are reached by long ladders, are used as points of lookout, and also as forts in time of siege; they store up here a large number of big stones, which they hurl down on the heads of the attacking party.

In each hut is a fire stone, or square of hardened clay, on which the fire is laid, and the smoke arising therefrom finds its way out through the eaves of the house, which are never too close to the roof. This smoke, generally very pungent, I have found not very conducive to sleep, on a few occasions when it has been my lot to pass the night beneath their roofs. The family all sleep round the fire, and have for mattresses a piece of large palm-leaf dried, which is just as hard as the wooden

flooring of the hut. Sometimes they use as a covering a piece of that same inner bark which the men use to dress their hair with. When they leave their houses, a palm branch placed across the hole which serves as a door protects the house effectually from intruders, none will remove this emblem of taboo. In the dry season they rarely sleep in their huts; they camp at the scene of their work, which may possibly be a mile or so from their village.

FAUNA.

In the forests in this district wild pigs abound. Their tusks are highly prized by the natives as spear sharpeners and as ornaments. Here, also, is found the cassowary in plenty. Pigeons and doves are very numerous and of many species, and ranging in size from the barn-door fowl to a paroquet; scrub hen, scrub turkey, gaurie pigeon, and ground pheasant are also found; specimens of the cuscus were also obtained. The kangaroo does not inhabit these parts, but is to be found both to the east and west of this district. Birds with plumage truly enchanting flit amongst the trees, and include the glorious birds of paradise, the raggiana, and a dark metallic blue one described by D'Albertis. Here also are found the regent, the many-tribed kingfisher (including the jackass), and the methodical bower bird (who decks his play-garden with newly-culled flowers every day), and hundreds of other kinds, ranging from the huge horn-bill down to the little insect-catching bird hardly larger than a beetle.

Immense varieties of beetles are here to be found, and wonderfully beautiful they are, many of them resembling some splendid jewels as they catch and reflect the sunshine. But who shall describe the number and beauty of the butterflies? They defy description at my hands; but I can say that many species hitherto unknown have already been collected.

Snakes and other reptiles are numerous, and some of the former are very deadly, and attain a size approaching that of the boa. The chameleon also is found here, and many other kinds nearly akin to him.

FLORA.

The flora of these parts are very beautiful, and as new ground is reached new species are being found, and there is no doubt that, as the explorer advances inland and ascends those lofty ranges, he will find ample to satisfy his botanical appetite and to repay the labour and fatigue of progress through a new country.

If ever New Guinea becomes a field for the white man's commerce, one of its most valuable products will be its timber, much of which is hardwood and suitable for building and ornamental purposes. There is a fair proportion of cedar and sandalwood which would, alone, be sufficient to warrant a speculation in that direction. The great drawback at present to white men in New Guinea is the prevalence of malarial fever, which, in a short time, reduces a man to half his former weight and leaves him prostrate for weeks. This malaria, seemingly indigenous to all new tropical countries, may, in course of time, as in Australia, disappear before the advances of pioneer settlers; but, until such time, I do not consider New Guinea as a field for the average white man.

The CHAIRMAN, Dr. WAUGH, and the Rev. G. WOOLNOUGH, expressed themselves as being highly interested by the paper read, and thought that Capt. Hennessy had graphically described the various subjects of his paper.

The proceedings then terminated.

SIXTH ORDINARY MEETING.

THE sixth ordinary monthly meeting of the Queensland Branch of the Geographical Society of Australasia was held in the Museum Library, Brisbane, on Thursday evening, 17th June, 1886. Dr. Waugh occupied the chair, and there was a good attendance of members and visitors.

The HON. SECRETARY read the minutes of the previous meeting, which were duly confirmed, after which the following paper was read by the author:—

The Upper South Johnstone River.

By W. H. MISKIN, Esq.

THE area to which the following remarks are principally confined is embraced in the extensive valley, or series of valleys, forming the watershed of Stewart's Creek and the southern branch of the Johnstone River, and other minor tributaries—all being ever-running streams. It is bounded by the Basilisk Range on the east and south-east, commencing from the junction of Stewart's Creek with the South Johnstone River; on the south-east and south by the Main Range, or spurs of the range trending towards the coast; and on the north by the South Johnstone River (Stewart's Creek, a large and rapid ever-flowing stream trending for some distance due south, and then, suddenly turning at a very extraordinary angle due west, traversing the centre); while its extreme westerly limit, quite unexplored, is defined by the Main Range running more or less parallel with the coast, and may be said to be approximately between the 17° and 18° of south latitude.

The South Johnstone River is becoming tolerably well-known on its lower waters; the rising town of Geraldton, situated at the junction of the two rivers (North and South Johnstone), being accessible from Townsville by two and sometimes three steamers weekly.

Although not comparable as a navigable stream with the north branch it is a wide and beautiful river, its banks densely clothed with the richest tropical jungle to the water's edge, mangroves scarcely reaching above the junction.

At about six miles from Geraldton navigation by boats becomes difficult by reason of the first of a series of frequent rapids, and here tidal influence terminates. These rapids are only to be surmounted by very hard pulling, and at times not without wading and hauling.

The result of the frequent negotiation of these rapids is that an ever-increasing altitude is attained as the ascent of the river is made, until arrival at Stewart's Creek, about eight and a half miles from Geraldton, where boat navigation may be said to cease (although it is possible to get three or four miles further up the main stream in a shallow punt, but with an immense amount of labour), we find the river fully fifteen feet above sea level.

Basilisk Range, named by the late G. E. Dalrymple, in his exploratory expedition in 1873, is a peculiar isolated elevation, rising abruptly from the river immediately at its junction with Stewart's Creek (and along its foot the latter runs for some distance); it has a general trending from north to south, but towards its further extremity it has a westerly bearing in the direction of the Main Range, which here begins to incline decidedly towards the coast, and in fact by means of a large lateral spur (Walter Hill Range) actually reaches the coast at Tam o' Shanter and Clump points. The Basilisk Range is, except at its immediate base on either side where it is clothed with the usual dense jungle, lightly timbered open forest country—ironbark, bloodwood, tea-tree, and oak, predominating with coarse grass. The formation is sandstone rock plentifully interspersed with quartz, outcrops of reefs being frequent; the soil is rather poor at the summit but gradually improves towards the base. The range extends for a distance of some six or seven miles, with steep and in some places almost precipitous sides,

the ridge extremely narrow and occasionally even razor-backed ; at its south-westerly extremity it is distinctly separated from the rising country beyond by a deep depression ; the opposite ridges beginning almost immediately to rise in decided gradations towards the range about ten or twelve miles distant. The northerly point has an altitude of probably 350 feet, but there are other points that reach considerably higher, perhaps 400 feet, or even more.

From this range, upon a fine day, is to be seen a panoramic view that must be seen to be appreciated, and well repays the toil of first a struggle through the belt of jungle (although, since the writer first ascended it a comfortable cleared track has been made through the scrub, and indeed the whole of the way up, and the telegraph line from the south, now running over the top, if not adding to the picturesqueness of the scene, at least gives it an air of civilisation), and the after-climb of the steep side of the range.

To the east is the open ocean, about ten miles distant, the coast studded with lovely islands (North and South Barnard and others), covered with verdure, with rocky headlands, and charming coves with white sandy beaches, and the waters of the completely landlocked Mourilyan Harbour—the most perfect port on the Queensland coast—while the winding of the South Johnstone River, flowing to join its northern branch, and together emptying into the Pacific by Gladys' Inlet—the heads of which can also be clearly distinguished—are perceptible by sheets of glistening water amidst the dense expanse of solid green presented by the primeval jungle, with here and there a break of bright green, denoting the canefields of the Mourilyan, Queensland, and Innisfail plantations.

Further south can be descried, by the various alternations in the character of the foliage and occasional glimpses of water, the course of the Moresby River, which discharges into the head of Mourilyan Harbour, taking its rise near the foot of the Basilisk Range, and, indeed, depending upon the easterly and south-easterly slopes of the range for a considerable portion of its

watershed. And here it may be remarked, parenthetically, that this river is destined to be the outlet in the future for the whole of the country to which this paper relates, for within three miles from the mouth of Stewart's Creek water navigable for small steamers can be reached on the Moresby. Further south the view is closed by a lofty spur of the Main Range running out to the coast (Walter Hill Range), which it nearly touches at its extreme point between Tam o' Shanter and Clump points.

After gazing with delight upon this incomparable landscape, and inhaling with fervour the invigorating sea breeze, the beholder, facing round, is confronted by a view equally extensive and magnificent. To the north-west, some twenty miles distant, is the superb Mount Bartle Frere, rearing its lofty head to the sky 5,438 feet, with its dark blue side seemingly riven by a streak of silver, produced by a waterfall that appears to traverse it from summit to base. Further north, the also (though less) lofty Bellenden Kerr mountains are dimly seen; while others of less proportions, and sometimes fantastic shape, fill in the scene.

To the west is the massive outline of the Main Range, some thirty miles distant, with towering peaks, its deep gaps indicating the natural passes for surmounting the range and reaching by comparatively easy gradients access to the tablelands of the interior.

And here I will venture to predict (now that the vexed question of the superior claims to the route for a railway from Herberton to the coast is absolutely settled by the adoption of Cairns as the starting point on the coast) that, as has indeed been already proved by the comparatively easily accessible route explored and surveyed by Mr. Christie Palmerston from Herberton to Geraldton, a track over which is now being cleared by that veteran explorer under the supervision of the Johnstone Divisional Board, it will be discovered, when too late, that a grievous error has been committed in ignoring the advantages so obviously presented by the natural conformation of this part of the Main Range for surmounting the barrier with the iron horse.

The whole of the intervening space, north and west, apparently nearly level, but gradually rising towards the west, is one vast almost interminable expanse of dense tropical jungle, covering some hundreds of thousands of acres of probably the richest and most fertile soil in the world, awaiting only a more enlightened public policy towards the tropical agricultural industry to realise wealth to the enterprising capitalist, and profitable employment to thousands of human beings; but now lying, and apparently for some time likely to do so, absolutely worthless—a wilderness of waste.

At our very feet is the brawling Stewart's Creek, like a Scotch salmon stream, rushing over its shingle and sandy bottom, sometimes amidst huge boulders, with water so limpid that at a depth of fifteen feet a pin could be discerned at the bottom, and so cold that the early morning bath makes one's teeth chatter; the banks clothed with all the luxuriance of palm and fern, flowering creeper, and shrub so typical of tropical vegetation, while the South Johnstone is seen undulating through the verdure in a more northerly direction. The scene is beautiful in the extreme and requires the language of the poet or the pencil of an artist to adequately represent, and it is with feelings of strongest reluctance that we abandon so attractive a spot to descend into the semi-darkness of the dense dank jungle.

The country from the junction of the South Johnstone and Stewart's Creek (where the soil is a rich black compound of alluvial, and decomposed vegetable, covered with the most luxuriant growth of palm, cane, banana, and creepers, densely matted together, growing amongst and over the larger timber, and progress through which is extremely tedious and laborious, and can only be accomplished at a very slow rate by chopping with cane knife and axe, step by step) gradually rises, and eventually, upon reaching some thirty or forty feet altitude, changes in the character of the soil to a rich, friable, ferruginous-coloured loam, the jungle here being less dense and matted than on the lower level. Continuing to rise until about sixty feet above the level of the land at the mouth of Stewart's Creek (about three miles

distant), the country presents a fine level tableland or minor plateau, so far as it has been penetrated by the surveyor's party, of the same rich class of soil. This is, indeed, the very outskirts of civilisation in these parts; for beyond this, in all probability, the foot of white man has never trod, the trace of the cedar-getter even (the pioneer of settlement in these regions) being imperceptible.

Stewart's Creek, after running in a somewhat tortuous course for about four miles in a due south direction, suddenly turns in a very abrupt manner due westerly. The creek, although not practicable for boats, owing to the many shallow rapids, has fine stretches of wide deep water, often 200 feet wide, and high banks far above any flood marks; in some places, being extremely precipitous, showing the vast depth and richness of soil in successive strata of various characters, often to the height of forty or fifty feet without any rock formation. At about two miles from the bend in the creek before mentioned, but about four miles in a direct line from the mouth, is a sight worth travelling to see. Here the creek falls in a sheet of water twenty-five to thirty feet wide, over black lava rocks, perpendicularly, without a break, forty-five feet, with a deafening roar that can be heard at a considerable distance, into a beautiful deep circular pool of about 200 feet across, the sides of which are perpendicular for some distance, gradually sloping away towards the lower end, where the water escapes through a narrow opening with a tremendous rush. The appearance of the pool is suggestive of volcanic action. The effect of the water rushing over the jet black rocks and throwing up clouds of snowy vapour is exceedingly beautiful, while the utter stillness, except for the roar of the water, and the reflection that probably not half-a-dozen white men have ever gazed upon the scene, invests the surroundings with peculiar interest.

This is a favourite camping ground of the blacks, who are here numerous and at times exceedingly troublesome; their huts are placed in a commanding position above the fall so as to secure a view up and down the creek. At the time of the writer's visit, however, they had apparently deserted the camp.

Above the fall is a fine stretch of still, deep water, extending at least for half a mile in a straight direction. Much beyond this is unknown.

Upon McIlwraith Creek, another tributary of the South Johnstone, joining it higher up than Stewart's Creek, is an exactly similar waterfall, but on a miniature scale, and, of course, devoid of the imposing effect of the Stewart's Creek fall.

ABORIGINES.

The natives, as before stated, are very numerous in this district and harassing, and, unlike their more southern brethren, seem to have no repugnance to nocturnal movements; indeed, their capacity for finding their way about in the dark and adroitness in making their way through the jungle is marvellous, and has been the source of considerable loss and annoyance to the settlers, and particularly to surveying parties, camps and homesteads having been frequently stripped of everything movable while the occupants were sleeping in happy unconsciousness of the terrible risk they ran of losing their lives. The blacks seem to be of a cowardly disposition, or, probably, they have never recovered the effects of the punishment inflicted upon them in former years for their misdeeds; for, it will be remembered, it was the members of the tribes of this district who were guilty of the atrocious murders of the unfortunate members of the ill-fated "Maria" expedition, wrecked off this part of the coast some years ago. They are believed to be cannibals. Their weapons are few, consisting principally of the wooden sword and shield. Fortunately they have hardly anything in the way of a missile weapon; they, however, use as a substitute the boulders from the beds of the creeks and river, which they have piled up in heaps on the banks at convenient places, and even carry some about with them. Upon one or two occasions they have tried this mode of attack upon boats when feebly manned; the report of a firearm, however, speedily disperses them be they ever so numerous. Their fishing nets and lines, dillybags and baskets, are exceedingly neatly and cleverly made, and they display much care

in the construction of their huts for use during the rainy season. The absence of missile weapons is, of course, attributable to the character of the country, there being little, if any, opportunity for the use of such in the almost entirely jungle-covered country they inhabit. The quantity and variety of fruits, nuts, and roots in this vast garden of nature, and the numerous streams teeming with fish with which this country is so lavishly endowed, and shell-fish on the coast, provides them with an easily acquired and abundant living.

ZOOLOGY.

In such a country as this, as is usual, the mammals are of course exceedingly scarce.

Birds are restricted to a great extent to the fruit-eating kinds, particularly the pigeons, which resort here in immense flocks and great variety; of course the scrub turkey, scrub hen, and the splendid cassowary are common. The brilliant rifle bird and kingfishers of many species make this their abode.

The reptiles are represented by many new and interesting forms, some of the lizards being exceptionally curious, while the alligator is more familiar than agreeable in the tidal waters of the Johnstone, but does not seem to venture above the rapids.

But it is to the entomologist that this locality presents a veritable paradise. Here is seen the magnificent *Ornithoptera Cassandra* in abundance, its truly gigantic caterpillar being found feeding upon a small trailing plant; while the brilliant *Papilio Ulysses* flushes its gorgeous blue wings in the sun, as common as an English cabbage butterfly. New species are to be had here, as the writer has had the pleasure of experiencing.

Beetles are to be collected in quantities; indeed the insect fauna is here represented in profusion, the smaller representatives being a perfect pest, especially when the lamp is lit, at times absolutely smothering everything. One very pleasant feature, however, in this connection is the entire absence of mosquitos in the district referred to, an exemption it is to be feared that will not be enjoyed for any prolonged period.

As has been before mentioned, fish of various kinds are abundant in the river and creeks.

To the conchologist a rare field is here open for investigation amongst the land shells.

BOTANY.

But of all the attractions it is in its botanical wealth that this district claims preeminence. Here the vegetable kingdom is represented with lavish extravagance, as may be easily understood from the enormous extent of fertile soil, the unexampled rainfall, and the numerous streams and watercourses by which it is intersected. Mr. Bailey, the Government Botanist, remarks: "It is probable the Johnstone is the richest field the botanist has in Australia." Some slight idea may be formed of the extent of the flora of this wonderful district from the result of a short collecting expedition made here in 1883, by Mr. W. R. Kefford, the former overseer of the Queensland Acclimatization Society, a practical and energetic botanist, a brief *résumé* of which appears in the annual report of that Society for that year by Mr. Bailey, a great many of the specimens collected by him proving to be entirely new to science. The large number of species absolutely peculiar to this district, and the generally numerous and varied wealth of species representing the flora, can be appreciated to some extent by the several publications on the Queensland flora by the last named gentleman.

Many species of valuable timber trees (some of them found in this district alone) are present in the greatest profusion, and will, when the country becomes more opened up, represent an extensive and important industry.

MINERALOGY.

The country at the head of the North Johnstone has already proved to be highly auriferous, the gold obtained being of exceptionally fine quality; and, as the same formation prevails at the head of the South Johnstone and Stewart's Creek, it may be reasonably assumed that, as greater facilities of access are dis-

covered, an alluvial goldfield of considerable extent will develop here in course of time.

The rich stanniferous deposits that have created the important town and district of Herberton will, doubtless, be found to extend towards and probably upon the eastern slopes of the range towards the head of the Johnstone. At present, however, very little has been or can be done in the way of searching for minerals owing to the dense jungle-covered face of the country, the almost total absence of roads rendering it practically impenetrable.

SOIL.

As before remarked, the soil of this district is of wonderful depth and richness, and on the tableland, or, rather, first plateau before mentioned, where the red loam is the surface characteristic, experiments already made prove that both soil and climate are admirably adapted for the production of vast numbers of valuable economic plants of inter-tropical and semi-tropical nature.

Here are to be seen growing in great luxuriance the cocoanut, coffee, cocoa, vanilla, indigo, india-rubber, cinchona, and others of the same class; while the sweet potato, yam, paw-paw, banana, granadilla, and pumpkin are veritable weeds, and the sugar-cane attains absolutely marvellous proportions.

The mango, custard apple, date plum, and a great variety of other tropical fruits are in their element. Most of the English vegetables can be successfully produced for a considerable portion of the year, and the orange, lemon, lime, and peach are seen in thriving condition.

The distant elevated slopes of the Dividing Range, with their admirable stretches of rich soil and favourable aspect, must at some time become the sites of numerous plantations for the growth of the Arabian coffee, which does not flourish at the lower altitudes in equal proportion with its Liberian *confrère*. Maize, arrowroot, and tobacco also, will be staple productions of this richly endowed region as greater convenience of transit presents; while the lesser elevations, after being thrown out from

cultivation, will produce abundant pasturage for stock raising, being quickly covered with a rich sward of the ubiquitous couch grass, which here develops with wonderful rapidity and luxuriance under these conditions, and is found ever green and succulent.

CLIMATE.

A most exceptional, it may be said almost phenomenal, rainfall obtains in this district, and is in fact a source, at times, almost of embarrassment to the agriculturist, from the consequent luxuriance of growth, leaving but a comparatively brief season of continuous dry weather for crops to ripen and for harvesting and crushing operations. From reliable data it has been ascertained that the mean rainfall, extending over a period of five years, has been 136 inches per year, the maximum for one month being fifty-seven inches, and as much as fifteen inches has fallen in twenty-four hours. The climate generally on the Johnstone River, owing to the unusual frequency of wet days, is (at least for a considerable portion of the year) rather depressing; and is of course exceedingly humid during the rainy season, at which time malarial fever is prevalent, especially on the lower parts of the river, but chiefly on recently settled areas. But at the higher altitude more particularly referred to in this paper fever is almost unknown, and the temperature during five months of the year very pleasant, the nights being so cold as to necessitate the use of a pair of double blankets.

Improvements in both respects previously alluded to will, however, as has been the experience in other similar localities, undoubtedly follow the clearing and settlement of the land.

In conclusion, I would remark that this splendid district, interesting as it is in its present state of wild and beautiful grandeur, but much more important when viewed from its vast capacity to minister to the necessities, luxuries, and wealth of humanity, will not be permitted to continue for any great length of time to remain a trackless waste, but when the absolute necessity of facilitating the procuring of a suitable class of agricultural labour is recognised, and we are prepared

to accept what is obviously the inevitable law of nature, then, and not until then, will the full benefits to be derived from the invaluable heritage comprised in this and many other similar districts be secured to the community.

However alluring to the mind the theory of the settlement upon the land of such districts as the one I have attempted to describe, by an agricultural population of our own race may appear, it is, I think, chimerical and impracticable. So far as my historical and geographical knowledge extends, there is no single instance that I can recall in the history of the globe where a successful colonisation, in the sense of the permanent settlement of a rural population within the tropical zone of the earth, has been accomplished by any family of the great Caucasian race. On the contrary, I think there is abundant evidence in the history of the world, both ancient and modern, to prove that such attempts have always resulted in failure, and that the white races settled in tropical countries, unless constantly replenished by an ever-continuous influx of emigration from temperate climes, gradually degenerate from the parent stock, both in physique and civilisation. My remarks apply, of course, more particularly to the class employed in agricultural labour.

While venturing, without trenching upon the field of politics, to hazard my personal opinions, which are, perhaps, hardly within the legitimate scope of the subject of this paper, but which intrude themselves while reflecting upon the probable future of our tropical agricultural territory, it is difficult to lose sight of the vast benefits that would result to the colony by the investment of capital to an incredible amount (now diverted into other channels or lying comparatively unproductive) that would be expended in developing the resources of such districts were greater encouragement offered in this direction, or at least a discontinuance of the persistent augmentation of the feeling of insecurity in such projects already so fatally (to the interest of the colony) engendered during the last few years; creating, as it unquestionably must, employment, directly or indirectly, to the mercantile, shipping, manufacturing, and labouring interests to an incalculable extent.

Finally, I cannot help observing that, when so much is being and has been said of the advantages and attractions supposed to be presented by New Guinea as a field for tropical agriculture, it is astonishing to me that the vast extent of certainly equally eligible, and in many respects superior, tracts of tropical territory in our own colony, at present lying wholly unutilised, should be overlooked.

Mr. MISKIN said that a great deal of the information contained in the paper which he had just read was derived from his brother, who was a settler in that part of the country, and who had many opportunities of studying the matters it contained.

A number of photographs, illustrating various scenes and phases of the paper, were laid on the table by Mr. Miskin for the inspection of the meeting, and nets, fishing hooks, war implements, baskets, and head dresses of the Johnstone River natives were displayed for examination. A very superior collection of butterflies of an infinite variety of hues, collected and classified by the author, were very much admired. The fishing hooks of the natives were also regarded with a good deal of interest. They are made of iron wire skilfully turned, and are barbless. In the course of some conversation that followed, Mr. Miskin stated that the conformation of the district was of volcanic origin, and that the natives were physically superior to those south; they lived on better food, and had not come so much in contact with the civilised races.

Mr. J. P. THOMSON said they were very much indebted to Mr. Miskin for his very able paper. He was inclined to agree with Mr. Miskin with regard to the degeneration of white people living in a tropical climate, and thought that the introduction of fresh blood was necessary. He noticed from some of the native implements on the table, that they produced fire by inserting a small wooden rod inside a small hole cut in the flat surface of a piece of wood and turning it vigorously around. The South Sea Islanders and other aborigines produced fire through the friction caused by rubbing a round piece of wood through an elongated groove cut in the surface of a flat piece of wood.

Rotooma and the Rotoomans.

By W. L. ALLARDYCE, Esq., S.M., &c., Fiji.

THE object of this paper is to endeavour to supply you with some information regarding one of our latest colonial annexations; its climate and people, with a few of their peculiar customs. The island in question is called Rotōōma, and I may mention that it is invariably misnamed by being called Rotoomā.

It is situated in the Pacific in $12^{\circ} 30'$ south latitude, $177^{\circ} 10'$ east longitude, and was discovered by the "Pandora" in 1793, when searching for the mutineers of the "Bounty."

The mainland is seven miles long by three miles broad, and contains about 9,000 acres.

How then did this speck in the Pacific come to be annexed? Well, it came about in this way. There occurred in Rotooma, about 1878, a religious war, and the Catholics and Wesleyans fought together. Fortunately the struggle did not last long, though a number of people were killed, and shortly afterwards three Rotooma chiefs came to Fiji, and in the name of themselves and their people offered the island to England. Their offer was accepted, and on the 13th May, 1881, Rotooma was formally annexed to the British dominions.

On approaching from the south-west you pass through a channel four miles broad, which lies between several small islands and the mainland. The first of these, Hoflua, at once strikes attention owing to the fact that the island is divided into two parts by a narrow strait of deep water several fathoms broad, while high overhead the rocks are connected, forming a huge picturesque arch. No one lives on this island, which contains a number of cocoanuts, is the natural home of thousands of sea birds, and is only accessible in the finest weather. The next island, or, rather, two small islands close together encircled by a reef, are called Hattana. There is no passage in

the reef, but they can generally be approached from the lee side during the south-east trades. They are uninhabited, very low lying, and are covered with cocoanuts and shrubs. The last of these islets, Waya, is in shape not unlike a sugar-loaf, rising straight out of the sea, and has a height of nearly six hundred feet. In a small hollow, facing the south-east, is the only village, which is composed of five men, including a Fijian teacher, and some thirty women and children. There is no landing place, and for months in bad weather they are altogether cut off from communication with their friends on the opposite shore. To go there in a boat either necessitates your swimming ashore or waiting till a small canoe is launched, in which are two men, who will come off for you. Apparently it is but a choice of two evils—an immediate ducking by jumping off the boat into the water, or a temporary postponement of the same operation by trusting one's self to the canoe. However, so skilfully do these men manage the canoe, that the landing, as a rule, merely necessitates a wetting of the feet. They patiently wait their opportunity, and when a large swell comes they paddle with all their strength and run the canoe, which draws but an inch or two of water, up a smooth rock, where they quickly jump out and hold on to it till the receding suction has ceased, when they drag the canoe up the rock before the next heavy swell comes. This is the only place in Rotooma where a drink of really fresh water can always be obtained. At best it is but a very diminutive stream, and in the dry weather to draw a bucketful would take some little time.

The mainland is divided into seven districts, viz.:—Ituten, Itumutu, Malhaha, Oinafa, Noatau, Pepsei and Falhaha. There are two fairly good anchorages on the north side during the trade winds, but the reef is everywhere a sure one. The soil is that rich black volcanic earth which makes vegetation so dense and luxuriant. Cocoanuts abound everywhere, even on the hills, which range from two to six hundred feet, while finer groves of ifi (*Inocarpus edulis*) and hefo (*Callophyllum*) trees are rarely to be met with anywhere. At present, there are but one or two

old women who make the oil from the *Callophyllum*, and that too but very impure. The aana (*Caladium esculentum*), yam, "ooh" (*Dioscorea*) exists in many varieties, and oranges, limes, lemons, bananas, mummy apples, and pineapples are to be found in large quantities, while vi (*Spondias dulcis*), breadfruit, "ool" (*Artocarpus*), and fava, a large tree which bears a kind of plum very much appreciated by the natives, not to speak of kaava (*Piper mythisticum*), are very plentiful.

The natives are shrewd and adventurous, very light in complexion, and of a copper colour, from which it is reasonable to suppose that they are of Malay origin, their own traditions making them to have come from Samoa.

In former times they wore their hair long, tatoed themselves from the hips to the thighs, and covered their bodies with turmeric and cocoanut oil. So thickly, indeed, did they besmear themselves with this mixture that its traces were left on everything they came in contact with. Now, however, as a rule, the tatoeing is limited to the arms and lower portions of the legs, while they seldom anoint themselves with turmeric.

The population is about 2,200, of whom four-fifths are Wesleyans, and the remainder are Roman Catholics. This excludes some three hundred young men who from time to time have left the islands as sailors and labourers to the Fiji, Samoan, Sandwich, and other groups of islands. Of those who have shipped to the colonies, the greater number are to be found at Torres Straits pearl fishing, where Rotooma natives are employed as boatmen and divers. The boatmen receive at the rate of two or three pounds a month; while the divers, if successful, have been known to make £200 a year. Very little of this money, however, ever reaches Rotooma, as a fortnight or three weeks in Sydney is amply sufficient to dispose of it all, and as a rule, with the exception, perhaps, of a box and a roll or two of cloth, with absolutely nothing whatsoever to show for it.

It not unfrequently happens, too, that on reaching Sydney a vessel is not found to be leaving for Rotooma for several months, in which case, when the money is finished, there is nothing to

be done but to re-engage at pearl fishing. (Since annexation, however, I have been led to understand that all vessels bound for Rotooma must first clear themselves at the Fiji Customs before proceeding there.) Nearly all the men on the island have at one time or another been to sea, and while in the old whaling days Honolulu and Behring Straits formed the goal of their ideas, the sailors of the present day must needs visit New Zealand, Australia, China, and India, while others still more ambitious are not satisfied till they have rounded the Horn and passed the white cliffs of Dover. The few who have never been to sea at all have often to endure a considerable amount of banter at the expense of their inexperience.

As most of those who have been abroad have brought back with them a smattering of English a stranger has but little difficulty in getting himself understood, the more so as a considerable number, after several years' residence in Fiji, have acquired a fairly good knowledge of that language.

Some forty or fifty years ago Rotooma formed a not unimportant whaling sation, as yams, fowls, pigs, &c., were always easily obtainable. As many as ten or eleven whalers have been known to have anchored in the lee harbour, Ituten, at once, and as in those days the abandoning of men and their deserting their ships was no uncommon occurrence, ninety whites have thus been on the island at one time, of whom seventy used to make and sell an intoxicating liquor from the cocoonut trees, known as "Tokalau toddy," so called because the natives of the Tokalau islands appear to have been the original makers, and still manufacture and drink a considerable quantity. At present (1882) there is but one of the old hands remaining, an Indian half-caste, who goes by the *sobriquet* of "East India Jack," and who says that he has lived there for over fifty years.

The climate of Rotooma, unfortunately, cannot be looked upon as by any means a healthy one, and the European, whether missionary, Government official, or trader, would do well, where possible, to make a trip to the colonies during the hot season. The temperature in the shade, from November to March, ranges

from 90° to 100° Fah., and in the cooler months from 80° to 90° Fah., while the average rainfall may be estimated at 150 inches. One must, however, remember that the reading of the thermometer is that of a *damp heat*, which is singularly oppressive and enervating. The scourge of the place is elephantiasis, and a very large percentage of Rotoomans are martyrs to it, as a slight attack of fever, or a chill, is quite sufficient to give, not only the native, but the European, this dreadful disease, which in very many instances reduces him to a most pitiable physical condition.

Rotooman houses, too, cannot be looked upon as altogether desirable abodes, being by no means air-tight, and somewhat damp. The average length is about four fathoms, the breadth about two, and the ridgepole varies in height from two to three fathoms. The walls and roof are formed of plaited palm leaves, and the two ends of the house are rounded off in the shape of a semicircle. Nearly every house is built on a foundation of stones and earth, or stones and sand varying from one to four feet in height. The floor is covered with small pieces of coral and pebbles, which form a fairly dry surface, and on these rough mats of plaited cocoanut leaves, called "farau" are placed. At the further end of the house there is a dais which is covered with nice soft mats, "salaa," which serves the double purpose of sitting-room during the day and bed-room at night. There is scarcely a house which does not possess, suspended from the ridgepole, a kind of large four-sided swinging basket, called kokona, which serves as larder and cupboard, and general receptacle for things which are intended to be out of the way of the children and the rats. To guard against the latter a piece of circular wood, a foot or more in diameter, is obtained, and a hole bored in the centre, through which the main string of the kokona passes. Underneath this piece of wood, when at a suitable height, a knot is made, not large enough to pass through the hole in the wood, which is thus kept stationary. However, the slightest weight on any part of it, at once gives the wood a sudden tilt downwards, and the rat is dropped on to the floor, clear of the kokona, and alongside of the cat.

There are a few houses on the island built of lime and stone, but these invariably take many months to build, and are as a rule eventually reserved as places of public worship.

The male portion of a Rotooman household have their time employed in planting, house building, and out-door cooking, &c., these duties being greatly facilitated to them owing to the productiveness of the soil, whereby a man can in the course of a few days plant more than sufficient food for himself and family for several weeks, his gardens requiring little or no attention beyond an occasional weeding, and the proximity of all the materials necessary for house-building operations and the abundance of fuel which is close alongside.

The women employ themselves principally in looking after the children, fishing, cooking small things in the house, and plaiting mats, of which there are several varieties and for which they are justly noted, a good mat in Fiji fetching from two to four pounds. On state occasions, too, when "kaava" is prepared, elderly women are chosen to chew the roots.

An American of the name of John Williams has the credit of being the first person to buy cocoanut oil in Rotooma, and a brisk oil trade was carried on till about twelve years ago, when it was supplemented by copra. When a native intended to make oil he collected several hundred dry cocoanuts and then invited his friends to a kind of social gathering, at which they did all the work and scraped the flesh out of the nuts while he killed a pig and supplied them with a suitable feast. The scraped cocoanuts were then placed in the frame of a canoe and were left to stand for five days, the canoe being covered over with mats or leaves. At the end of this time it was stirred regularly morning and evening for other three days, when the owner was then enabled to take off some gallons of oil. He then poured into the canoe several buckets of salt water, which the cocoanuts absorbed while the oil oozed out; and this was repeated once or twice. The Rotoomans, however, were not considered by any means adepts in oil making. A gallon of oil usually fetched a fathom of cloth, and it took ten nuts to make

a quart of oil, or forty nuts to the gallon. Thus a hogshead of oil, which ranged in price from £2 10s. to £3 10s., required 2,500 nuts. The casks employed in this trade in the first instance were mostly old oak beer hogsheads, as it was at once found that cocoanut oil when stowed in other varieties of casks leaked very considerably, owing to its extremely penetrating nature. A larger measure than this was the imperial butt, which was specially made and sent out from England for the trade. Vessels laden with oil generally had a number of these large butts in the hold as a kind of ballast and primary layer, though these were subsequently replaced by two-hundred-gallon iron tanks. With the introduction of copra, however, the oil making almost altogether ceased. A native some years ago used to receive £10 a ton for his copra; but of late, owing to the fall in prices, he rarely realises more than £6 or £7. To make a hundred-weight of copra he requires a little over two hundred nuts, the flesh of which he scoops out and places in the sun to dry, and which, according to the weather, takes from three to five days. With fine weather and a warm north wind three days is sufficient, supposing even that it is taken in at night; but with a hot sun and no wind it requires four days; while with the S.E. trade, which is the coolest wind, it has generally to remain out for five days. When dry it is found to have lost nearly half of its original weight, and now weighs 112 lbs., in which state it is sold to the trader, in whose hands it shrinks still further, owing to the copra bug and other insects. Thus it takes nearly two cocoanuts to make one marketable pound of copra, and to make a ton requires over four thousand nuts.

Three years ago there were five trading firms on the island, and the annual export of copra was about 250 tons. There was also a slight "kaava" trade, varying from three to four tons per annum, the dried root in the first instance being bought by the traders at from 6d. to 9d. per pound.

One of the peculiar features of the island is the large number of caves which abound in most of the districts. Many of them are mere underground passages of from fifty to sixty yards in

length, to explore which you must be prepared to grovel for yards on your stomach, pushing a lamp before you, and with hundreds of bats flying about your face. There is, however, one very remarkable cave called Mamphiri, which is well worthy of mention. On the top of a hill 300 feet above the sea, and partly covered over by thick bush, is a circular hole of about eighteen feet in diameter, round which blocks of lava stand up two or three feet high, forming a kind of railing, against which one can with safety lean if disposed to gaze at the darkness below. To descend it is desirable to put yourself in charge of the chief of the district, who will either accompany you himself or send a number of his young men to put up a scaffolding and make everything secure; you merely require to supply the rope. On descending, for the first thirty feet the circular hole remains much the same, ferns and mosses growing on the sides nearer the top; after this, however, it opens out very much, and, after a further descent of seventy feet, you reach a heap of scoriæ, thirty feet in height, down which it is necessary to scramble. After groping round the walls of this cave, which has an oval shape and is rather over twenty yards in length, a passage will be found at the north end, which, after sixty yards of gradual descent, leads you to another cave of smaller dimensions. This underground passage is beautifully paved with huge blocks of flat lava, between and winding through which are a number of small gutters. Not very long ago a number of the natives thought that Mamphiri was bottomless, while others believed that there was a submarine passage leading from it to Waya. Tradition says that the cave was formed by a chief of the name of Raho, who, having been defeated in battle, determined to have revenge on his enemies though he perished himself in the attempt. He accordingly went to Mamphiri and cut a large stick, which he struck into the ground with the intention of swamping the island. In this he was unsuccessful though he is said to have thus formed Mamphiri.

It formerly was the custom on the birth of an infant, if a boy, for one of the old women in attendance to rush out of the house

and calling loudly on their god, "Taugroa," proclaim that another man child had been born. The advent of a girl, however, on this terrestrial scene was not thus proclaimed. This was followed by a feast, called "otchanki," which, however, was only made to the firstborn, and invariably consisted of large quantities of pigs, yams, and dalo, &c.; the food brought by the father's friends being given to the mother's relations, and *vice versa*. The next important event occurred when the child was about four years of age and consisted in boring a hole in the lobe of its ear, called "palang ou falinga." This operation was performed by a doctor, who was obliged to draw blood from his own arm or some other part of his body after doing it.

Previous to the introduction of Christianity, and even to a certain extent afterwards, it was customary for parents to formally marry their children when they were but five or six years old. This occasion was, of course, attended by much feasting. In many instances, however, the man and woman on growing up never took kindly to each other, and, though married, never lived together. The last feast of all was that made on his decease, when the greater portion of his stock and property were sacrificed for the benefit of those who came to attend his obsequies. Often a large pile of stones was placed on the grave of the departed, which took several days to erect. In later years gravestones have been obtained from the colonies, varying in value from £10 to £20, in order to mark the last resting place of the deceased.

In olden days there were three chiefs, or rather officers, of very great importance in Rotooma, viz.:—Sau or king, Puer, and Mua. The sau, or Rotooma king, was till comparatively lately the being to whom most veneration was paid on the island, and though the puer, a kind of prime minister, conducted the affairs of the land, he always drank "kaava" after the sau on state occasions. The puer had the power, on the death of a sau, to name a suitable chief as his successor, though his choice was not necessarily followed, in which case a tribal war occurred if the matter could not be otherwise satisfactorily settled, and the

victors then elected a sau. The length of reign was a matter that rested altogether with the king, but he could not resign before six months, which was known as a "tef," a period with them not unlike our year, as the reign was always reckoned by the number of "tefs." Some generations ago the sau was appointed when a mere boy, and often reigned for some thirty or forty years; but, latterly, he rarely occupied the throne for more than a twelvemonth. The sau, in like manner, on the death or resignation of a puer had a right to appoint a successor, and his choice also, though not necessarily, was usually adhered to. The staff of the sau was composed of certain officers who were known as Heugata, Titup, Fakpuer (the doctor), Faugata, and Fatma, exclusive of two *aides-de-camp* called Mafuai, whose duties obliged one to always accompany the king, while the other sat in his house and received the king's daily presents of food, &c. On the appointment of a sau, a large feast called "Taokianmarai" had to be made, which he attended, dressed in a costly mat with a girdle of red leaves round his waist, and a large necklace hanging down over his chest, composed of sweet-smelling flowers. He was accompanied by a number of old women who, as they proceeded, sang. After the feast the king took off his robes of state and gave them to his Faugata, who donned them, and for the remainder of the day held the position of sau. When he returned them in the evening he daubed the king's face with a yellow dye, which was supposed to greatly enhance his personal appearance. In the second month of the year a large feast was made, called "Tefhay," which the whole island attended. When the people had collected together, one of the king's *aides-de-camp* began shouting out the names of all the past kings, and as each name was called some of the descendants came forward with food and placed it before the sau. This calling of names lasted for a considerable time. The Rotooma kings, as handed down from generation to generation, number one hundred and six. In the same week of the same month, the sau, with all the people, went to Noatau for a large feast, called the "Sesueli," and on the next day the

officers of the sau made him a feast, called "Arougi," in his own district. Among minor feasts, one called "Suivauqunu," which was made on every occasion when he took off his robes of office, is the most important.

It is a noticeable fact that on all occasions when presents of food were made to the sau his officers always received a larger share than any of the other chiefs, excepting the puer and mua, and always drank kaava before them (the other chiefs). The duties of the puer consisted in making the necessary laws and in arranging with the different districts that a regular supply of food should be daily brought to the sau, whose diurnal duties consisted in partaking three times of food and kaava. Neither the sau nor the puer could condemn a man to death merely for his own gratification, which shows that the chiefs never had the absolute power which existed and does still exist in many of the other groups of islands.

THE KINGS OF ROTOOMA.

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|-------------------|-----------------|
| 1. Lapatemasui. | 18. Taio. |
| 2. Tuitupu. | 19. Fonumau. |
| 3. Saparere. | 20. Varomus. |
| 4. Muamea. | 21. Tiu. |
| 5. Muatoirere. | 22. Marafu. |
| 6. Ifiuri. | 23. Irava. |
| 7. Ifitunga. | 24. Tokoara. |
| 8. Fesaitu. | 25. Asekava. |
| 9. Niuto. | 26. Maruseu. |
| 10. Saurotooma. | 27. Sakumaue. |
| 11. Tafaki. | 28. Tausia. |
| 12. Muamea | 29. Sautapuaki. |
| 13. Tukumasui. | 30. Vaka. |
| 14. Sauhanesakai. | 31. Ravaka, |
| 15. Kaurufonu. | 32. Tokanina. |
| 16. Riamkau. | 33. Taitofanga. |
| 17. Kaurufose. | 34. Irava. |

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|-----------------------|--------------------|
| 35. Ravaka. | 71. Kautane. |
| 36. Tuaojo. | 72. Fogonaratoi. |
| 37. Gasgasfaga. | 73. Tuiporotu. |
| 38. Fatafesi. | 74. Fonumanu. |
| 39. Fuatanefau. | 75. Tiu. |
| 40. Vuana. | 76. Soarasoaratau. |
| 41. Fatafesi. | 77. Toepo. |
| 42. Taemanava. | 78. Kauika. |
| 43. Solovolū. | 79. Fosauriro. |
| 44. Riamkau. | 80. Farepapau. |
| 45. Tirasoko. | 81. Sauroro. |
| 46. Otorevao. | 82. Ufiamorata. |
| 47. Ragofuata. | 83. Soarasoaratau. |
| 48. Kaurasi. | 84. Teau. |
| 49. Vavaoti. | 85. Ufigoatu. |
| 50. Ufata. | 86. Kavasakegamua. |
| 51. Patipativavahina. | 87. Saumativa. |
| 52. Furisefana. | 88. Fotugafuru. |
| 53. Tuirotorava. | 89. Fonomau. |
| 54. Marafu. | 90. |
| 55. Pogisemao. | 91. Varea. |
| 56. Tiarupea. | 92. Ravaka. |
| 57. Sukamasa. | 93. Mora. |
| 58. Mou. | 94. Fonumanu. |
| 59. Kausiriafe. | 95. Vasea. |
| 60. Tuiporotu. | 96. Tavo. |
| 61. Tokanina. | 97. Sokogaoūtu. |
| 62. Garegasau. | 98. Ragafua. |
| 63. Fakarogofono. | 99. Irava. |
| 64. Matalagi. | 100. Hanifiro. |
| 65. Mauava. | 101. Tuipenau. |
| 66. Sakogatau. | 102. Tigarea. |
| 67. Vavaoti. | 103. |
| 68. Tavo. | 104. Marasia. |
| 69. Vainomoko. | 105. Sukamasa. |
| 70. Katoagatau. | 106. Sukamasa. |

The mua was less powerful than either the sau or the puer. He was appointed by the puer for an indefinite period, though it was customary to resign after about a year. By him alone he could be dismissed from office. On the appointment of a mua he could take up his abode in whatever district he chose, and on the fifth day of his muaship the people of the district he had chosen to live in took him out fishing for the purpose of obtaining turtle. If a turtle was not caught he was prevented from cooking turtle again while in office, and the general opinion was, that though he might be a good mua, yet food would be scarce. To cook turtle was a very great honour, and belonged to a people called "Moriroa." If a person happened by chance to catch a turtle he was obliged to send for one of the Moriroa to cook it. On this particular occasion, however, if a turtle was caught there were very great rejoicings, as it foretold of an abundance of food. If the previous mua had died a natural death, it was the first duty of his successor to bury him at "Muasolo" (the Mua's Hill), the burial place of the muas, situated in the bush about half way between Fauguta and Malhaha, and to unearth the last mua in order to obtain the stone axe, called "voirou," which it was customary to bury with the mua—a different axe, however, being buried with each mua. If the stone axe was easily found the opinion was that the new mua would be a very good one. It was then wrapped up, carried home, and taken very great care of. In those days a year (tef) was composed of six moons, called respectively Oihap, Noatau, Howata, Kasep, Fosoghow, and Afopugi. Oihap, or the weeding month, was the most important by far, for during it the most momentous feasts occurred. On the first day of this month a large fishing took place at Fauguta, which all the people of the district attended under penalty of death. At the conclusion of the fishing a large feast was made, composed of perhaps a hundred pigs and a proportionate quantity of yam and taro, which was duly taken up by all the people to Muasolo. This procession was headed by men blowing conch shells and shouting to the gods for a fruitful season. The mua,

attended by all his officers, of whom he had a large number, with his head enveloped in native cloth and carrying a stone axe in his hand, brought up the rear, while a woman walked behind him and held a fan palm leaf over his head as an umbrella. On arriving at Muasolo it was probable that they would there meet people from other districts performing obsequies to the spirit of the departed mua. Those districts only were excused from attending whose mua had been dead three years, for the districts had the honour of mua in a kind of turn. The non-attending districts were, however, obliged to make the fishing and feast, and were permitted to eat it in the house where their last mua had died in place of carrying it to Muasolo. The reigning mua now set the example of clearing and burning up all the rubbish about the muas' graves, in which he was ably assisted by all present. The food was now partaken of, after which the procession started for Malhaha, preceded, as before, by the conch blowers, &c. On arriving there they went fishing, and were joined by the Malhaha people, and the fish with other food was, as before, taken up to Muasolo and disposed of there. This finished the most important day to the mua in the six months. In the following month, Noatau, a large fishing took place at Noatau, from which the month derived its name*, though the fishing itself was known as "Nukrairai," which was the name of the Tiu's burying place—a high Rotooman family. Here the feast was partaken of, and the places cleaned as at Muasolo. In the next month, "Howata," there was a large fishing at Oinafa, and as the people always met on this occasion on the small island of Howata, which is close to the shore, the month derived its name from the island. During the months of Kasep and Fosoghow there were no remarkable feasts; though in the following month of Afopugi, everyone was warned to be very careful of what they did or said, and on no account to make any noise near the mua's house. Besides these feasts, there were a

* I think my authority must have been mistaken, but this is what he told me.—

W. L. A.

large number of smaller ones which the mua was not obliged to attend in person. On the occasion of the larger feasts the food for the mua was always cooked by itself. Did he feel unable or indisposed to eat it all, it had to be pitched away, and no one was permitted to eat it. If any one ate it, it was said that his throat would at once swell up to a prodigious size, which was a sufficiently dreadful idea to prevent anyone from ever attempting it. On a mua's resigning office he was again taken to fish, after which he was accompanied by his officers into the bush, and he himself having planted a little kaava, they finished their duties to him by planting him either a yam, taro, or banana bed.

The kaava planted by the mua himself was, when ripe, taken to, and drunk by, the reigning mua. A new mua was always appointed a day or two before the last one resigned.

As I do not consider that these few remarks about Rotooma would be in any way complete without a specimen of their mythology, I beg to relate to you the tale of Toak and Honitimus.

[Here the author gave a graphic account of Toak and Honitimus, from which it would appear that Toak fell in love with a woman named Honitimus, who afterwards turned out to be immortal, much to the disappointment and disgust of Toak.]

In reading the paper Mr. J. P. Thomson explained the way in which the natives brewed the kaava, and the mode adopted by the Tokalaus in extracting the juice from the cocoanut tree to make toddy, and also the material used by the natives in the manufacture of mats. He also explained that Mr. Allardyce had been for some time a resident commissioner at Rotooma, but had to leave on account of the unhealthy condition of the island, and was now a magistrate and commissioner for the island of Kadavu, and the districts of Navua and Nadroga, Fiji.

The proceedings then terminated.

ANNUAL MEETING,

JULY, 1886.

THE first annual meeting of the Queensland Branch of the Geographical Society of Australasia was held in the Lecture Hall of the School of Arts, Brisbane, on Tuesday evening, July 6th, 1886, at 8 o'clock. The chair was occupied by the Hon. A. C. Gregory, C.M.G., &c., President of the Queensland Branch, and there were present a good attendance of ladies and gentlemen.

The HON. SECRETARY read the minutes of the previous monthly meeting which were confirmed, after which a ballot took place for the new Council, resulting in the election of the following gentlemen as members thereof:—J. N. Waugh, M.D.; Messrs. W. A. Tully, B.A., F.R.G.S.; W. H. Miskin, James Muir, E. J. Bennett, and the Rev. G. Woolnough, M.A.

On the motion of the Rev. G. WOOLNOUGH, seconded by Dr. WAUGH, Mr. James Muir was elected Honorary Auditor for the session 1886-7.

The CHAIRMAN stated that, although the councillors were elected annually, it appeared by the constitution of the Society that it was his lot to hold office for three years as President, and as such he would endeavour to serve the Society to the best of his ability, although, he felt sure, there were others equally as willing and able to hold the office.

Mr. W. A. TULLY said he felt sure that all the members of the Society would heartily support him in testifying to the past services of the President, whom he highly eulogised, and thought that the Society had been very fortunate in selecting as its President a gentleman with such long and varied experience in exploration and other scientific research as the Hon. A. C. Gregory.

The CHAIRMAN called on Mr. J. P. Thomson, Hon. Secretary,

to read the Council's report and the Hon. Treasurer's statement of accounts.

Council's Report for the First Session, 1885-6.

MR. PRESIDENT AND GENTLEMEN,

The administrative Council of the Queensland Branch of the Geographical Society of Australasia, in accordance with the rules of the Society, present to you their report on the operations of the Society for the preceding year.

Since the formation of the Society the Council have met on twelve different occasions for the transaction of general business. At the meetings referred to the working of the Society has been practically formulated, after careful deliberation, in such a manner as the Council consider most expedient for the advancement of the Society's welfare and the interest of its members.

In addition to the ordinary routine business, the Council have been enabled to frame a sufficiently comprehensive code of rules and bye-laws necessary for the government of our Branch of the Society. Those rules, after being submitted to a special meeting and duly ratified, have been printed and circulated amongst our members.

Although the year was far advanced before our Branch of the Society was inaugurated, yet since that date we have held six ordinary monthly meetings, at which ten papers have been read. Those papers we trust may be the means of supplying our members with reliable information on the various subjects and places therein described. The report of our inaugural meeting and the papers read at the January and March meetings have been published and circulated, the Council deeming it expedient to publish quarterly reports with the view of keeping the subject of our papers fresh in the minds of the readers. The next publication will be our annual proceedings, containing a complete record of all our operations since the formation of our Branch, and which we trust to be able to present to our members as early as possible.

The founders and members' list shows a roll of seventy-one

who have paid their entrance fee and subscription, and ten who are yet indebted to the Society, exclusive of four hon. members, thus making a total of eighty-five. In reference to those who have not yet paid up, the Council intend, in fairness to the members, that the rules of the Society shall be strictly adhered to. Lately, several gentlemen have sought admission as members, but owing to the approaching end of the session, their election has been withheld, in order to give them the advantage of joining at the commencement of the session. The Council have good reasons for believing that during the new year our list of members will be considerably increased; as the existence of our branch becomes more widely known and its operations felt, we may assume that a proportional ratio will be observed in the numbers of its supporters. During the past year the Council had corresponded with about forty different scientific institutions, on the Continent of Europe, America, in India, Africa, China, Australasia, and various other places; the Council therefore look forward with some degree of certainty to the receipt of many valuable publications during the new year, which will prove advantageous to the Society and offer many advantages to members. The Council feel deeply indebted to the Trustees of the Queensland Museum for generously permitting us to hold our meetings in their Library Room, and trust that the privilege enjoyed during the past year may be permitted to the Society in future.

As the Treasurer's report will show, we have a credit balance of £81 16s. 1d. after paying all our debts. Taking into consideration the sum of the foregoing conditions, the Council may reasonably conclude that the state of our affairs are in a very satisfactory condition, and regard the formation of our branch as being most successful. The cost of printing becomes very heavy, and while exercising the greatest care in the disbursement of funds, the Council consider that, in a great measure, the prosperity and success of our Society will be influenced by the wide circulation of its literature, for which purpose funds are necessary; therefore they earnestly trust to the support of the

members and public for the amount of force necessary to keep the mechanical structure in motion. In conclusion, the Council desire to state that the government of our branch of the Society is conducted on a purely independent basis; they deem it their duty to thank all those who have lent a willing hand in furtherance of our objects, and earnestly hope for the sympathy and support of co-workers and fellow colonists.

JAMES PARK THOMSON,

Hon. Sec. and Treasurer.

On the motion of the Rev. G. WOOLNOUGH, seconded by Dr. WAUGH, the report and balance sheet as read were adopted.

The PRESIDENT then delivered his annual address, as follows:—

The Queensland Branch of the Geographical Society of Australasia has now arrived at the termination of its first session, and, considering that much of our attention has been of necessity devoted to details connected with the organisation of the Society, I think that our present position is a satisfactory one.

The Society now numbers seventy-one members, with every prospect of continuous accession; while, notwithstanding the short period of active existence, we have had ten papers contributed:

1. "The North-west Coast of Vanua Levu, Fiji." By J. P. Thomson, Esq.
2. "New Guinea." By H. Romilly, Esq.
3. "Western Tasmania." By T. B. Moore, Esq.
4. "Islands in Torres Straits." By Hon. J. Douglas.
5. "Explorations in New Guinea." By Capt. Strachan.
6. "Atmospheric Phenomena." By E. J. Bennett, Esq.
7. "Progress of Queensland." By A. A. Hull, Esq.
8. "A few Months' Experience in New Guinea." By Capt. Hennessy.
9. "The Johnstone River." By W. H. Miskin, Esq.
10. "Rotooma and the Rotoomans." By W. L. Allardyce, Esq.

All these are on subjects of considerable interest, and contain much valuable matter relative to our special objects of research.

Since the expedition to New Guinea, when Captain Everill in the "Bonito" ascended the Fly River and its tributary, the only important exploration undertaken has been by Mr. Forbes and his party, and it is much to be regretted that want of funds should have necessitated a cessation of his labours just when there appeared to be some prospect of material progress being made in the investigation of the interior country; and this is the more to be deplored, as the formal possession taken by the Imperial Government of the south-east portion of New Guinea has been accompanied by the establishment of restrictions in regard to the occupation of the country by British subjects, which, however desirable they may be deemed as a question of policy, have checked the settlement of the coast for purposes of commerce, and contingently closed one of the more important sources of geographical information.

Turning to the opposite side of Queensland, the Victorian Branch of our Society has joined with the Royal Society of that Colony in urging exploration in the Antarctic regions, and has asked our co-operation in investigations in matters which involve important questions in regard to the accumulation of Polar ice, its periodical breaking up, and the relative effect on the periods of drought and excessive rainfall.

Though a knowledge of the causes of variation in our annual rainfall may not enable us to prevent seasons of drought, yet it may assist in estimating what measures may be necessary in providing for water conservation, so as to store the surplus of one period to meet the deficiency of the next.

This subject also brings into prominence the importance of studying the physical geography of our own colony, and determining the limits of the basins of the upper portions of the principal watercourses, the relative rainfall in each, and the proportionate area of soil which will absorb rain and that which sheds the water off into the rivers; while note should also be made of the area of land in the lower valleys which would be suitable for cultivation under a system of irrigation, for without an adequate knowledge of these conditions attempts to establish

irrigation works for agricultural purposes can only lead to expensive failures.

The absence of mountain ranges in Queensland and the consequent paucity of permanently flowing rivers is unfavourable to any extensive system of irrigation in any one district, but there are many localities where there is sufficient supply for the cultivation of limited areas—for instance, the Albert, Logan, Upper Brisbane, Mary, Burnett, Upper Condamine, and Barwan rivers in the south, which might each be sufficient for the irrigation of from 500 to 1,000 acres; while in the north, there are many streams between the Burdekin and Endeavour rivers which, from the steepness of their upper valleys and abundant coastal rainfall, are admirably adapted to the purpose.

It is satisfactory to know that the trigonometrical survey of the colony is steadily progressing, and that the positions of many important features which have hitherto been set down from very imperfect data will successively be determined with accuracy.

A trigonometrical survey of the Moreton and Darling Downs districts was commenced about 1850 by Sir F. Mitchell; but the imperfections in the measurement of the base line on the Normanby Plains by the use of hardwood bars of ten feet lengths, the small size of the theodolites, and somewhat unfavourable selection of the trigonometric stations, combined with the death of Mr. Surveyor Burnett, left the work in such an imperfect state as not to be of much available value.

Now, with the advantages of steel measuring bands of 100 feet, and the high class instruments which have been introduced by Mr. Tully, the Surveyor-General, together with the facilities afforded by the electric telegraph for the determination of longitudes, we may fairly look forward to our maps taking a high position as regards accuracy.

The accuracy of maps is not only important in regard to the country after its occupation, but equally as regards the details of the routes of explorers; and I would impress strongly on those who may intend to explore new country, whether in

Australia or New Guinea, the necessity of mastering the use of the instruments necessary for the determination of the positions they may visit. Most explorers encumber themselves with a host of heavy instruments, while they carry but a very inadequate knowledge of their use. It is far better to learn the use of the few small instruments, such as are now on the table, and which would scarcely fill a pocket or holster, than to travel with a horse load of instruments which one does not know how to use effectively. I shall not detain you longer except to show you these instruments, which are adequate for travelling all over Australia. This is the little compass which I have used in three expeditions across Australia; this is the prismatic compass which I used for taking more important bearings; this is the sextant with which I took the latitudes and longitudes, with a pannikin of cold tea to furnish an artificial horizon. If we wanted to know the height of mountains this aneroid was amply sufficient to tell within ten feet; and if we wanted to measure the temperature, this small thermometer will meet our requirements, and can be converted into a hygrometer by being covered by a wet cloth.

Mr. J. P. THOMSON, in the course of a few remarks, stated that he, like the president, had accepted office for three years; but if there was anyone anxious to fill his place, he would be happy to allow him to do so, as he could find plenty to occupy his time in connection with his profession. Before the formation of the Queensland Branch of the Society he had occupied all his spare time with the study of astronomy, but since his connection with the Society he had to give up, for a time, his former pursuits and direct all his attention and energy to the tedious duties necessarily connected with a young society.

The Rev. G. WOOLNOUGH eulogised the secretary for his services in connection with the Society. No one, he said, could make the Society popular. Such institutions never were, but Mr. Thomson had worked to make it useful. He then referred to the practical information to be imparted by the Society. The ordinary geography imparted nowadays merely related to the

position of bays, headlands, &c., but he thought we should be taught more of practical geography. Some of the papers read during the past year had been exceedingly interesting; that by Mr. Miskin, on the subject of the Johnstone River, read at the last meeting, was an admirable paper. He suggested, however, that during the coming year their list of papers read should not be so numerous as heretofore; one on each night was quite sufficient, as some time would thus be allowed for discussion. They had been debarred from discussion at previous meetings in consequence of nearly all the time having been taken up in reading the papers. He regretted that the rules of the Society forbade them passing a formal vote of thanks to the secretary for his energy and zeal, but nevertheless they could at the same time think of him as a "jolly good fellow."

The PRESIDENT endorsed the remarks of the last speaker in reference to Mr. Thomson's valuable services in connection with the Society, and, in reply to a question, explained that the Society had received a request to co-operate with the Victorian Branch of the Geographical Society and the Royal Society, who have recently joined in conference to consider the question of Antarctic exploration. The request had only recently been received in Brisbane, and the Council of this Society had not yet had an opportunity of dealing with it. The request had not defined what was the nature of the co-operation desired, but he presumed it meant that this Society would take an interest in the matter and endeavour to forward the object. It was not proposed to start an expedition from Victoria, but they were anxious to collect all information possible, in order to be prepared to afford any assistance or advice which might be required in the event of any expedition being formed. The Victorian societies were at present in communication with the British Association on the same subject. At present matters had not assumed such a form that he could say what was proposed to be done. They had already commenced to collect information regarding the size and descriptions of the icebergs in the Antarctic Sea, and how far they have affected the seasons, and such other useful information.

Mr. MISKIN expressed disappointment that the Society had not been favoured by the New South Wales Branch with a report on the recent New Guinea expedition under Captain Everill in the "Bonito." The people of this colony had been looking forward with interest to some report from the expedition, but none was forthcoming. He thought the colony was justly entitled to some information, seeing that it had contributed liberally towards the expenses of the expedition. He thought they should place on record their regret that the New South Wales Society had failed to communicate the results of the expedition to the public of this and, in fact, of the other colonies also. The action had, he thought, tended to weaken the relationship between this and the Society of the neighbouring colony. Speaking of the Forbes' expedition to New Guinea, the same remarks also applied, he said, in a certain measure thereto. Mr. Forbes would, he thought, have obtained more support from this colony than he had done had he communicated to us at least some of the results of his labours in New Guinea. In reality we had heard practically nothing from him, although the Geographical Society of Australasia had contributed a larger sum towards the expenses of his expedition than any other scientific society with which he may be connected.

The CHAIRMAN explained that with regard to Captain Everill's expedition, it was highly probable that a great part of the delay in publication was caused by the difficulty of "tallying" the various books and journals, as there was far more trouble connected with this work than the uninitiated were aware of. He thought, however, the best plan would have been to have published Captain Everill's log-book just as it was. It was also probable that as the Queensland Government had subsidised this expedition a report might be forwarded to the Government in due course, in which case it would be a Parliamentary paper. He admitted, however, that he was not aware of the existence of any such report.

Mr. WOOLNOUGH remarked that the New South Wales Society's annual meeting was held about a week ago, and very little reference was then made to the matter.

The CHAIRMAN explained that the position of the Queensland Society in respect of this matter was somewhat peculiar. This Society was not in existence when the expedition was inaugurated, and it came into practical existence just as the expedition was returning.

Mr. W. A. TULLY, referring to the Forbes' expedition, said that he did not think the Queensland Society had any claim on Mr. Forbes, as they had not contributed to the cost of his explorations. Possibly New South Wales might have reason to complain of his reticence, but we had none. Possibly Mr. Forbes might be able to explain the cause of his reticence; probably it was partly owing to the fact that he holds loyalty to the Royal Society at home.

The CHAIRMAN said he did not think sufficient time had elapsed before they could reasonably complain of reticence on the part of Mr. Forbes in giving information. At the same time, he reminded them that Mr. Forbes had received assistance from the Royal Society of Queensland and the Geographical Society of Australasia.

The proceedings then terminated.

GEOGRAPHICAL SOCIETY OF AUSTRALASIA.

LIST OF FOUNDERS AND MEMBERS.

QUEENSLAND BRANCH.

(P) Members who have contributed papers which are published in the Society's Proceedings. The numerals indicate the number of such contributions.

A dagger (†) prefixed to a name indicates a member of the Council.

Should any error or omission be found in this list it is requested that notice thereof be given to the Hon. Secretary.

Founders.

- P1 Allardyce, W. L., Navua River, Fiji
Alton, R., Survey Department, Brisbane
Armour, R. L., J.P., Brisbane
Atkinson, J. R., L.S., Ipswich
Bailey, T. S., Survey Department, Brisbane
Bartley, N., Brisbane
Bell, W., Supreme Court, Brisbane
Bennett, E. J., Survey Department, Brisbane
Brydon, J. M., J.P., Brisbane.
Coghlan, J., Mount Eagle, Cooyar
Daniell, E. N., Survey Department, Brisbane
Davidson, W. M., Survey Department, Brisbane
Drury, E. R., C.M.G., Brisbane
Ferguson, J., Brisbane
Foxton, J. F. G., Brisbane
Fraser, T., L.S., Brisbane
Gailey, R., Brisbane
† Gregory, Hon. A. C., C.M.G., M.L.C., F.R.G.S., &c. (President),
Brisbane

- Heath, G. P., J.P., Comm. R.N., Brisbane
 Heeney, F. X., Lands Department
 P1 Hennessy, J. M., Capt., New Guinea
 Hoggan, R., Survey Department, Brisbane
 P1 Hull, A. A., L.S., Survey Department, Brisbane
 Langford, W. H., Survey Department, Brisbane
 Lavarack, C. W., Survey Department, Brisbane
 Leonard, G. A., L.S., Yorick Club, Collins Street, Melbourne
 Lilley, Hon. Sir C., K.C.M.G., Brisbane
 † Lloyd, W. M., J.P., Brisbane
 Luck, H. C., F.R.G.S., Brisbane
 McDonald, G. T., L.S., Rocklea
 McDonnell, E., J.P., Brisbane
 McDonnell, J., J.P., Brisbane
 McMaster, J., M.L.A., Brisbane
 Macpherson, Hon. P., M.L.C., Brisbane
 Marks, C. F., M.D., Brisbane
 Mein, Hon. C. S., M.A., Brisbane
 P1 † Miskin, W. H., Brisbane
 P1 Moore, T. B., F.R.S., Tas., New Norfolk, Tasmania
 Morehead, Hon. B. D., M.L.A., Brisbane
 Muir, A., Brisbane
 † Muir, J., Brisbane
 O'Connor, T., L.S., Rockhampton
 Persse, T. K., Survey Department, Brisbane
 Raff, H., L.S., Brisbane
 P1 Romilly, H. H., New Guinea
 Russell, H. H. A., Immigration Department, Brisbane
 Ryan, R. A., J.P., Brisbane
 Stanley, F. D. G., F.R.S.B.A., Brisbane
 Stodart, J., J.P., Brisbane
 Thomson, J., M.B., Brisbane
 P2 † Thomson, J. P., M.A., C.E., Hon. Sec. and Treasurer, Brisbane
 Trower, H., Survey Department, Brisbane
 † Tully, W. A., B.A., F.R.G.S., Brisbane
 Viner, A. J., Brisbane
 † Waugh, J. N., M.D., Brisbane
 Wilson, R. W., J.P., Brisbane
 Wilson, W. H., Brisbane
 † Williams, W., J.P., Brisbane
 Woolnough, Rev. G., M.A., Brisbane
 Wright, H. T., Comm. R.N., Brisbane.

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Clarke, D. J., Brisbane
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 McDiarmid, A. A., J.P., Brisbane
 McDowall, R.G., L.S., Toowoomba
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 Mune, W., Rewa River, Fiji
 Musgrave, A., junr., New Guinea
 Potts, J. W., Brisbane
 Sayce, E., Brisbane
 Spowers, A. A., L.S., Brisbane
 Tofft, G.A., Geraldton, Johnstone River
 Waraker, E. M., L.S., Tambo
 Withrington, W. R., Survey Department, Brisbane

Honorary Members.

- P1 Douglas, Hon. John, C.M.G., F.R.G.S., Special Commissioner for
 British New Guinea
 Gregory, Hon. F. T., M.L.C., F.R.G.S., &c., Toowoomba
 Hodgkinson, W. O., F.R.G.S., &c., Cooktown
 Woods, Rev. Julian E. Tenison, F.G.S., F.L.S., Hon. Member
 Royal Society, Victoria; Hon. Member Royal Society, N.S.W.;
 Hon. Member Royal Society, Tasmania; Hon. Member Adelaide
 Phil. Society; Hon. Member New Zealand Institute; Hon.
 Member Linnean Society, N.S.W., &c.; Union Club, Sydney.

Obituary, 1886.

WILLIAM LANDBOROUGH, of Caloundra, an old Australian explorer and
 Hon. Member of the Society.

DONATIONS
TO THE
GEOGRAPHICAL SOCIETY OF AUSTRALASIA
(QUEENSLAND BRANCH).

[The names of the Donors are in *Italics*.]

ABSTRACT of Proceedings of the Royal Society of Tasmania.

From the Society.

TASMANIA:—Map of.

From C. P. Sprent and T. B. Moore, Esqs.

UNITED STATES GEOLOGICAL SURVEY:—Atlas, to accompany the Tertiary History of the Grand Cañon District (Dutton); Experiments with Diffusion and Carbonation (Wiley); Report on Condition of Crops in America and Europe; Report on the Area of Corn, Potatoes, and Tobacco; Report on Yield of Crops per Acre; Report on the Condition of Growing Crops; Report on Condition of Crops; Yield of Grass per Acre; Report of the Commissioner of Agriculture for the Year 1884; Proceedings of a Convention of Delegates from Agricultural Colleges, &c.; Methods of Analysis of Commercial Fertilizers; Decisions of the Department of the Interior and General Lands Office in Cases relating to the Public Lands. *From the Hon. S. Walker Griffith, M.A., Q.C., Premier and Chief Secretary of Queensland.*

FIRST ANNUAL BALANCE SHEET
OF THE
QUEENSLAND BRANCH OF THE GEOGRAPHICAL SOCIETY OF AUSTRALASIA,

Dr.

ENDING 30TH JUNE, 1886.

Cr.

	£	s.	d.
To 71 Entrance Fees and Subscriptions at £2 2s. each	149	2	0
„ 1 Entrance Fee... ..	1	1	0
„ 2 Subscriptions paid in advance for year ending 30th June, 1887	2	2	0
	£152	5	0
By Printing, Stationery, and Postage	52	9	11
„ Advertising	3	12	6
„ Freight on Queensland share of New Guinea Collections	0	11	6
„ Preparation of Map	1	5	0
„ Messenger of Museum for attendance ..	2	10	0
„ Petty Cash	10	0	0
„ Balance in Queensland National Bank ...	81	16	1
	£152	5	0

J. P. THOMSON, Hon. TREASURER.

Compared with the Vouchers, Cash Book, &c., and found correct.

JAS. MUIR.

2ND JULY, 1886.

WATSON, FERGUSON AND CO., PRINTERS BRISBANE.

PROCEEDINGS AND TRANSACTIONS

OF THE

Queensland Branch

OF THE

GEOGRAPHICAL SOCIETY

OF

AUSTRALASIA.

2nd SESSION,

1886-7.

EDITED BY

J. P. THOMSON, M.A., C.E.,

Hon. Sec. and Treasurer.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. II. PART 1.

Brisbane:

WATSON, FERGUSON & CO., PRINTERS, QUEEN STREET

1886.

NOTICE.

All Donations presented to the Queensland Branch of the Society are acknowledged by letter and in the printed Proceedings of the Society.

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CORRIGENDA.

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28	3	Kay	Cay.

The Geographical Society of Australasia.

QUEENSLAND BRANCH.

Vice-President:

THE HON. A. C. GREGORY, C.M.G., M.L.C., F.R.G.S., &c., &c.

Hon. Secretary and Treasurer:

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Hon. Auditor:

JAMES MUIR, Esq.

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JAMES MUIR, Esq.

REV. G. WOOLNOUGH, M.A.

E. J. BENNETT, Esq.

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MUSEUM LIBRARY

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PROCEEDINGS AND TRANSACTIONS

OF

The Geographical Society of Australasia.

2nd SESSION, 1886-7.

QUEENSLAND BRANCH.

ORDINARY MONTHLY MEETINGS OF MEMBERS
OF THE
QUEENSLAND BRANCH
OF THE
GEOGRAPHICAL SOCIETY OF AUSTRALASIA.

12th August, 1886.

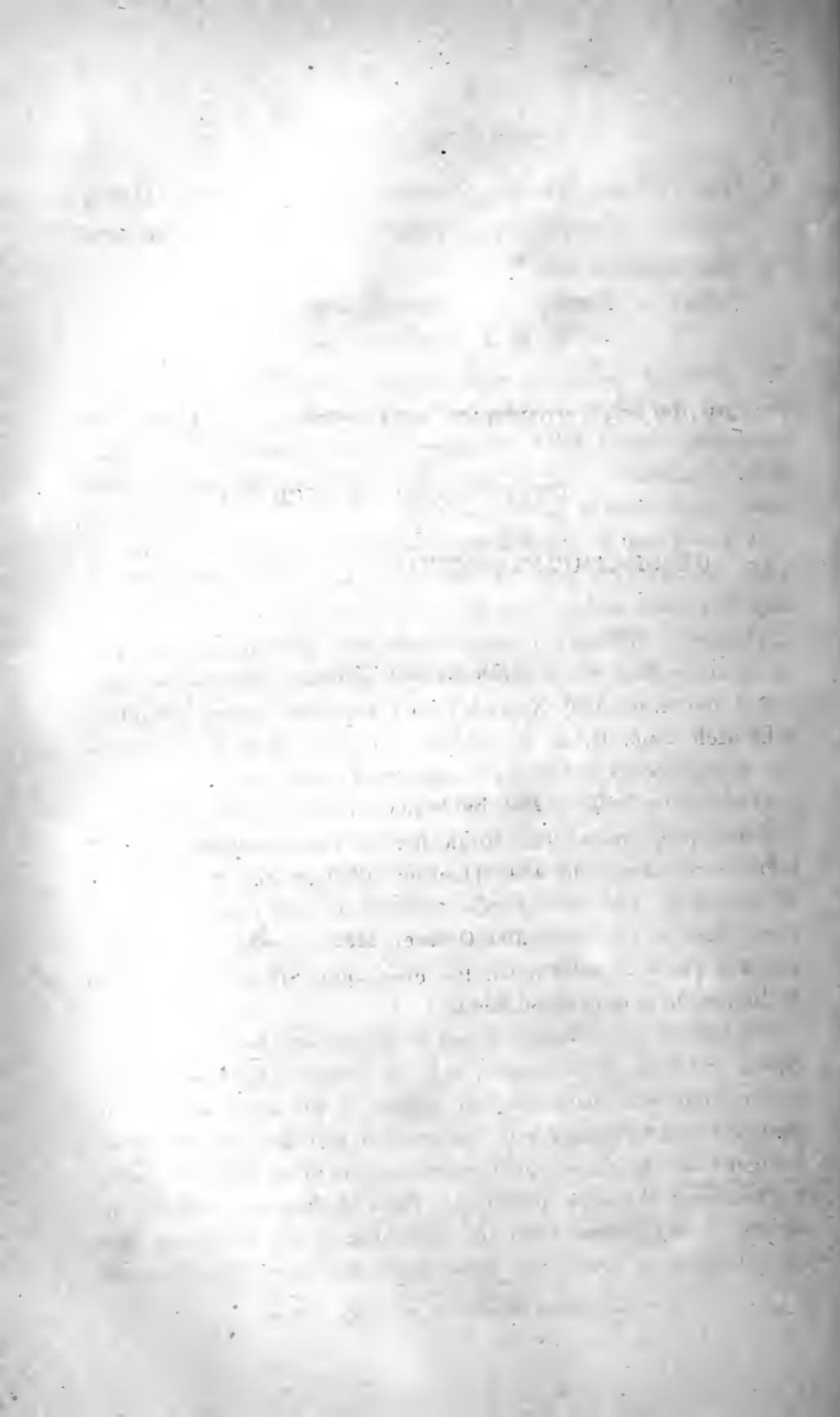
A paper, entitled Notes on New Guinea, was read by E. G. Edelfelt, Esq., M.L.S.

16th September, 1886.

A paper, entitled The Rewa River (Fiji), its Tributaries and District, was read by J. P. Thomson, M.A., C.E.

21st October, 1886.

A paper, entitled British Possession and Settlement in South-Eastern New Guinea, was read by Rev. G. Woolnough, M.A.



A few Thoughts on Natural Phenomena, Heat, Light, Electricity, Atmospheric Disturbances, Barometer, &c.*

(Read at Meeting of the Society, 29th April, 1886.)

By E. J. BENNETT, Esq.

THE ordinary replies to such questions as, Why does it rain? Because the air is overcharged with moisture. Why does the barometer rise or fall? Because the air is heavier at one time than at another; may be very true and very simple, but they must be admitted to be very meagre.

It is proposed in the following remarks to give the outcome of a few thoughts on some of the causes as well as effects which may be classed under the heading "Natural Phenomena."

The great difficulty in many cases is to discriminate between cause and effect, the connection is so intimate, the one so infinitely and necessarily appears to act and react upon the other that each cause is, in its proper place, an effect also, according as it precedes or follows the observed phenomenon.

It would be futile to attempt to explain atmospheric variations without, at the same time, considering the three existences—heat, light, electricity. Any attempt to formulate general explanations of terrestrial and atmospheric phenomena will naturally place these three in the forefront, as they more or less pervade all we see and know in nature, animate and inanimate, and appear to be the prime motors throughout.

Though by our ordinary senses we recognise these three principles, or forces, or existences, as being distinct from each other, yet in numerous instances they appear to act and react, and to change and interchange with one another, and their effects are so similar that the three would rather appear to be different manifestations of the same principle. Each of them may affect our senses to any degree from the minimum to the maximum, the quantities, so to speak, may be so small that our ordinary senses

* Inadvertently omitted from First Annual Report.

cannot detect, or so large that our senses are not equal to the strain and give way, or are annihilated.

Each, under certain circumstances, produces, or is changed into the other, and appears rather, therefore, as a varying form of the one prime principle. Heat produces light, and *vice versâ*. Electricity and light—electricity and heat—are almost in many cases convertible terms; they each appear to follow similar laws; each produces, or is connected with the production of the other, so that the separation and distinction between them is known rather by the variations in effects produced by them.

Again, each of these principles occupies the same double state—visible and invisible, sensible and latent; and such states are no indications of quantity, major or minor.

This trinity in unity view is fortified by the known existence of three forms of substantial matter—solid, liquid, and gaseous—in appearance quite different, but in constitution identical. Thus, ice, water, and vapour. The opposite also appears in some cases of compound substances to hold good, the same constituents, in the same proportions of each, result in substances very dissimilar, according as surrounding circumstances may vary.

It is not, therefore, unreasonable to hold the opinion, that all we see in substantial nature is the effect of the ruling and governing power of these three forces, influencing the arrangement of the ultimate or primary particles of which all substances consist, whether crystalline or amorphous, metallic or non-metallic, solid, liquid, or gaseous.

Without going into the question of substances which are called elements—that is substances which have not been resolved into other elements, which at present cannot be reduced any further—we find the bulk of our surroundings to consist of compound substances. Thus air is a compound of hydrogen, nitrogen, oxygen, carbonic acid, and ammonia. Water is a compound of oxygen and hydrogen, and is well known in its three distinct forms—ice, water, and vapour. Earth, vegetable, and animal substances are each and all combinations of elementary substances.

To revert to air, the most generally diffused and necessary substance by which we are surrounded; it consists, as before stated, of nitrogen and oxygen principally, but also of small quantities of hydrogen, carbonic acid, and ammonia. The oxygen is constantly being drawn away by combustion in its various forms—in other words, by the oxidation or union of other substances with oxygen; so also nitrogen and carbonic acid are being constantly appropriated from the air by vegetation and plant life.

It is not here necessary to go into the details involved in this ever-recurring change in the constituents of the air, suffice it to say that the whole process is in constant operation, taking away in one form and returning in another, meanwhile promoting either animal or vegetable life.

There is, however, an important natural law which here comes into play—namely, that each and every gas is as a vacuum to every other gas; consequently, as a gas would be equally distributed throughout a vacuum, so each gas is equally distributed through the air, with no limit except that of the atmosphere itself, which probably has no limit in theory, though, practically, by the diminution of the attractive force of the earth and the expansive force of heat, the atmosphere becomes so attenuated that it ceases to exist.

The air, then, is an envelope surrounding the earth, and would, except for other disturbing causes, rotate with the earth uniformly. Such, however, is not the case; we feel and see the effects of wind in every degree. Wind is the effect of some disturbing power or cause. What then is the cause?

Heat appears to be the chief cause by rendering the air more attenuated, and being more attenuated the weight of a given quantity or volume is reduced; as weight acts vertically downwards, the effect of reduction of weight is to act vertically upwards, or rather the weight of the adjacent heavier air acting downwards and laterally presses the lighter air upwards.

As cold is the absence of heat, so also in the case of electricity it would appear that instead of there being two kinds of electri-

city, usually termed positive and negative, it is rather, as the terms would imply, electricity on the one hand and absence of electricity on the other. So also the absence of weight is lightness.

A solid substance stands in the same relation to a liquid as a liquid does to a gas. So also a gas may hold a similar relationship to a still more highly attenuated principle. The effect in each case is the same—namely, that the particles are removed farther apart from each other, and therefore, within a given space, there are fewer particles, and consequently the weight is less. Heat would appear to occupy this position of being a solvent, and not only so, but to be the chief and prime solvent; though a salt may be dissolved in a liquid, yet a solid metal may be reduced to a liquid by the addition and application of heat, and a liquid similarly into a gas.

Let us now return to the disturbances occurring in the air.

Within the tropical belt of the earth's surface the quantity of heat is far greater than in the temperate and arctic regions, consequently the air in the former is rendered lighter (speaking in general terms), and being replaced by the colder adjacent air a disturbance is at once produced.

Another noticeable feature is that the rising air has a natural tendency to a spiral movement, the extent of which is governed by the extent of the area affected by the addition of the quantity of heat. The effect we constantly see exhibited in varying magnitude from the tiny dust whirl to the tremendous cyclone.

As gases practically expand into unlimited space, so also will heat expand, and being thus dispersed the resultant negative, cold, immediately comes into play. Now, as vapour in its uncondensed state is practically a gas or water dissolved in heat, so the hot air holds, and can hold, a far larger quantity of vapour of water than cold air. This supersaturation is neutralised directly the extra heat radiates away into space and the soluble vapour becomes condensed and is visible, so that the formation of clouds is entirely dependent first on the solution of a quantity of water in heated air, and secondly on the condensation of the same water by the dispersion of the requisite supply of heat.

There are so many local causes for differences and variations in results, or in the causes and effects, that it would be impossible with our present state of knowledge to lay down the facts applicable to every case. We know, however, that certain localities and tracts are liable, some to greater, others to lesser visitations of rain, the explanation usually given being that elevated ranges of hills or vegetation have the power of attracting rain which other localities do not possess. This, especially as regards vegetation, seems rather to mix cause and effect (vegetation being rather the effect), inasmuch as a certain current of air would probably hold in solution the same proportion of moisture irrespective of the country it happened to pass over; the cause therefore must lie in the attraction exercised by locality towards the solvent of the moisture, in other words, some peculiarity to abstract the heat, in whatever form it may exist, and thereby precipitate the moisture. I say in whatever form it may exist, and this brings me back to the question touched on at the commencement, the interchangeableness of heat, light, and electricity. We know from actual experiment that electricity is produced on the condensation of steam issuing in a jet from a high pressure boiler, and can be collected in the usual manner. The usual explanation for this fact is, that it is caused by the friction of the particles of water coming into contact with the metal points; this, I think, is hardly satisfactory, and I am inclined to the view that it is the setting free of latent heat taking the analogous form of electricity. We also know that in making steam, we pour in any quantity of heat into the water in the boiler without raising its temperature (except under additional pressure), the only effect being the production of steam; the heat becomes latent or non-operative on our senses or the thermometer, the water is therefore dissolved in heat, and is invisible. *Vice versâ* on being again condensed it becomes visible as steam, and gives out the heat, this heat taking the form of electricity partly.

Applying this to the vast laboratory of nature, we may reasonably expect similiar results. The sun, as the source of heat,

furnishes the solvent of the water, causes the upward rising of larger or smaller areas or bodies of air, taking them both, the air and dissolved water, into the higher regions where the heat is again dissipated into space, thereby producing cold or negative heat, thereby also reproducing water, or in extreme cases, by the intensity of cold, producing ice, even in tropical regions. This condensation, again, setting free electricity which results in thunder and lightning storms; for it is to be noted, that hail storms are always coincident in tropical regions with thunder storms, and both are the effect of the sudden cooling of heated columns of air saturated with moisture being carried up into regions of intense cold. As a corollary, I may venture to state, that the size both of rain drops and of hailstones depends greatly on the height at which they are formed, gathering size in passing down through saturated air and by their own cold condensing extra moisture in their course, thereby adding to their own bulk.

Other causes may, and do produce rain, though the main principal is the same—namely, that rain is the result of the cooling a body of air which is fully charged with moisture by the elimination of a portion of heat which is necessary to hold that moisture in solution. The production of the rain may be, and is frequently, caused by a hot saturated current of air meeting or mixing with a colder current, or with any other body or object which has similar effect whereby the temperature is reduced. It would seem, therefore, not improbable that certain localities have the power of extracting heat or electricity from the air, and thereby hold the enviable position of being known as wet belts or regions. This is very noticeable in the case of Mackay on the Pioneer River, in this colony, where the rains are quite of a tropical character, although the country north of it is not at all so favoured. The same applies in a considerable degree to the Tweed River district in New South Wales.

The sun is, doubtless, the principal source of heat, and heat, again, is the principal cause of disturbances in the atmosphere; but there are many other causes which affect air currents. The rotation of the earth; the configuration of the land and oceans

and their relative proportions. Ocean currents are affected similarly to air currents, except that the water cannot rise as does the air to great heights. These all interchangeably act and react upon each other, rendering the attempt to arrive at any certain result or knowledge of coming changes of weather almost hopeless, except by working out probabilities from a series of methodical observations on an uniform and systematic plan and extending over long periods. This is now being carried out to a large extent in various parts of the world, but will give practical, rather than theoretical, data on which to base weather tables.

This brings us to the consideration of the barometer, an instrument which, as its name denotes, is a measurer of weight as applied to the air. The barometer, or kindred instruments, show the variations in the weight of a column of air over or under an assumed standard. This standard is taken at a fixed temperature and at the sea-level. Mercury is usually employed to fill the glass tube, because it is the heaviest fluid; it requires a height of about thirty inches to balance the pressure of the atmosphere. Water or any other liquid might be used, but a much longer tube would be necessary so as to represent the same weight. It is not necessary to go into the principle of the barometer beyond stating that the air acts upon the open or exposed surface of the mercury, causing it to rise or to fall at the other end of the glass tube, which, being hermetically closed, retains the vacuum originally obtained when manufactured. Thus, then, the greater the weight of the atmosphere on the exposed surface the higher will the mercury rise in the tube, and *vice versa*. What, then, causes the change in the actual weight of the column of air as affecting the mercury in the barometer?

Not the moisture held in the air either in a state of solution or in its condensed form as clouds. If such is the cause, a saturated air would always be heavier than the opposite state.

It would appear, rather, to be the effect of change of weight produced by the upward or downward currents of air. Thus, if a column of air represented by a circular ascending heated mass, by its inherent quality of lightness, exerts a certain force

upwards, by exactly that amount of force is the actual weight of the average height of the atmosphere reduced, and *vice versâ* with the downward replacing current. So, if in a certain locality an upward movement of air is caused by heat, there must of necessity be a corresponding downward supply to take its place, the former representing a decreased and the latter an increased weight on the surface of the mercury, indicated by falling barometer in the former and rising barometer in the latter case.

This is constantly illustrated on board ship where cyclones are met with, especially in tropical latitudes. The circular character of the storm is denoted by the wind changing all round the compass, the strength depending both on the general violence and also on the particular part of the cyclone encountered. The barometrical effect is always the same, and only varies in degree; it always indicates a fall in the mercury or the equivalent reduction of the weight of the atmosphere, and is accompanied also by electrical discharges and heavy rain.

If these surmises are correct, it is not unreasonable to expect that if man can devise a means of drawing off or adding electricity, as the case may be, to the clouds, thus bringing about a change in the thermometrical state of the atmosphere also, he will, with the advance of such knowledge, be able to command to a great extent the clouds and rain. The known change of climate may, and probably does, primarily arise from the increase or decrease of evaporation caused by the vegetation, producing thereby electrical changes and corresponding increase or reduction of heat, and consequent ability to hold more or less moisture by the air in that particular locality.

In conclusion, to refer in a few words again to latent heat. There are many illustrations of its existence: thus heat may be evolved from cold iron by hammering, by mixing two or more substances together, which in combining form a more dense mixture or compound, as water and quicklime, water and some acids; and also by the reverse process,—salt and ice, whereby the salt having a great affinity to water (liquid), and in satisfying that demand, requiring the conversion of the solid ice into the liquid

water, robs itself and everything it is in contact with of heat in its sensible form and converts it into its latent form. So with ammonia and all volatile substances, as additional heat in the latent state is necessary to the gaseous form, so the volatile solid or liquid substance on assuming the gaseous form produces cold. Minutely divided metals also will burn or become oxidised on coming into contact with the oxygen of the air, thus producing the same effect of heat by the conversion of the gaseous oxygen into the solid metallic oxide.

These examples appear to indicate that there is a general law affecting matter, that heat is the chief solvent, and that the diverse forms of matter, whether gaseous, fluid, or solid, and in all the infinite degrees and varieties, are consequent on the quantity of the solvent separating their constituent particles or atoms more or less from each other; that sudden separation apparently produces cold, and that condensation produces heat.

FIRST ORDINARY MEETING.

THE first ordinary meeting of the second session of the Queensland Branch of the Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of Thursday, 12th August, 1886. Mr. W. H. Miskin occupied the chair.

THE HON. SECRETARY read the minutes of the previous meeting, which were confirmed, after which the following gentlemen were elected ordinary members of the Society, by ballot:—Captain John Mackay; E. G. Edelfelt, M.L.S.; E. J. Stevens, M.L.A.; W. Allan, F.R.G.S.; John Watson, S. T. Debney, S. G. Briggs, J. A. Robertson, Alfred Delisser, M.I.C.E.; Robert Abbott, A. McDowall, T. Mylne, J. O'Connor, W. R. Twine, sen.; J. Falconer, Rev. W. O. Lilley.

THE HON. SECRETARY announced the receipt of six donations to the Society.

THE REV. G. WOOLNOUGH desired to know whether the complete *résumé* of the Society's exploration expedition to New Guinea had yet been furnished to the Queensland Government by the New South Wales Branch of the Society.

THE HON. SECRETARY, in answer to the last speaker's question, said that from information he had received he believed that the necessary information would be furnished so soon as the various specimens collected by the expedition were classified. He had been informed that the whole of the money contributed by the various Colonial Governments towards the equipment and maintenance of the expedition had been expended thereon, but that the accounts in connection therewith had not yet been audited by the Government.

THE REV. G. WOOLNOUGH asked if the Society had any additional information regarding the proposed exploration of the antarctic regions?

THE HON. SECRETARY, in reply to the last speaker, stated that

he understood negotiations were taking place between the Victorian Branch of the Geographical Society and the British Association, also between the Premiers of the various Colonies of Australia, in regard to the matter.

The following paper was then read by the author:—

Notes on New Guinea.

By E. G. EDELFELT, M.L.S.

New Guinea has for a considerable time been the centre of attraction in political as well as scientific circles all over the world, but more so to the Australian Colonies, which, when we look upon it from a geographical point of view, is not at all surprising, inasmuch as New Guinea has at some former time been part of Australia, but by some freak of nature is now separated from the Australian continent, as we all know, by Torres Straits.

Much has already been written about this great island, but unfortunately as yet we know comparatively little or nothing of New Guinea proper—I mean the interior of the island—and as New Guinea is of immediate importance to Australia, the more information we have from this island the better for Australia, and I should say especially for Queensland.

I shall now proceed to give a short narrative of a trip from Port Moresby to the Hilda River in November, 1884. I left Port Moresby for Maiva, a coast village about eight miles north-west of Yule Island. I was recommended by Mr. Chalmers and Captain Liljebblad to make this my headquarters, as from there it was supposed I would have an easy access to Mount Yule, the object of my journey, as it was already then rumoured through the papers that Mr. Forbes had chosen Mount Owen Stanley as his field of operation. On that ground I directed my attention to Mount Yule, where I expected great results in floral discoveries.

My botanical researches in New Guinea were entirely a private enterprise on my own small means, and a Mr. T. A.

Gulliver, from Townsville, who spent a considerable sum of money for botanical and other scientific researches in New Guinea.

I stayed a few days at Maiva to acquaint myself with the natives for the egoistic purpose of obtaining their assistance to carry my goods and pilot me part of the way towards Mount Yule; after a fortnight's residence amongst these good people my object was accomplished; and on the 24th of November I set out with ten carriers and Maka, a teacher, who volunteered to accompany me on my journey to Mount Yule.

For about two miles we travelled in an east-south-easterly direction, through low country with part mangrove swamps, and this country had all the appearance of being subject to heavy floods, as flood marks on the trees indicated such in every direction.

At midday we reached Paihana village, which would be about five miles in a direct line north from the coast, somewhat opposite Hall Sound. The village contained about thirty houses, mostly poorly built, and situated in a densely-wooded spot, intermixed with groves of cocoanut palms; and a distance of about one mile south of the Hilda River.

The natives received us in a very friendly manner, and at once offered us cocoanuts and betelnuts. Every male native carried a bark blanket on his shoulder, a custom I have never seen anywhere else in New Guinea, and before seating themselves would first spread their bark blanket on the ground.

As my Maiva carriers would not take me any further, although only midday, I had to remain for the day, and at once arranged with the Paihana chief, Aruoba, to secure me carriers, which he promised, and to take us away the following morning early, to Yavetta village, a day's journey from there to Mount Yule, or Kobia, as the natives call it. And moreover said, he would send his people back, but would himself go with us to Mount Yule, or Onioni village at the foot of the mountain. The Paihana people are the same who are supposed to have killed Dr. James, an American, and Mr. Thorngreu, a Swede, when anchored off Yule Island some years ago.

On the following morning, 25th, everybody was up early, and when the time for my departure arrived, I had no carriers; after some remonstrance with the chief, a few men volunteered to take me away, but the worthy chief himself had in some mysterious way during the night got his foot lamed, and consequently stayed at home. A Papuan's promise can rarely be depended upon.

However I set out with my small party and crossed the Hilda River in canoes, as the path leading towards Mount Yule was about half a mile up the opposite river bank from the place where we embarked. On reaching this path the first half mile we travelled under a complete archway of tall rank grass; and then we came into a rich forest country with a beautiful green sward of nutritious grass, admirably suited for stock.

We met a number of native men and women laden with fruit and vegetables, which they carry in netted bags, on their way to the market to exchange their goods with the people on the other side of the river. They became rather excited on seeing me, but gradually becalmed themselves; and some of them left their companions to go on their market business, and conducted us to their village, Nanea.

On entering the village the inhabitants raised their voice to the highest possible pitch, in astonishment to see such a party, carrying articles incomprehensible to them. We were at once conducted to the principal chief's house, and through my companion, Maka, the teacher, and one of the Maiva men who spoke the dialect of these people, I was formally introduced. Generally the first thing the Papuans ask a stranger is his name, and the object of his visit.

When these forms were gone through, a house was placed at my disposal, and my party installed themselves as comfortably as circumstances would permit.

As I was the first European that had visited this district, the people made a great deal of me, but I found it necessary to reside amongst them for a few days in hope of obtaining their assistance to pilot me and carry my luggage to the foot of

Mount Yule; every day I related to them my object for residing with them, but they never once offered to take me away.

I made daily excursions for miles within the boundaries of their own district; where numbers of people would accompany me, always unarmed, and in every way attentive, and each one anxious to serve me. But when it came to the day I wished to proceed on my journey, all refused me their assistance, on the ground that they feared the mountain people would kill me, and the Brilaneanna man would blame them for my death. But the sole object was jealousy of my trade, they wanted it all themselves, and not to fall into the hands of tribes beyond their own district.

After two weeks' stay they were just as reluctant to accede to my wishes as on the first day of my arrival, and after the expiration of the third week I, with sorrow and dismay, had to set out on my return journey to the coast.

During my stay amongst these Nauea people they treated me most kindly; they supplied me and my party with food, water, and wood, without asking the least remuneration, which is always done on the coast, or elsewhere, where the Papuans have had dealings with Europeans.

Every afternoon at 4 p.m. when the people commenced to come in from their plantations, for a whole week I had to sit in state on the veranda of the chief's house and exhibit my white skin. The people were very orderly, and always treated us with respect; it is a large community, at least 1,500 inhabitants in this one village; they are of a medium stature, clean, healthy, and well fed, and mostly of a light colour, even as light as many half castes of a Tahitian origin, intelligent and industrious. Here I saw for the first time in New Guinea hammocks made of bark cord, on the same principle as our own European make.

The village is situated about two miles east of the Hilda River, and surrounded by the most fertile country I ever saw anywhere else, with a luxuriant vegetation; here grew many esculent roots new to me, and all of an excellent quality, and so far as I am able to judge, this country, from the foot of Mount

Yule to within a short distance of the coast, is most valuable for agricultural or pastoral purposes.

Whether the Hilda River will ever be of any practical navigable service to future settlers is more than I can say; if the natives' information can be relied upon (but I am sorry to say their statements are not always in accordance with the truth), they maintain it always contains plenty of water. At the time of my visit the wet season had already set in, and the river banks were overflowing with a strong current, which prevented my progress; but so far as I ascended it, it was not less than two chains wide, and in some places much more, and with almost perpendicular banks; it flows into the Edith River near the coast, and empties its contents into the sea.

And, furthermore, I am of opinion that the Hilda receives its sources from the interior, immediately at the back of Mount Yule, and as the western side of this mountain terminates very abruptly, and apparently almost forms a perpendicular wall, I firmly believe the river has its course under this wall or within a short distance of it. If this is correct and the river proves navigable at all seasons of the year, this will be a most important route for future explorers, as this route would bring them into the centre of the south-easterly portion of the island. And as the western side of the Mount Owen Stanley Ranges gently slopes into the eastern side of Mount Yule and forms a saddle between the two mountains, I should think from this centre the Mount Owen Stanley Ranges could easily be explored, and probably from this point the summit of the mountain itself could be reached. As it appears to me that Mount Yule and Mount Owen Stanley is one continuous mountain chain, with the exception of the so-called saddle which divides the two mountains, and as Mount Yule terminates very abruptly, as I believe, when it meets the Hilda River, I have every reason to think my supposition is correct, as from this point a vast extent of level country supersedes the mountain and traverses a north-westerly course for many miles.

The Nauea natives gave many interesting narratives relating

to the people on the other side of Mount Yule, such as—"There are men with long tails." These, of course, are only beings of their imagination. The natives in the Astrolabe Ranges give the same tale about Mount Owen Stanley. False or true, these statements only added in a great measure to my desire of visiting the locality where these supposed wonders dwelt, in hope of adding something new to the science of natural history.

I have every reason to believe that the whole of this district is healthy, and will eventually be one of the localities for European settlement.

In every village I passed through I was astonished to find a number of fowls cooped up in long coops made in true European style. The birds are merely kept for the feathers of the male, which are particularly bright and used for ornaments. They are something similar to the Malay fowls with the exception of being a shade bigger. I took two with me to Townsville, but on my arrival there they died, which I attribute to the strong sea air, as they were bred in the mountains, and also the unsuitable food during the voyage.

On my return to Maiva I stayed there a few days, and made a small collection of botanical specimens. The Maiva district is dry, consisting of a series of hills up to 600 feet above sea level, with slate and ironstone. The vegetation is mostly a stunted eucalypti growth, and the natives are compelled to have their plantations in the valleys, where there is more moisture and shelter for the fruit trees and vegetables.

I found several quartz pebbles of a very good quality, water-worn. They had in all probability been washed down from the hills, as they were found in a shallow watercourse, which only contains water during exceptionally heavy rains. And amongst the natives I saw numbers of large brilliant crystals, obtained from the neighbouring hills, and used by the natives as charms when hunting or courting.

On the hills, about a mile from the village, I discovered in calcareous beds a number of marine fossils of a recent formation. These I presented to the Government geologists, Mr. Jack, of

Townsville, and Mr. Wilkinson, of Sydney. Now, I venture to say that if any gold shall be discovered in New Guinea it will be in the Maiva district, but whether it will be in payable quantities I will not undertake to predict; and we shall see, at a time when New Guinea is thrown open for settlers to develop the resources now latent, if Maiva will not be one of the districts where the digger will search for the precious metal, and find it too.

Maiva is situated close to the sea, consisting of several villages with a numerous population, with abundance of sago and coconut palms; the only drawback to the progress of this village, should it ever become a European settlement, is that there is no harbour, and for the tremendous surf it is with extreme difficulty anything can be landed without being completely overwashed, and frequently the boats or canoes upset, and everything in them is precipitated into the sea. In early morning about sunrise is generally the best time to land, as at this time it is usually calm, while the wind shifts either to the north-westerly or south-easterly quarter.

The Maiva people are very interesting; the women are much tattooed, and have hard masculine features, but laborious and of an animated temperament. The men are indolent and full of conceit, pay great attention to their scanty way of dressing, and seem to be passionately fond of dancing and singing, which at the time of my visit they kept up to the small hours of the morning.

Now, gentlemen, in conclusion, I beg to say a few words in reference to the climate. Much diversity of opinion is manifested on this subject, and no doubt it is of great importance to future settlers in New Guinea. Those who know something of New Guinea, and desire it to be occupied by Europeans, say that the climate is not more detrimental to the white man than the climate of North Queensland. Those who know a great deal of New Guinea, and do not desire it populated by Europeans, say the climate is most injurious to health.

Captain Moresby gives an excellent account of the climate, and probable resources of the island, and so does the present High Commissioner, Mr. Douglas; so also have other writers done who

from time to time have visited the island. And to take two living examples of the correctness of these statements, we know Messrs. Lawes and Chalmers, who have been there several years, and where do we find two healthier looking men than these two gentlemen are? I myself was there fifteen months, and was not indisposed one day from the supposed ill effects of the climate.

It has been said, through the Press, that the late Sir Peter Scratchley met an untimely death through the severity of the climate, but I say—No! Sir Peter Scratchley was advanced in age, and moreover was under medical treatment in Melbourne previous to his embarkation for New Guinea, hence I say the climate of New Guinea can be endured; but if we go to New Guinea with an impaired constitution, we must be prepared to meet fatal results.

At the same time I do not deny that New Guinea possesses many unhealthy places; but if sanitary laws are strictly carried out, fever and many other complaints peculiar to tropical regions can, to some extent, be prevented; and I trust these conflicting reports as regards the climate will not retard any settlement in New Guinea. And we should hasten on to develop the resources, and convert them into profitable industries, which in my opinion would be of great benefit to Australia.

The CHAIRMAN, in thanking Mr. Edelfelt for his paper, said that such literary acquisitions were of great importance to the Society, and it was highly desirable that the Society should have every possible information concerning the various localities of New Guinea, and the paper read would, no doubt, be a valuable addition to their communicated knowledge. He invited discussion.

At the instigation of the Rev. G. WOOLNOUGH, a conversation took place regarding the question of British settlement in New Guinea.

Mr. EDELFEIT said that he did not think there would be any difficulty in the way of Europeans acquiring land in the districts visited by him. There were millions of acres unutilised except for the purpose of hunting; and the land was so fertile that the natives only required small areas for planting purposes.

Mr. J. P. THOMSON stated that Mr. Edelfelt was about to proceed to British New Guinea, where he intended residing for two or three years, and that he had kindly promised to furnish the Society from time to time with information descriptive of the localities within the scope of his operations. He thought it desirable that writers of papers upon New Guinea should endeavour to prepare sketch maps, with the positions of the most prominent points approximately determined in regard to their latitude and longitude, and also an approximation of the height of the mountains; the width and depth of rivers, and the strength of their currents. From the various papers read before the Queensland Branch of the Society on New Guinea, he considered that the Society was now in possession of a very fairly connected description of the south eastern seaboard of the British possessions. From the Admiralty chart, he had approximated the position of the Hilda River to be in latitude $8^{\circ} 40'$ south, and longitude $146^{\circ} 40'$ east. The author's opinion in regard to the Hilda River proving a probable successful and short access to the Owen Stanley Ranges was, he considered, a most important factor of geographical information, which ought to receive serious consideration by intending explorers in New Guinea. He thought it very probable that minerals would be found in the Maiva district, judging from its general conformation, although he believed that the old metalliferous rocks of New Guinea would be found to exist in the high mountain ranges of the interior. He thought the author had misapprehended the place names of the district, as the locality he had described consisted of several native villages; probably the name of the district was Maiva, and that each separate village comprised within the boundaries of the district has its distinctive name, as he had found similar conditions in many of the Polynesian islands. He concurred with the author in regard to climatic condition, but did not consider the condition of the European missionaries as being in any respect an exemplification of its effect. The European missionaries in Polynesia, he said, were well provided with domestic comforts

agreeable to place and climate, which, under the circumstances, rendered life more enjoyable than otherwise ; the explorer and cultivator of the soil were more fitting examples in judging climatic effect. He further referred to the natives and their tribal rights and land laws.

Mr. EDELFEIT endorsed the remarks of the last speaker in regard to the name of the district, and the condition of the European missionaries.

The CHAIRMAN announced that a paper would be read by the Hon. Secretary, at the next meeting, upon the Rewa District, Fiji.

The proceedings then terminated.

SECOND ORDINARY MEETING.

THE second ordinary monthly meeting of the second session of the Queensland Branch of the Geographical Society of Australasia was held in the Museum Library, Brisbane, on Thursday evening, September 16th, 1886, at 8 o'clock. Dr. WAUGH occupied the chair. There was a large attendance of members and visitors, including a number of ladies.

The HON. SECRETARY read the minutes of the previous meeting, which were confirmed, and announced the receipt of two donations to the Society since last meeting.

The following letter, from Capt. J. B. Robertson, was read:—

9 Dock Street, Brisbane,
12th Aug., 1886.

The Hon. Secretary,
Geog. Soc. of Australasia,
Brisbane.

Sir,

I have the honour to inform you that when I was master of the schooner "Flora," trading from Queensland to the South Sea Islands, in the year 1883, I discovered a clear passage through the Barrier Reef, from five to six miles in width, and lying N.E. from Mount Bartle Frere. To enter the said passage from seaward, bring Mount Bartle Frere to bear S.W., and steer with it on that bearing until the Southern Frankland Island is sighted. Bring that island to bear S.W. $\frac{1}{2}$ S., and steer, keeping it on that bearing which will lead in mid-channel between the reefs. The outer edge of the Barrier Reef appears to be distant about 20 miles from the Frankland Islands. I consider the discovery of this passage a very important one to vessels trading to and navigating Queensland waters, as there is nothing like it in any other section of the Barrier Reef. The Trinity Opening north of Cairns is very dangerous as it is full of "horses'-heads" and strong currents. The Trinity Opening was doubtless taken by

the "Young Dick," labour schooner, when she came to grief; and doubtless there may be still some survivors on a sand kay adjacent, or on Green Island on the south side of the opening, for which a search should be made. Trusting you will bring the above statement before the public through the medium of your Society,

I have the honour, &c.,

(Signed) J. B. ROBERTSON.

A circular letter was also read from Professor Liversidge, F.R.S., of the Sydney University, inviting co-operation in the proposed formation of an Australian Association for the Advancement of Science. The letter stated that it was proposed to hold a meeting in Sydney on an early date, in order to make preliminary arrangements for a meeting in 1888.

The CHAIRMAN said that the proposed meeting in Sydney would practically be a scientific parliament, assembled to discuss scientific subjects. It would be the first step towards the federation of the scientific societies of Australasia, and also towards entering into lines of close communication with the scientific societies of Europe.

MR. J. MUIR said he considered it highly desirable that the Queensland Branch of the Society should be represented at the proposed meeting in Sydney, and if possible, by members of the Council. He thought it was usual to send either the President, or the Hon. Secretary, as representatives in such cases.

The Rev. G. WOOLNOUGH moved that a reply should be forwarded to Professor Liversidge, signifying that the Queensland Branch of the Geographical Society of Australasia intended, in so far as it is able, to comply with the request contained in his circular letter. The resolution was seconded by Mr. J. MUIR, and carried unanimously.

The HON. SECRETARY presented to the meeting the first annual proceedings of the Queensland Branch of the Society, and intimated that printed copies were now ready to issue to members of the Society.

The Rev. G. WOOLNOUTH said the volumes were beautifully got up; they were a valuable addition to the Society's literature, and a credit to the Council.

The following paper was then read by the author:—

The Rewa River (Fiji), its Tributaries and District.

By J. P. THOMSON, M.A., C.E., Hon. Sec. and Treasurer.

In the last paper I read before the Society on the 12th January, 1886, I made a promise that the next I prepared should be descriptive of the Rewa River, the District, and its sugar industries; accordingly, the pleasing task I now endeavour to accomplish, will be the fulfilment of the promise so made. Before formulating the subject of my paper, pray permit me to crave your generous indulgence while I explain one or two points which at first sight may not appear very clear to the members of our Society, and the people of this colony generally. Fiji, owing to its geographical position, is somewhat isolated from the Australian Colonies; and it is only of late years that regular steam communication has been established between the sister colonies and the capital of the fair Colony of Fiji. Consequently there are numbers of people who, owing to the absence of reliable information, have but a faint idea of the magnitude and importance of the Fiji Islands, and may wonder as to what benefit can be derivable from a description of any portion of the colony referred to. In answer to all such querists, I would gently remind them that an accurate description of any unknown or imperfectly known portion of the earth's surface, and the human family thereon, ought always to be acceptable to a scientific society, having for its chief objects geographical research. Considering the active part taken by Fiji at the late Federal Council, we may fairly assume that the colony referred to, in the event of federation being brought about, will form an integral part of federated Australasia, and it will therefore become apparent to all intelligent colonists that

they should endeavour to learn all they can regarding their adopted sister. Much has been written and told about Fiji, both in books, newspapers, and by individuals, nearly all of which, in my opinion, has been misleading, and containing gross misstatements highly calculated to materially injure the colony, to enlist the odium of the outside world on the colonists, and calumniate those intrusted and connected with the administration of the public affairs. Nearly all book writers have been brief visitors; men who make a rapid tour through the principal centres of population—some have, perhaps, never even seen the colony—in search of something fresh to relate to the world, and lending an ever willing ear to the babble of the multitude, and the thrilling story of some unfortunate aggrieved one, which, combined with their individual impressions, is sufficiently comprehensive to build a considerable volume containing a very romantic and highly interesting account of Fiji, eagerly read and digested by the outside world. Newspaper reports are often supplied by the same class of writers, while others of equally minimum importance supply the balance. From such unreliable and questionable data, the outside public have hitherto derived their information regarding the Colony of Fiji, and many more islands in Polynesia; hence the harm done, the evil results and effect thereof. In verification and support of the foregoing statements, I here quote from His Excellency Sir William Des Vœux's annual message to the Legislative Council, in March, 1879:—"The necessary condition of progress would not long be absent, if, instead of pressing for what will not be conceded, they—the colonists—would occupy themselves in making known the advantages which they already possess." An admirable advice which I concur in, and if acted on would doubtless produce a most beneficial and permanent effect. Again, I quote from the minute of His Excellency the Hon. J. B. Thurston, upon a petition from the Levuka Chamber of Commerce to Her Majesty's Government, praying for the discontinuance of the Native Taxation Scheme, &c., presented to the Legislative Council, 9th April, 1886:—"His Honour further

hopes that the action he has taken in the matter may in some measure neutralise the injury inflicted abroad upon the commerce and reputation of the colony, by a section of the community who appear determined never to be conciliated; and who, in their efforts to subordinate the interests of the native race, permit themselves to utter the most sweeping and reckless statements in disparagement of the Colonial Government." As I am ever desirous to promote the interests and welfare of every young colony, I now ask the public of Australia, through the medium of this paper, to discountenance and ignore all odious newspaper and book reports descriptive of the colony and native race of Fiji. I believe I can claim the honour of being the first to write about Fiji for a geographical society, it will therefore be my aim to give you an accurate description. Having thus introduced myself, I will proceed with the subject of this paper, and in so doing I crave the charity of all good men.

New arrivals in Fiji, who are at all romantically inclined, cannot fail in being greatly surprised at the magnitude and grandeur of the rivers which drain the immense volume of water falling on its green verdure-clad surface, and when one takes into consideration the dimensions of the islands, the number of the rivers and their relative magnitude are really marvellous. The largest river in Fiji is the Rewa, in the island of Viti Levu (the largest island in the group). It is formed by the confluence of the Wainibuka and Wainimala, and at 28 and 11 miles from its mouth receives as tributaries on its right bank, the Waidina and Waimanu. Its navigable length, inclusive of tributaries, is about 72 miles, and it drains a surface area of about 1,360 square miles, equal to about one-third the area of the whole island; and over the area so drained, there is an approximate average annual rainfall of 130 inches. It is influenced by the tides of the ocean for a distance of about 27 miles from its mouth, and, as in the majority of tidal rivers, the several entrances are obstructed by a bar, and extensive areas of mud flats locate in the vicinity of its mouths. The Rewa, as a glance at the accompanying map will show, may be entered by five

different channels, all of which are separated from one another by extensive delta, and protected from the fury of the ocean by a complete barrier of coral reef, which lavish nature has designed and built up so as to defy the anger of the ocean, and being anxious to provide for the wants of her children and perfect her handiwork, she has left channels wide and deep enough to admit the largest ship afloat. The most western entrance to the Rewa is that mostly used by steam launches and small sailing crafts. It debouches into Laucala Bay, and is distant, by water, from Suva about eight miles; it is not a deep channel, and serviceable only to vessels of light draught; it has a width of 792 feet from bank to bank, which is fringed with dense mangroves, and running in a circuitous direction for a distance of three miles, joins the main stream at Katanaedewa. The main mouth of the Rewa River is separated from the last named channel by Laucala Island. Vessels sailing from Suva will steer right across the bay for Laucala Point, and after passing between the said point and Nukulau Island will alter their course, turning sharp to the left, and steering in a northerly direction for a distance of one mile and a-half, enter the main mouth of the Rewa, with the island of Laucala on the left, and Mataisuva on the right, at which place the mouth of the river is 3,063 feet in width. Great care on the part of strangers is however necessary, as there are several small coral patches off the main entrance which in rough weather are very unwelcome obstacles to encounter. Once inside the mouth of the river there are no dangers in the way, and vessels may proceed on their course up the stream, the only obstruction likely to be met with is the five small islands opposite the native town of Vutia, just inside the mouth, and the shallow parts of the river. The main channel from Nukulau Island to Mataisuva has an average depth of from ten to five fathoms, and from Mataisuva to Tovutovu the depth of the river varies very slightly, obtaining a uniform depth of about three fathoms, and an average width of 2,244 feet. The banks of the main stream in the vicinity of its mouth present a very clean and inviting appearance, being almost free from the detestable mangroves,

and the seashore to the east and west are fringed with beautiful sandy beaches. In that respect the mouth of the Rewa proper may be said to differ in a very marked degree, not only from its minor channels, but from all other large rivers in Fiji. This difference in physical condition might, perhaps, form a very interesting subject for investigation: the difference is striking and really remarkable, the more so when viewed from surrounding conditions and considering that all the eastern and western banks of the western channel, and all along the shores of Laucala Bay, are fringed with dense belts of mangroves extending for miles along the shore flats. The only reasonable conclusion that I can arrive at in satisfaction of the remarkable difference in physical condition referred to, is marine and submarine agencies. Owing to the conformation of Laucala Island, the mouth of the western channel is effectually protected from the force of the prevailing winds, and all along the head of Laucala Bay there are immense deposits of mud; and the absence of strong ocean currents causes the water to be sluggish, which, combined with rich deposits of soil, foster the growth of the mangroves. The foregoing conditions are absent at the mouth of the main channel, and instead of large mud deposits there are sand and shingle and strong ocean currents, while there is nothing to afford shelter from the force of the strong winds. The difference in the foregoing local agencies is, in my opinion, sufficient to account for the marked contrast between the two localities referred to.

The island of Namukulau is right off the mouth of the Rewa, being distant therefrom about two miles. In shape it is slightly elongated from east to west. Surrounded by a coral reef, and the shores fringed with nice sandy beaches, which at all times give the island a clean and healthy appearance, its central section is adorned with beautiful shrubs; and in great profusion, towering in stately grandeur, is the majestic cocoanut palm. The island is used by the Government, who have constructed a wooden jetty and erected several commodious wooden buildings on the western side, for a Coolie immigration depôt. The immigration ships chartered by the Government sail direct from India to Fiji, and anchor in

Laucala Bay, where the Coolie immigrants disembark and locate in the Namukulau depôt until such time as they are taken away by the various planters to whom they had previously been allotted; and I should imagine that they are very loath to leave the island depôt, for a more healthy and charming spot could scarcely be found on the earth's surface.

Great credit is due to the Fiji Government for the admirable way they provide for the comfort and safety of alien races whom they introduce as immigrants into the colony; indeed, Coolies and Polynesians are better cared for while in the hands of the Government than many of the working class in our large cities in the old country.

Immediately inshore off Namukulau is located the island of Laucala, separated from the former by a channel three-quarters of a mile in width. The island is four miles in length, and contains an area of about 1,460 acres; it is perfectly flat and only about ten feet above sea-level, and crusted with rich sandy soil which is thickly covered with the cocoanut palm. At one place it is so narrow and low that my blackboys have dragged my boat across in order to shorten our journey from the mouth of the Rewa to Suva.

On the left bank of the river mouth, immediately opposite Laucala Island, is Mataisuva—a very nice little spot. The ocean side is fringed with a nice sandy beach, on whose smooth silvery bosom the long rolling billows of the Pacific take great delight in throwing their frothy spray. Mataisuva forms part of an extensive delta; and the soil, which consists of rich alluvial deposits, has, since the days of old, been carried from the mountains of the interior by heavy torrents of rain and sweeping river currents, and is adorned with beautiful cocoanut palms, lemon and lime trees, and thickly growing shrubs. It was in days of old the site of a Wesleyan mission station, but the cruel hand of nature has long ago obliterated all traces of that formerly holy and consecrated institution, and all that now remains to mark the spot are a few European fruit trees which nature seems loath to part with, and whose increase the natives appear to relish. Mataisuva

would be a charming spot for a picnic in the day time, only it might be prudent to limit the visit to the day time only, as a stay during the night time would not, perhaps, prove so enjoyable, even though one might be courting, unless provided with a waterproof bag so as one could get inside and close the mouth in order to keep out those little intruders known as mosquitoes and sandflies, which are not over kind to those with tender skin and sensitive nerves.

Leaving Mataisuva and following the river course in a north-easterly direction for a distance of three and a quarter miles. Tovutovu is reached on the right bank of the river, at which place a channel 264 feet wide branches off, and running east for a distance of 1,580 feet again joins with a long wide channel which, at their juncture, flows in two opposite directions; the one trending to the north for a distance of fifty-two chains again forms itself into two branches, the one immediately joining the main river, and the other, trending in a circuitous course, joins the main stream three-quarters of a mile higher up; the former channel forms Nakulubu delta, and the latter that of Nukumotu, at which place the main river is very deep, the current strong, and its width about 792 feet. The southern branch of the before-mentioned channel winds in a south-easterly direction for a distance of about two and a half miles, joining the ocean at the island of Nasoata, and so forming the Rewa delta, containing about 4,800 acres of rich alluvial soil.

The island of Nasoata is small and very flat, being fringed in many places with dense mangroves and its central section clothed with dense jungle. The soil, however, is very rich, and although almost completely isolated, it appears to be sufficiently attractive to charm the heart of Mr. Davies, who is its lord and king, and who appears to be something after the style of a hermit. On January 1st, 1884, I went with a few friends to have a picnic on the island, and it being low tide when we got there we were obliged to wade ashore for a distance of fully a quarter-mile and carry the ladies in our arms, and although the tide was high when we left yet the same pleasant task had again to be performed.

I enjoyed the day very much, but did not attribute the source of enjoyment to the beauty of the island.

Returning again to Tovutovu channel, the native town of Rewa—a great stronghold in olden days, and one of the Wesleyan mission stations—is situated on its southern bank; and on the opposite bank is Nasali, a European settlement owned by the late John Rennie.* From a utilitarian point of view, Nasali may be considered to command a very good commercial position, situated as it is in the centre of various districts, all of which are thickly populated with natives whose brisk trading propensities doubtless offer to the owner of Nasali some little advantages and the chief inducements necessary to compensate for the disadvantages of a more attractive position. Nasali and the town of Rewa, owing to their proximity to the river and the extremely low level of the delta on which both places are situated, are in times of heavy continuous rain subject to floods. At high tide the banks of the channel are only about two feet above the water level, consequently, when the wind is blowing strong on to the land and the rains heavy in the interior, the river comes surging down with mighty force, which, being met by an opposing agent in its egress to the sea, the banks soon overflow and the surface of the delta is submerged in water charged with rich deposits of soil. Fortunately floods are of rare occurrence and not at all desirable visitors, as the writer has experienced, even at Nasali. One has to keep in the house, hourly expecting to find the whole building and its occupants quickly gliding down the river; and to move from one place to another, even from the house to the kitchen, necessitates resource to boats or any other *floatable vessel* procurable. In 1883, I laid down a meridian line at Nasali and also at several other places in the district, and from a series of careful star observations I found the magnetic declination to be $7^{\circ} 53' 25''$ E. on the 19th December, 1883, which is considerably below the mean average magnetic declination in the group.

* For past hospitality I owe the Rennie family a debt, and here record the same as a slight indication of appreciation.—J. P. T.

The Nasalai delta is formed by the ocean, the Nasoata channel, the Rewa River, the Waibokasi and the Nasalai channels, and contains an area of about 6,400 acres. Its surface is covered with timber and dense vegetation, and the soil is of the richest possible quality, although in some places sour owing to the low swampy condition of its central section, which, however, could be overcome by the expenditure of a little capital in the systematic construction of drains. By clearing the surface of timber and vegetation and turning up the soil, all surplus moisture would evaporate, and by natural stages sourness would disappear. To some enterprising sugar-planter the Nasalai delta would certainly make a fine field for growing the sugar-cane. It is mostly owned by the natives, who, through the agency of the Government, would doubtless be very glad to grant a long lease of the whole, or a portion of it, at a very low rent. It is most convenient to a port of shipment and accessible on all sides by water, and possesses several good sites for the erection of a sugar mill. Like many more extensive areas on the Rewa, all that it really wants is energy, skill, and capital, to make it yield an abundant and profitable harvest.

Opposite Tovutovu there is a shallow mud bank in the river which it is necessary to avoid at low water. At a distance of two and a-half miles up the river from Tovutovu is the Waibokasi River, which trends in an easterly direction for a distance of two and a-quarter miles, at which place it is intersected by two branches; the Nasalai branch on the south, which flows in a south-easterly direction and empties its waters into the sea opposite Nasalai point; the northern branch forms an acute angle with the Waibokasi, and flowing in a circuitous direction again joins the Rewa River, and thereby forms Natogadravui delta, which contains an area of 887 acres of the richest alluvial soil, partly cultivated by the natives, who grow extensive fields of sugar-cane thereon, and for which purpose it is naturally adapted. The Natogadravui delta was, I believe, in olden days joined to the Nasalai delta at a place called Nakelimusa, but the natives, being desirous to shorten the route to the Rewa River, cut a deep channel through the narrow neck of land, by which means the

two separate channels were joined into one. This piece of engineering skill on the part of the natives has proved of great advantage to small vessels trading between Suva and Levuka. From the confluence of the Nasalai River the Waibokasi flows in a north-easterly direction and joins the ocean at a place on the north-west side of Kaba Point, called Navuloa, thereby partly surrounding a large tract of land which I shall here call Kaba, being the second largest delta on the east side of the island, containing an area of 6,390 acres, and bounded on the north-west and south-west by the Waibokasi and Nasalai channels, and on the south-east and north-west by the ocean. Its north-east portion is formed like the trunk of an elephant, having a long narrow neck of land with a moderately high ridge running up the centre to Kaba Point, which is everywhere dotted over with cocoanut palms, native plantations, and native towns, which conditions give to the locality the appearance of civilisation and prosperity. The central and western sections of the delta are low lying and in several places swampy, owing to the numerous estuaries and tidal creeks which traverse its surface in transverse and longitudinal directions. The soil, however, is of a rich alluvial quality, bearing on its crust dense vegetation, which, owing to rapidity of growth and non-utilisation, has a very rank appearance.

The Waibokasi River, although narrow and crooked, is deep and of considerable importance to the coastal trading vessels, and is regarded in a similar light to that of some river or miniature canal in the old country. Small steamers, sailing craft, and boats, bound from Suva to Levuka, enter the Rewa, up which they sail to the Waibokasi and thence through that channel to the ocean, from which the passage can be made inside the reef all the way to Levuka, having, even in rough weather, smooth water all the way; thus quick and smooth trips are made by small vessels in rough weather, which under other conditions would necessitate them remaining in harbour during rough weather. In addition to the desirability of a smooth trip, the traveller will enjoy a rare treat of a novel kind, as he skips over the surface of the ocean inside the reef, looking at the innumerable variety of submarine life gliding under the surface; and sailing through the numerous

narrow windings of the Waibokasi, whose banks are covered with beautiful cultivated fields of sugar-cane, and overhanging trees adorned with rich variegated foliage, producing innumerable blended tints, all making up a scene which in itself is enchanting and idyllic to all admirers of nature's vast store of beauty.

Opposite the junction of the Waibokasi with the Rewa is situated the lower end of Toga Island, of a somewhat peculiar formation, and containing an area of 937 acres of alluvial deposit of the richest possible quality. Bananas, watermelons, pumpkins, breadfruit, pineapples, lemons, and limes grow in wild profusion on the island, and yams, sweet potatoes, taro, and other cultivated esculents flourish to perfection. There are two or three native towns on the island, and the greater portion of it is utilised by the natives for planting purposes. On the western side of Toga Island, near its upper end, and on the right bank of Toga Channel, is Koronivia, an extensive sugar estate leased from the natives by the Rewa Sugar Co., of which more anon. Toga Channel, however, has a serious drawback in being shallow in many places, which, I am afraid, can only be effectually removed by the use of a dredge and the future preservation of the banks of the channel. A mile higher up the main river, on its left bank, is situated Nausori mill and sugar estate, owned by the Colonial Sugar Refining Co.; and three-quarters of a mile higher up, on the right bank, is the confluence of the Waimanu River, from which place of juncture the main river stretches almost due north in a straight course to a place called Nadurulolo, the site of the provincial court-house and jail, presided over by Mr. Carew, S.M. From Nadurulolo, owing to its elevated position, a fine view of the river can be obtained. All the river bed from the mouth of the Waibokasi to Nadurulolo is composed of shingle, gravel, and coarse sand, which has so accumulated in two or three places as to make the river shallow at low water. The water is clear and almost fresh, and the average strength of the current is about two miles per hour through a channel of about 1,056 feet in width. At Nadurulolo the river turns sharp to the left, forming an acute angle and stretching in a westerly direction

for a distance of six and a quarter miles to Waiduda. Nearly all the bend of the river opposite Nadurulolo is under cane cultivation by the Colonial Sugar Refining Co., for which purpose it is well adapted. The land on both banks of the river right up to Waiduda is composed of alluvial deposits of the richest quality, and is owned by various Europeans, and nearly all cultivated for growing sugar-cane. The bed of the last-named section of the river is composed principally of mud, shingle, and sand, which forms itself into a shallow spit at a point about half-way up the reach; the average width of the river is about 792 feet, and the rate of the current is about two and a-half miles per hour; and at one or two places on the face of the bank are seen jutting out basaltic and agglomerate rocks, which are very common in the interior of the island. From Waiduda the river curves round in a northerly direction to Navatu, where it again takes an easterly course to a place called Viti, thence it again swoops round in a circuitous direction to the junction of the Waidina River, at which place the tidal influence may be considered to cease. All the land bounded between Navatu and the confluence of the Waidina on the right bank of the river is owned by Europeans and under cane cultivation, and the whole of the soil is composed of rich alluvial deposits and of a great depth; and on the opposite bank of the river the country is composed of moderately high ridges covered with dense vegetation, which derives its nourishment from a deep loamy soil. At the junction of the Waidina the main river forms an acute angle, and trends in a northerly direction through the Viria district, for a distance of thirteen miles, to the confluence of the Wainimala and the Wainibuka Rivers. Large alluvial flats of virgin soil compose the river margin through the Viria district, and the general conformation of the country is undulating; gently sloping ridges, crusted with rich, deep, loamy soil, on whose surface forests and dense vegetation grow in profusion. Nearly all the land in the Viria district belongs to the natives, who, from generations back, have, according to ancient land and tribal rights, enjoyed all the rights and privileges handed down from one generation to another. Such tribal

rights do not, however, prevent the natives from entering into any legitimate negotiations with their European brethren for the alienation of land; indeed they are only too glad to encourage the introduction of European capital and enterprise on their land. The Wainibuka and the Wainimala join together to form the Rewa at a point forty-one and a-half miles by the river course from the sea, at which point of intersection the former trends in a northerly direction through the districts of Taivugalei, Matailobau, Nailega, and Waimaro, and gradually diverging from its northerly course towards the west, terminates in the mountains westerly from Viti Levu Bay. The Wainibuka is really a very beautiful river, winding in graceful curvature through beautiful fertile valleys and narrow fissured gorges, whose solitude is only broken by the rippling of the waters and the sweet carol of the birds of the forest as they warble their love ditties in early morn and evening shade, hopping from the branches of the tall stately forest giants which overhang the waters of the stream.

Through the greenest of our valleys,
By Nature's children tenanted,
Winds a wide and mighty river—
Silvery river sweeps its tide.

The Wainibuka is a very convenient river for travellers who desire to go overland from Rakiraki, Viti Levu Bay, or the Tai Levu coast to Suva, as they may walk inland and strike the river at an easy distance from the coast, thence the journey down the river may be accomplished in a canoe which, although in close proximity to the water's edge, is, if not comfortable, something novel and romantic. The general physical features of the before-mentioned districts are undulating and mountainous, crusted with soil of the richest quality and clothed with dense forests of various varieties of timber, jungle, and tropical vegetation, adorned with the most beautiful variegation of foliage, producing blended tints and shades which to the eye and the mind are truly fascinating and idyllic—a veritable paradise. The high elevation, combined with the rich quality of soil, peculiarly qualifies the Wainibuka basin for the growth of coffee, which, if cultivated, would yield to the grower a rich and bountiful harvest.

WAINIMALA.—The Wainimala, from its confluence with the Wainibuka, winds in a circuitous form in a westerly direction through the districts of Viria and Soloira for a distance of seven and a-half miles where it receives as a tributary the Wailasi, from which point of intersection it trends in a north-west, west, and south-west direction, skirting the base of the Korosuli Mountain, to a point at or near the base of Muanivatu, a mountain range in the centre of the island rising to an altitude of 4,000 feet above the sea-level, the eastern slopes of which form the watershed of the Wainimala, and the western slopes that of the Sigatoki River, the waters of which are emptied into the ocean sixty miles west of the mouth of the Rewa. The current of the Wainimala is more rapid than that of the Wainibuka, and the country through which it flows is more broken and mountainous than in any of the former described districts, and the scenery more wild and romantic in aspect; indeed, on the high land near the source of the Wainimala the temperature is decidedly cool and bracing even in the middle of the hot season. The river bed is in most places composed of coarse gravel, shingle, and pebbles, and in moderately shallow places the water is clear and limpid. The soil is rich alluvial and loam, and naturally adapted for the growth of products requiring high elevation, moisture, and richness of mineral ingredients; indeed it will be a very hard matter to find a place with conditions so favourable to the nourishment and growth of tropical products. Here we find nature so lavish in the distribution of her gifts that she plants, reaps, and replants all her precious and bountiful store of produce; she looks down on her handiwork and smiles at its opulence, its graceful perfections, and its obedience to her will.

WAIDINA.—The Waidina, from its junction with the Rewa, traverses through the Naitasiri district, in a westerly direction, for a distance of fifteen miles, when it receives, as a tributary, the waters of the Waisove, at which place of juncture it trends in a south-westerly direction into the Namosi district, draining a portion of the north watershed of Mount Smyth. The Waisove,

from its union with the primary watercourse, diverges in graceful and almost magical curvatures in a north-west and westerly direction, cutting through a small section of the Vuniguni district, and finally terminating near the base of the Korobasbasaga mountains, a lofty range rising to an elevation of 3,960 feet above sea-level. The waters of the Waidina are rapid, and the intricacies of its windings conflicting, the whole watercourse being composed of a succession of rapids and whirlpool reaches, whose concentrated forces impede and endanger its navigation considerably during the dry season, and in the wet season the careering of the waters is doubly powerful in their frantic efforts of escape. I once navigated the river referred to in a canoe, and although there were four powerful Fijians paddling and poling, yet it took us two long days to reach the native town of Vakadua, only a distance of eleven and three-quarter miles. Sometimes the rapids were so strong that we had to creep inch by inch, with every muscle and nerve of the polemen stretched to its greatest tension, and the mode of propulsion most tedious, owing to the displacement of the shingle and gravel which composes the bed of the channel; while great skill was required to keep the prow of the canoe parallel with the course of the current, as the smallest divergence therefrom would have certainly resulted in the overthrow of our frail craft. The Waisove is more shallow and rapid than its primary, and can only be navigated on its lower section by small canoes, while that of the upper can only be traversed downwards by bamboo rafts. The major section of the country traversed by the Waisove is hilly and mountainous, and its aspect wild and romantic in the extreme; bold precipitous mountain faces, gracefully and fantastically robed and embellished with forest grandeur, intermingled with a truly luxuriant and varied vegetation, producing an astonishing and transcendent multiplicity of tints and hues, delightful to the eye and vivacitating to the mind, while small clear spots may be observed with blocks of agglomerate and basaltic facings protruding from the mountain sides. The soil is loam and *débris*,

and of a good depth, which, combined with gradiated elevation and low rate of temperature, peculiarly qualifies the Waisove section of the country for growing coffee and other equally valuable products of the soil requiring specially favourable conditions such as herein described. The whole country comprised within the limits of the lower Waidina basin is undulating, crusted with rich loam, *débris*, and alluvial soil, bearing belts of forest, patches of reeds and jungle. The soil is free and soft, so much so that iron spades are not required; all excavations can be executed by the use of a wooden stick, which is altogether more consistent with the habits and usages of nature's own children, and certainly superior to the iron for digging up or planting vegetables. Man was made before the spade, and doubtless Adam and Eve were more indebted to the wooden stick than they were to the iron spade. The land is owned by the natives, who only use a very small percentage of it for food planting, the remainder lies in its virgin state, yielding an increase to nature alone. Thousands of acres could be leased from the natives, and smaller areas purchased by any desirable agriculturist desirous to demand the increase of the soil and to turn it into good and profitable use.

WAIMANU.—The Waimanu, from its junction with the Rewa at the native town of Navuso, trends in a westerly direction, receiving on its right bank as tributaries the Waimana and Suravu creeks, skirting the northern slopes of Nakobolevu and terminating in a range of hills near the eastern slopes of Mount Smyth. The bed of the channel is composed of shingle, sand, and gravel, and the current in places is rapid. Canoes can navigate its waters for a distance of about fourteen miles, and sugar punts, carrying about twenty tons of cane, can navigate for about eight miles. The country within the Waimanu basin is of an undulating nature, intersected in several places with sections of alluvial flats. The soil is rich vegetable loam, covered with timber, reeds, and dense vegetation. All the land on the right bank of the Waimanu between the Wainaucikau Creek and the Rewa is owned by Europeans, and nearly all under cultivation,

and at the junction stands the Waimanu Hotel, a very commodious two-story wooden building, owned and kept by Host Dods, whose geniality and attentiveness will be appreciated by his visitors.

I cannot close this chapter of physical description without once more glancing back and reviewing the extensiveness of the grand river system herein so briefly referred to. Here we have such mighty watercourses traversing and retraversing the largest island in the group—the largest in the group, but when viewed on the map of the world and compared with other islands and continents, is something similar in appearance to that of the smallest star to the sun. Truly natural cause and effect are wonderful if we but view their agencies on the smallest section of the surface of the globe. In addition to its natural beauties, the Rewa river system is a most important one both from a commercial and agricultural point of view. During heavy floods, which are of rare occurrence, the flat land on the margin of the river is enriched by the deposits left through the inundation of the waters, just as the Egyptian plains are through the overflowing of the Nile, the only difference being in the irregularity and uncertainty of its periodicity.

EUROPEAN LAND CLAIMS.

After annexation, and the establishment of English law over the Colony of Fiji, all prior claims to land by Europeans alienated by natives * were investigated by a commission composed of a chairman and an efficient staff of members, several of which were old experienced residents of the colony, and well versed in the laws, usages, and language of the natives. Land Courts were held in the various provinces and districts throughout the group, and claims were allowed in whole or in part, or disallowed, as the case might be, by the Governor in Council with the advice and recommendation of the Lands Commission. In the adjudication of claims, one of two conditions was required from the claimant:

* From careful inquiry it would appear that the natives when alienating or bartering land, were under the impression that the term of ownership should only extend during the lifetime of the purchaser, according to their own land laws.—*J. P. T.*

—namely, that of legal purchase,* or a specified term of occupation, either of which would entitle him to his claim. Although a great number of original titles and deeds to land in Fiji have on various occasions been in my possession, and in my professional capacity I had many opportunities of inquiring into and investigating European and native land claims, yet in this paper I do not intend to express my personal opinion regarding them; but as much litigation has on various occasions been resorted to, and as controversy and diversity of opinion still exist, it may perhaps be interesting and useful if I here record, from actual documents, the number and area of European land claims on the Rewa River and its tributaries, all of which have been surveyed by the Government, and Crown grants issued to the respective claimants thereof; and from the following statement I shall leave my hearers and readers to judge for themselves :—

Table showing the number and area of European Land Claims on the Rewa River, Fiji.†

NO.	ESTATE.	AREA.			NO.	ESTATE.	AREA.		
		A.	R.	P.			A.	R.	P.
1	Mataisuva	5	0	0	12	Kasavu	17	3	15
2	Mataisuva	2	0	0	13	Naqio	5	0	0
3	Mataidravuni	1	0	0	14	Nukumotu	80	0	0
4	Batinitobu	7	0	0	15	Tikola	20	0	0
5	Naikorokoro	4	1	12	16	Matainuku	4	0	0
6	Nabula	2	0	22	17	Daua	28	2	2
7	Bocona	1	0	0	18	Vucimaca	500	0	0
8	Tamavua	1	0	0	19	Nausori	193	0	0
9	Nasali	6	2	33	20	Nausori	94	0	0
10	Nasali	1	1	38	21	Verata	650	0	0
11	Tovutovu	40	0	0	22	Verata	700	0	0

* *Purchase* is scarcely the correct term to use in treating with the subject of land acquirement from the Fijians in their darker days; the word *barter* is, I consider, more applicable, inasmuch as land was given in exchange for articles of trade, such as cloth, tobacco, beads, knives, muskets, tomahawks, and even *mere sham pipes*, &c., the value of which, the Fijians were perfectly ignorant of; and yet we call ourselves *Christians!* and boast of our religious principles!—*J. P. T.*

† Numerals in the following table correspond with those on face of accompanying map.

NO.	ESTATE.	AREA.			NO.	ESTATE.	AREA.		
		A.	R.	P.			A.	R.	P.
23	Drekinikelo	215	0	0	54	Vunicibicibi	746	0	0
24	Waidra	543	0	0	55	Viti	219	0	0
25	Korogaga	517	0	0	56	Viti	217	0	0
26	Nengaga	136	0	0	57	Viti	200	0	0
27	Wainerou	100	0	0	58	Baulevu	324	0	0
28	Woiniva	101	0	0	59	Nasi	139	0	0
29	Naibenabenu	202	0	0	60	Vlasleba	150	0	0
30	Calia	582	0	0	61	Laulau	468	0	0
31	Wainisasi	523	0	0	62	Vunivesi	216	1	3
32	—	50	0	0	63	Toli	581	2	21
33	Naitasiri & Nago	1634	2	18	64	Toli	537	0	0
34	Nakiria	212	0	0	65	Naivuku	320	0	0
35	Wainilua	60	0	0	66	Nuwiloka	294	0	0
36	Qereqere	130	0	0	67	Nawikida	355	0	0
37	Queraquera	36	0	0	68	Naralia	926	0	0
38	Mataimati	211	0	0	69	Waimana	400	0	0
39	Marakalulu	443	0	0	70	Waimana	563	0	0
40	Muaninuku	450	0	0	71	Waimana	150	0	0
41	Kolutanibuli	300	0	0	72	Wesleyan Mis.	315	0	0
42	Kobuka	135	0	0	73	Davuilevu	149	0	0
43	Kovunikavika	564	0	0	74	Vunivesi	262	0	0
44	Dakuivarata	546	0	0	75	Navunivesi	110	0	0
45	Baunikoli	124	0	0	76	Tikola	20	0	0
46	Naisoro	132	0	0	77	Korobici	10	1	30
47	Lami	562	0	0	78	Nalukaiwai	24	0	0
48	Wainikia	163	0	0	79	Nalukaiwai	20	0	0
49	Nevumavu	117	0	0	80	Lokia	69	0	0
50	Naivakatali	404	0	0	81	Malaso	11	3	5
51	Wailoa	300	0	0 ?	82	Naivutivutinisoni	40	1	0
52	Vunivuci	539	0	0	83	Mataidravuni	1	0	0
53	Vunicibicibi	1070	0	0	84	Mataidravuni	1	0	0
<i>Grand Total</i>							21,308	3	39

SUGAR ESTATES AND SUGAR MILLS.

In describing the sugar mills and estates situated in the districts referred to in this paper, I will commence with those on the lower section of the river and enumerate them in consecutive order.

VUCIMACA is situated on the left bank of the river, containing an area of 500 acres, originally the property of Stanlake Lee and Co., but now owned by the Colonial Sugar Refining Co.; the former owners had a mill erected on this estate, but it is now removed by the present owners to their estate up the river. The whole of this estate is composed of a rich alluvial flat, the greater portion of which is under cane cultivation, and yielding between thirty and forty tons of cane to the acre, which is cut and transported by punts to their mill at Nausori.

KORONIVIA.—On the opposite side of the river, situated on the right bank of the Toga Channel, is the Koronivia estate, owned by the Rewa Sugar Co., Limited, consisting of 2,600 acres of flat alluvial land of the richest possible quality, partly leased and partly freehold. The estate is a new one, being occupied only two years, consequently the soil is virgin. Prior to its occupancy the major section of the estate was covered with heavy timber and dense vegetation, and in order to remove that considerable obstruction from off the surface the company entered into contracts with the Fijians, with the result that the greater portion has now disappeared. The first clearing was commenced in July, 1884, and there is now an area of 900 acres of land covered with a flourishing crop of sugar-cane. The first planted canes had to be replanted as often as four times on account of the sourness of the newly opened up land and the raids of the grasshoppers. The cane growing on the estate is Honolulu; other varieties are planted, but that of the former has proved more reliable. Some of the cane has been cut and crushed, and so far the average yield has been between thirty and forty tons to the acre for a growth of twelve to fourteen months, and producing over two tons of sugar to the acre. There is little doubt, however, that as the estate gets opened up, and the soil systematically wrought, the yield will considerably increase, as the subsoil is of great depth and will require the powerful agency of continual cultivation to bring it to the surface for utilisation and yield of substance. A section of the estate bordering the south-west boundary consists of a naturally open plain of a

decidedly swampy and marshy nature, covered with a long coarse grass and pandanus. Only a small portion of the plain is contained in the Koronivia estate; its major section extends for miles to the south-west, and is at present owned by the natives and in a purely virgin state. The surface soil, which is black and of a great depth, containing a high percentage of phosphates, rests on a thick stratum composed of clay, being a dense mass of finely comminuted particles, but all of a highly tenacious kind; in a condition of slight moisture it becomes a clammy paste, and is never to be found so utterly devoid of moisture that its constituent particles are separable; it affords no passage for water, receiving it with difficulty and retaining it in a similar way, consequently all the drainage and surface water is contained in the surface stratum, which, finding no means of egress, keeps the land in a marshy and swampy state. Such, however, could be rectified by a system of closed drains (open drains would be of no permanent use as the surface stratum and supersoil, consisting of fine calcareous particles and other disintegrated minerals, would give way to the heavy rain and fill up the drain), such as shown in the accompanying diagram. A compound drain, composed of a layer of loose stones and an artificial duct formed with a flat tile on the bed of the drain and covered with a semi-cylindrical tile such as shown in Fig. I., is undoubtedly the best. That, however, represented in Fig. II. is a good useful drain and suitable for all ordinary requirements, being formed of large assorted stones placed in the bed of the drain, with a layer of small stones upon them. The abundance of coral rock in Fiji ought to facilitate the construction of the above-mentioned class of drains considerably, and at a very moderate cost. I am fully convinced that large areas of unutilised land on the Rewa and many more places could be made most useful and their value increased, and even large areas under cultivation could be improved, by a thorough system of drainage. The Rewa Sugar Co. have a fine new mill, being entirely French and comprising the patent Defeburier, erected on their Koronivia estate, which, I am informed, has so far given general satisfaction. To two of the

boilers is attached a Godillot furnace for burning megass direct from the rollers, and I am told, so far as can be judged, answers the purpose well. The capacity of the mill is up to 300 tons of cane per day of twenty-four hours, which appears to be the French method of gauging the power of their mills. It was at first intended to use animal charcoal for filtering purposes, but the original intention was abandoned on the score of expense against the utility, under the extremely low condition of the sugar market. Singularly enough, this French class of machinery appears to have proved a failure in the colony of Queensland, although I fail to see the reason why; probably the usual prejudice existing amongst some Englishmen in respect to foreign inventions, and the absence of proper care, may have been the principal causes. The chief labour employed on the estate is coolies and a few Polynesians and Fijians. The whole of the estate is under the able management of Mr. W. Mune, to whose energy and skill its present progress and development are indebted.

NAUSORI.—A little above Koronivia, on the opposite side of the Rewa River, is Nausori estate, containing an area of 193 acres, nearly all under cane cultivation, and owned by the Colonial Sugar Refining Co. This company now occupies both sides of the river for a distance of about two miles on the left bank, and about four and one-half miles on the right bank of the river above Nausori, with their Nakaseli and Navuso plantations, one freehold, the other leasehold, from the natives. On the Nausori estate the company have their mill erected; this mill is the largest thing of its kind in the world. They have three double mills at work night and day during the crushing season, and another set of rollers ready to be erected when the supply of cane will warrant it. I believe they did propose trying a system of diffusion this season, but I am told that the inducement is not sufficient to warrant the experiment. The output of the mill is about 300 tons of sugar per week, and last season they are supposed to have crushed 10,000 tons of cane, with a probable increase for this year. All their cane growing outside of Nausori, with the exception of that growing on their Viria

estate, is transported up and down the river by a large fleet of iron punts, or barges, towed by steamers. Their principal labour is Indian coolies, with a large staff of whites.

TOLI estate is situated on the right bank of the river, and contains an area of 537 acres, owned by Mr. Eastgate, who is growing cane for the C. S. R. Co.

On the opposite side of the river to the last-named estate is situated ULICALIA estate, owned by the Rewa Sugar Co., and containing an area of 482 acres, 300 of which are under cane cultivation. The old mill on this property, and one of the first in Fiji, has been abandoned, and now the cane is transported by punts to their new mill at Koronivia.

A little above Ulicalia, on the opposite side of the river, is LAULAU estate, the property of Mr. Dods, containing an area of 468 acres, with about seventy acres under cane cultivation. Opposite Laulau, on the left bank of the river, is NAGO, or Naitasiri, the fine estate of the C. S. R. Co., containing an area of 1,634 acres, about 600 acres of which are under cane cultivation. Next in order, on the opposite side of the river, comes Baulevu, Viti, Muaniwini and Vunicibicibi plantations, owned by Messrs. J. C. Smith, Smart and Langton, Sahl and Harley, containing in all an area of 2,776 acres, nearly all of which is under cane cultivation, under contract with the C. S. R. Co. The average yield of cane on these estates is about forty tons to the acre of twelve to fourteen months growth, for which the growers are paid 12/6 per ton by the company referred to. The next and last sugar estate is Viria, or Lami, situated on the right bank of the river a little above the junction of the Waidima, and owned by the C. S. R. Co., containing an area of 700 acres, 260 acres of which are under cane cultivation. On this estate the company have now erected the mill that was formerly at Vucimaca, owing to the difficulty experienced in transporting the cane to their Nausori mill, caused by the shallow condition of the river during the dry season, at a point about one mile below Viria. In addition to the sugar estates herein described, there are a great number of smaller plantations owned by the Fijians,

who cultivate the sugar cane, and sell it to the manufacturers, receiving about an equal price to that of the European grower. Although a considerable area of the land in the Rewa district is utilised for cane cultivation, yet there are extensive areas of virgin soil available for the same purpose awaiting European capital and enterprise. At the back of Nausori, and above the Viria estate, there are thousands of acres of available sugar land, consisting of rich alluvial flats, equal to any yet cultivated in the district, which could be leased from the natives through the Government at the very reasonable rates of from 4/-, 5/-, and 10/- per acre per annum, for a term of five, ten, to twenty years. The soil is rich, the climate good, and the rainfall sure. The average annual rainfall on the Rewa is over 100 inches. The highest mean temperature in the shade is 82° Fahr.; the lowest 72° Fahr. The maximum temperature in the shade is 94° Fahr., the minimum 63° Fahr. The maximum temperature in the sun is 150° Fahr. The mean annual number of wet days extending over a period of five years was 58, the mean number of showery days 84, and the mean number of fine days 224. These meteorological results, from a scientific point of view, must be regarded as an approximation, but are accurate enough for all practical purposes. Although the Rewa district is one of the oldest settled places in the group, yet it has no properly established meteorological station; the want of which is much to be regretted, not only in the interests of science, but that of the residents of the district—a circumstance reflecting very little credit on the meteorological observer. Indeed *reliable* meteorological information is much wanted throughout the greater portion of the Colony of Fiji, with the exception of Delanasau, on the north-west coast of Vanua Levu, where a first-class station has been established for many years by R. L. Holmes, Esq., F.R.M.S., a gentleman of undoubted ability.

Prior to 1881 all the labourers imported into Fiji were Polynesians, but owing to the great competition in the Polynesian labour trade from other colonies, the labour market found it impossible to meet the demands made upon it, consequently the

Government had to look to other means of supply, which resulted in the establishment of a system of coolie immigration from India, which has so far proved a great success, and now very few Polynesians are employed in the Rewa district. Each good working coolie or Polynesian can work and look after from two to three acres of the cane field, therefore the number of labourers on each plantation, if properly superintended, ought to be proportional to the area cultivated. The cost of imported coloured labour, including introduction, &c., per head per annum, is as follows:—Coolies about £28, Polynesians about £35, and Fijians £27. Coolies cost £21 16s. 8d. introduction money, wages 1s. per day for men, 9d. per day for women, and boys as they are worth. For the first six months the employer has to provide the coolie in rations, deducting 5d. per day from his earnings for the same, but after that period he has to find himself. His term of service is five years. The percentage of sick and absent from work every day makes them an expensive class of labourers. Polynesians can be got at £15 passage money, wages £3 per annum and food, &c. His term of service is three years. A new Fijian labour ordinance has been adopted, to be assimilated to the coolie ordinance, to allow of the engagement of the Fijian by the day for time or task work, which will doubtless prove a great boon to European agriculturists and sugar planters in Fiji. Of the three classes of coloured labourers herein described the Polynesian, when well, has proved to be the best and most reliable. Owing to the absence of published statistics, I am unable to give the number of coolies now employed in the Rewa district, but the following statement is taken from printed official documents, and will show the number of labourers employed on the various plantations in the district from 1st June to 31st December, 1883, just shortly after the introduction of coolies.

Table showing the average number of Labourers employed on the various Estates on the Rewa River, from 1st June to 31st December, 1883.

ESTATE.	MALE.	FEMALE	TOTAL.	CLASS.
Viria	193	8	201	Polynesian and Indian coolie.
Vunicibicibi	24	0	24	Polynesian.
Mnaneweni	172	30	202	Polynesian, Indian coolie and Fijian.
Minikalavu	64	0	64	Polynesian and Fijian.
Viti	34	2	36	Polynesian.
Banlevu	181	49	230	Polynesian and coolie.
Naitasiri	160	39	199	Polynesian and coolie.
Koroqaga	16	1	17	Polynesian.
Laulan	27	0	27	Polynesian.
Rewa	68	5	73	Polynesian.
Pioneer	11	0	11	Polynesian.
Tole	36	3	39	Polynesian.
Naivalivali	13	3	16	Polynesian.
Waidra	36	1	37	Polynesian.
Navuso	118	144	262	Polynesian, coolie, and Fijian.
Verata	38	0	38	Polynesian.
Elliston	13	0	13	Polynesian.
Nabulu	18	0	18	Polynesian.
Navutoka	87	3	90	Polynesian.
Qereqere	115	11	126	Polynesian.
Nausori	502	70	572	Polynesian, coolie, and Fijian.
Vucimaca	69	16	85	Polynesian and coolie.
Grand total	1995	385	2380	

From the 1st June to 31st December, 1883, of the total average number of labourers as above stated the total number of diseases from all causes was 2,339, or 97.7 per 100. Out of that number 2,027, or 100.8 per 100 of the total average number of males, were in males; and 312, or 81.0 per 100 of the total average number of females, were in females. The total number of deaths from all causes was 100, or 4.2 per 100 of the total average number of labourers. Out of that number 85, or 4.2 per 100 of the total average number of males occurred in males; and 15, or

3.9 per 100 of the total average number of females, occurred in females.

At present the European population on the Rewa is about 2,000, the most of which are very much scattered over the district.

CULTIVATED PRODUCTS.

The soil and climate of the Rewa district is peculiarly adapted for the growth of all tropical and semi-tropical products. Yams, sweet potatoes, pumpkins, arrowroot, beans, and many varieties of esculents are scattered over the district in great profusion, yielding an abundance; and sugar-cane, maize, cotton, and tobacco, attain to almost marvellous proportions of development. The cultivation of tobacco is very much neglected on the Rewa, as in all other parts of the colony: no one appears to possess the necessary experience in growing and curing, consequently the industry is left almost entirely in the hands of the Fijians. It grows without any attention, and would handsomely pay any one with the knowledge to cure the leaf. Perhaps the Government might be induced to pay a bonus to successful growers. Rice would also be a very profitable industry. Owing to the employment of coolie labour, large quantities of rice have to be imported into the district, which ought to be obtained from local sources. The sugar industry is undoubtedly the mainstay of the district, and its present prosperous condition and development are largely due to that source. During the last four years the increase of the sugar industry in the Colony of Fiji has been wonderful. In 1882, the total sugar export of the colony was 1,731 tons 1 cwt. 3 qrs. 27 lbs., value £58,857 8s. 0d.; in 1883, 5,163 tons 9 cwt. 22 lbs., value £175,555 18s. 8d.; in 1884, 8,728 tons 19 cwt. 1 qr. 17 lbs., value £218,224 5s. 0d.; in 1885, 10,586 tons 9 cwt. 2 qrs. 10 lbs., value £211,729 11s. 9d. The decrease in value of last year's exports is, of course, owing to the low state of the sugar market. In 1882, the total molasses export of the colony was 36,218 gallons, value £5,432 14s. 0d.; in 1883, 194,797 gallons, value £29,219

15s. 0d.; in 1884, 459,905 gallons, value £7,186 0s. 6d.; in 1885, 151,264 gallons, value £2,363 10s. 0d. From the sum of the foregoing conditions, it will be seen that the total value of the last four years' exports, derived from the sugar-cane alone, has been £708,569 2s. 11d., which is, I think, sufficient proof of the suitability of the climate and soil for the production of sugar. The foregoing statement is derived from printed official documents, and is therefore absolutely correct.

FLORA.

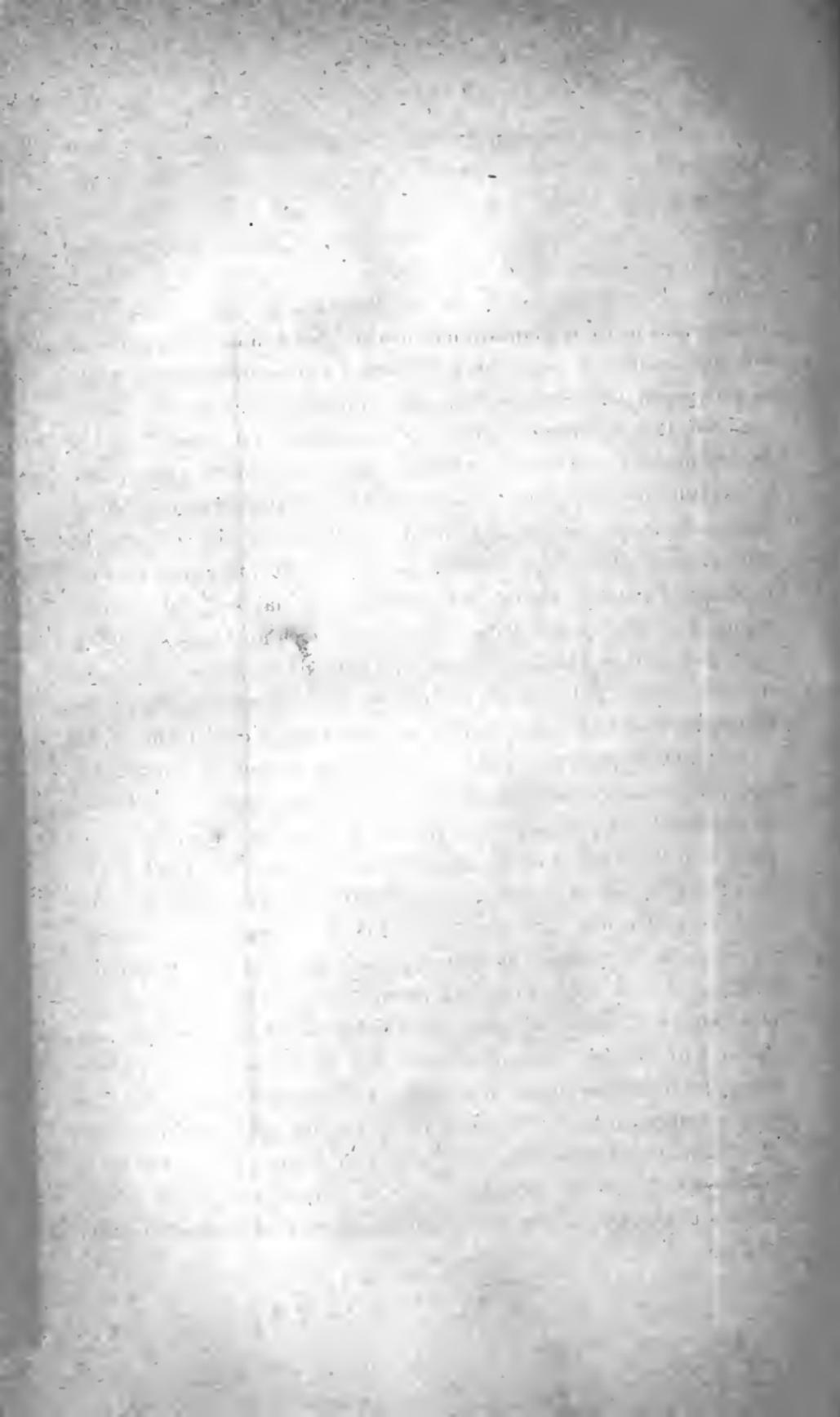
In addition to the known flora of Fiji there are doubtless many new discoveries yet to be made. According to Horne,* the flora indigenous to Fiji amounts to 1,086 species of flowering plants, and 245 species of ferns and allied plants; and of these, 635 species have been met with in Fiji only. The largest orders are Leguminosæ, represented in the group by thirty-six genera and sixty-two species; Rubiacæ, by twenty-three genera and 122 species; Orchids, by twenty-five genera and forty-nine species; Euphorbiæ and Urticacæ, twenty genera each and 131 species. The following species are common on the top of the mountains in the interior:—*Litsea*, *alstonia*, *paphia*, *polystichum*, *blechnum*, &c. Large areas of the low lands are dotted over with clumps of screw pines and sago palms (*Cycas circinalis*), and the mountain sides are adorned with the *Astelia*, *calophyllum*, *burmanii*, *cinnamomum*, *pedatinervium*, *gnetum genoni*, *kautabua* (*Podocarpus cupressina*), *daknasalusalu* (*Podocarpus vitiensis*), *leweninini* (*Dacrydium elatum*), *dakua* (*Dammara vitiensis*), *niasau* (*Keattia exorrhiza*) and many more varieties, all combining to make up and embellish the beauty and grandeur of the landscape. Many large trees are growing in the district, such as the *vutu* (*Barringtonia speciosa*), *dilo* (*Calophyllum inophyllum*), and *baka* (*Ficus*). The *baka*, or fig-tree, is truly a *lusus naturæ*. When fully developed it has a resemblance to the banyan-tree. It commences life by a series of thread-like roots growing down the side of the trunk, which gradually develop in size, ever tightening their hold upon the trunk of the tree until ultimately

* "A Year in Fiji," by John Horne, F.L.S., &c., pp. 58-9.



Reduced and Drawn by J.D.CALDWELL from a Photograph

BAKA TREE (*Ficus*)



the whole mass of network strangles the tree which supported them. The forests contain some prime timber trees, such as the *dakua*, *dakuasalusalu*, *lewenimini*, *damauu*, *kautabua*, and other kinds equal in use and value. The *yagona* plant (*Piper methysticum*) is of such historical renown that I cannot allow it to escape notice. It is grown extensively by the natives both round their houses and in their plantations; it also grows most luxuriantly in the high mountain lands of the interior. The stem of the plant is composed of a series of joints similar in appearance to the stem of the sugar-cane, only more crooked and irregular: the leaf is broad and velvety and of a beautiful green colour, and when fully developed the plant is noble and picturesque looking. The root in its green and dried condition is chewed by the natives, who dilute the chewed particles with water and convert it into a beverage called *kava*, which the natives and a great number of Europeans drink largely. It does not possess intoxicating qualities (as has often been stated) such as spirituous liquors, but if indulged in to excess it deadens the lower extremities and has a wonderful tendency to weaken the optic nerves and impair the sight; it possesses medicinal properties, and when taken in moderation it acts as an aperient. It is used as an article of commerce in Fiji, and quantities have been exported to England and the Australian colonies: in 1882, 1 ton 9 cwt. 3 qrs. was exported, valued at £166 12s. 0d.; therefore the plant is well worth cultivation, both for ornament and commercial value. The district is interspersed with belts of forest, jungle, wild sugar-cane, and grass, exhibiting an endless variety of the most lovely foliage, the tints and shades of which combine and blend with one another, and, reflected in the sunlight of early morn, produce numerous miniature-like rainbows, one and all of which appear to vie with each other in the struggle for supremacy of grandeur and in adding brilliancy and beauty to the romantic and idyllic landscape peculiar only to Fiji, the sight of which creates in the beholder a feeling of the most profound admiration and wonder.

Where palm and verdure ever green
Throughout the year is always seen.

FAUNA.

Sheep do not appear to thrive well in Fiji, although several enterprising spirits have given them a trial. Horses, cattle, and goats, however, thrive remarkably well, and large herds are met with in many places, especially on the Tai Levu coast; to geese, turkeys, ducks and fowls, the group is a perfect paradise, even the natives can boast of well-stocked poultry-yards. Pigs are the real pioneers of the colony, and are running wild in the forests and jungle. The pig to the native is as much prized as a stud of race-horses is to the breeder. There are very few animals indigenous to Fiji, perhaps only the rat and flying fox; there are land and water snakes in the group, comprising about ten different kinds, all of which are said to be perfectly harmless; lizards are plentiful and of many varieties, and rats are becoming a perfect pest, especially in the sugar districts; wild duck, pigeons, parrots, snipe, sandpipers, the golden dove, and a kind of swamp hen are numerous in all parts of the group, and when cooked are delicious. An endless variety of fish, of all shapes, sizes, and colours, abound in the sea, rivers, and creeks. Sharks are very numerous both in the sea and rivers, and they appear to have a decided relish for human flesh, and whenever an opportunity offers they show no respect to persons. They are often captured by the natives, who, in turn, appear to relish their flesh. Lobsters are plentiful, and large prawns abound in the fresh-water streams. Turtles are plentiful, and their flesh and shell are much valued by the natives; they are usually captured and kept for the occasion of festivities and state assemblages, when they are presented to the chiefs, who alone possess and enjoy the privilege to consume or distribute them to whom they may. Bêche-de-mer are plentiful on the reefs; they are collected, cured, and exported; last year (1885), 20 tons 7 cwt. 1 qr. 17 lbs. was exported, valued at £1,221 18s. 9d. The annual exportation could, however, be increased considerably by encouraging their collection on a moderate scale. Pearl-shell is also obtainable, and forms a valuable article of commerce. Salt-water and land crabs are abundant, and are delicious eating, one

variety found on the Island of Cikobia, climbs the cocoanut trees, tears the husk from the nut, and by some means breaks the shell and consumes the flesh from the inside, and when pursued it picks up pebbles and throws at the pursuer! Oysters, although not plentiful, are found in some of the mud flats, especially on the Macuata coast; they are also found attached to the roots of the mangrove and doga trees growing below high-water mark. During the wet season the number of mosquitoes on the Rewa may be easily estimated by their density of mass or the area they cover, for there are plenty of them and lots to spare. Butterflies are numerous in Fiji, and there are many varieties, several of which exhibit wonderful richness and brilliancy of colour, beautiful to behold as they flit along in fantastical and eccentric motions from leaf to leaf. Beetles of truly wonderful shapes and variegations are copious in the forest, and insects of the minutest proportions are everywhere to be found throughout the group.

NATIVES.

The unavoidable length of this paper has, I fear, already severely over-taxed your patience, therefore, I can only very briefly refer to the last subject it contains. The natives of Fiji are a contented and happy family, and are much superior in physical and intellectual capacity to any of their brethren in Polynesia. The Maories are probably the only coloured race in the Southern hemisphere who may be considered their superiors. Prior to their conversion, cannibalism existed amongst them, but not to any great extent, and in many cases, deeds committed of an atrocious nature were, in my opinion, the incitement of great aggravation. If they had been naturally born cannibals, I hold that religion and civilisation, although powerful, would have failed to bring them so rapidly to submission as it has done. However, the Fijians now are a civilised and useful race. Nearly all of them can read and write their own language; the youths are trained at an educational institution, some by the Wesleyans and Roman Catholics, and others by the Govern-

ment at the Native State School; they are very intelligent, and some of them clever at mensuration; indeed, some may compare favourably with lots of their fair-skinned brethren. At the instigation of the Government some are becoming medical students. They did, in olden times, practice polygamy, but now they marry according to English law. They, in accordance with the laws of nature, abhor celibacy, and would consider its practice a stain on their manhood; and very justly too, for when the all-wise Creator has so richly endowed us with all our faculties, why ought we to scorn his handiwork and good judgment by a refusal to use them? The natives cultivate and manufacture many useful articles; they have good comfortable houses, built of their own material, to live in: they pay a tax in kind to the Government, and contribute sufficient to their churches to pay for all their religious training. As regards moral culture, I do not think Europeans can teach them much. It has often been asserted by evil report that the Fijians are becoming poorer, and several appeals have been made to the people of these colonies for charitable subscriptions to defray the expenditure connected with their religious training on the score of their poverty: and for the benefit of those who have not the means of knowing the true state of affairs, I shall here give a correct return of the purely native donations to the Wesleyan Missionary Society for the following years, taken from the Legislative Council Paper, No. 2, of 9th April, 1885:—1872, £1,057 13s. 3d.; 1875, £2,396 19s. 10d.; 1876, £3,218 12s. 11d.; 1877,* £891 3s. 8d.; 1879, £3,463 12s. 9d.; 1882, £3,476 8s. 7d.; 1884, £1,728 1s. 3d. The returns of 1885 are not yet printed: but it is believed that they will show a very large increase upon the previous year.

I cannot conclude this paper without tendering my sincerest thanks to my friends, the Hon. Wm. McGregor, M.D., C.M.G., at present Acting-Administrator of the Government, and Mr. W. Minc, Manager of the Rewa Sugar Company, Fiji, for their kindness in supplying me with many data necessary for the

1877 was the year of native disturbances in Vitilevu.

compilation of this paper; and, finally, I thank you all for the kind and attentive hearing you have accorded me.

The paper was illustrated by a large map, diagram, and a number of photographs and native curios.

Amongst the photographs exhibited was one of Mr. Thomson's Observatory, when conducting the observation of the transit of Venus, on December 7, 1882, at Levuka, Fiji.

Mr. A. J. VINER, who had spent a considerable time in Fiji, bore out the author's statements in respect to the Rewa River, with which he was personally acquainted, and considered the Society was much indebted to Mr. Thomson for his valuable and very interesting paper.

The proceedings then terminated at 10.30.

THIRD ORDINARY MEETING.

THE third ordinary monthly meeting of the second session of the Queensland Branch of the Geographical Society of Australasia was held in the Museum Library, Brisbane, on Thursday evening, October 21, 1886, at 8 o'clock. Mr. W. A. Tully, B.A., F.R.G.S., occupied the chair, and there was a good attendance of members, and several visitors.

The HON. SECRETARY read the minutes of the previous meeting, and, after the same had been confirmed, the following gentlemen were elected ordinary members of the Society, by ballot:—Messrs. C. T. Bedford and J. D. Caldwell.

The HON. SECRETARY announced the receipt of six donations to the Society.

Dr. WAUGH moved that the Society accord a vote of thanks to the Hon. Secretary, Mr. J. P. Thomson, for the very able manner in which he had edited and got up the annual proceedings of the Society. The motion was seconded by Mr. A. A. HULL, and unanimously carried, and suitably responded to by Mr. Thomson.

The following paper was then read by the author:—

British Possession and Settlement in South-eastern New Guinea.

By the Rev. G. WOOLNOUGH, M.A.

MOST persons in Queensland, and many elsewhere, are familiar with Sir Thomas McIlwraith's action in directing the British flag to be run up in New Guinea, with a view of claiming that country for Great Britain. It is equally well known that for reasons never fully stated the British Government disallowed that action, and that New Guinea was left, as to its ownership, where it was before. Soon afterwards the Emperor of Germany stepped in

and claimed so much of New Guinea as is indicated by the dotted line on the small map attached to a parliamentary paper entitled "Islands in the Pacific Ocean," and now exhibited to assist in forming an idea of the present general division of the country. It will be seen that the portion now called Kaiser William's Land is on the northern side of New Guinea; that it commences at the easternmost point of the Dutch possessions, running thence due south about half-way through the country, then bearing away eastward, and finally touching the sea at a point south-east of Huon Gulf. That part of New Guinea now left for British possession begins on the southern side of the island at the easternmost point of the Dutch possessions, and terminating on the north-eastern side at the line which marks the boundaries of Kaiser William's Land. This part of New Guinea is better seen on the map showing the outward and inward coastal trips made by the late Sir Peter Scratchley in the steamer "Blackall," from August to December, 1885, and now placed on view to illustrate this paper. It is generally known that the latest movement in regard to the British possession of this part of New Guinea has been made by the Premier of this Colony. He has suggested that Great Britain should proclaim its possession of the country named, and that whatever at present may be the precise form of its government, a guiding power should be exercised by the Government here. I have premised these historic statements for the purpose of making more intelligible what has now to be said on the possession and settlement of the country.

If the first object of a society like this is scientific, its ultimate object certainly is practical. From a considerable number of persons we have received information as to the mountains, rivers, soil, forests, flora, fauna, and people of New Guinea. and it has been understood all along that this knowledge was being gathered with a view to turning it to practical account in the settlement of the country. In the same way it must be understood that the Government of Queensland have not promised money and attention to this subject on purely sentimental grounds. They have in view such a settlement of south-eastern New Guinea as will

make it eventually self-supporting and a worthy part of the British Imperial dominions. It may assist the understanding of the subject if I first speak of the possession, and then of the settlement, of this new land.

There are three ways, in any one of which the people of one country may take possession of another country. The first in order, and the most frequently resorted to in days of yore, was that of taking by force of arms. Everyone acquainted with either sacred or profane history will remember that might has been the right upon which countries have changed hands. Conquest has been held to give the best of titles against the strongest counter claims. This was deemed to be so good that in this way all the kingdoms of England after many years of conflict were placed under one sovereign; and in the same way Wales and Ireland were added; Scotland having had the honour to come into the union by giving the family of the Stuarts to the throne. The explanation given of this mode of acquiring ownership is exceedingly amusing. It amounts to this:—That the moment hostilities begin between two nations, all property rights fall back into a state of nature; and it is a law of nature that that which belongs to nobody, belongs to the man who can take it. But it is absurd to talk of conquering New Guinea. There would be no one to resist the smallest invading army. It will not be pretended, therefore, that the country has been or can be taken in that way. The next usual method of obtaining possession of a country is by cession, as Fiji, for instance, was taken by Great Britain. But the cession or giving of a country implies that there is someone to give it. In the case of Fiji the two principal persons were Thakombau and Maafu. The first of these chiefs was a pure Fijian, a man who in the course of many years had gradually acquired the supreme chieftainship, and who on that account came to be called King of Fiji. Maafu was a Tongan, a free lance, who to do knightly service went over to Fiji, and there acquired by his personal prowess great influence over many of the Fijian people. His influence was great enough to tempt him to be insolent to Thakombau

himself, and it is certain that the latter feared Maafu, and was as much influenced by that fear as by anything else, in offering to cede the country to Great Britain. But it was a piece of pure presumption on their part to pretend to cede the country. They had no power whatever to do anything of the sort, according to known native ideas and belief as to territorial ownership of land and chieftain government of the people. I name this to show that in New Guinea, there being no such powerful chiefs as these men were, there cannot be a cession so good even as that, imperfect as it was. The tribes of New Guinea have no intercourse worth naming; they have no government bearing the slightest resemblance to a commonwealth, and therefore there could be no single act of cession on their part. The one other remaining method of taking a country is by occupancy. It will be observed that this word does not introduce a new idea. Occupancy follows conquest; and it follows the cession of a country. The term has a new meaning only when applied to unoccupied country. It is said to mean "the advisedly taking possession of that which at the moment is the property of no man with a view of acquiring it for yourself." Thus the meaning of the word is easily understood in regard to unoccupied countries. Just as wild animals are the property of the person who takes, and are his so long as he can keep them, but no longer, so is unoccupied land. It is acquired, as it is said, by possession, by adverse possession, and by prescription. Get it, hold it against all comers, hold it a long time, and it is yours against the world. It is worthy of note that nearly everyone who has spoken publicly or who has written on this subject has quietly assumed that Great Britain is fully entitled, should she so desire, to walk in and to occupy New Guinea precisely the same as if the country had not a solitary inhabitant in it. All these persons, some of whom are very eager, speak as if the presence of a few thousand native inhabitants, living very simple tribal lives, were of no account whatever in this matter, and that it would be a justifiable thing for Great Britain to dispossess them, and to

distribute their lands as royally as the lands of England were seized and disposed of by William the Conqueror. The sense of right now prevailing in England appears to be sufficient to prevent the British Government from taking possession just in that way. To say that England has done it before, is not to justify such a course now, and there is reason to believe that the difficulty of taking hold of the country has had fully as much to do with the delay that has taken place as any unwillingness on the part of Britain to burden herself with distant and feeble possessions. This difficulty of a good possession lies at the root of not being able to deal with the land and people of New Guinea. The old fental notions as to the tenure of land may have to be introduced unless the Government are prepared to recognise existing New Guinea usages on the tenure of land, and probably both systems will for a time side by side prevail.

I will now call your attention to that part of my thesis which I have ventured to name the settlement of New Guinea; by which I mean chiefly the relations in which the Government and European settlers may be placed towards the native inhabitants of the country as to property, and as to their domestic government. It is to be regretted that with all that we have heard about New Guinea we have heard almost nothing of its people. Visitors have studied almost everything but man. Perhaps it is on the principle that "Every prospect pleases, and only man is vile." From the little that has come before us, and judging that in the light of our knowledge of other primitive societies, the people of New Guinea are living in a very simple state—a state to be noted as primitive rather than as vile and wicked. When approaching this subject it should be known that the progress with which we are familiar is by no means common to mankind, nor is it by any means natural. It is not natural for a man to do to-day what can be put off till to-morrow. The condition of the great bulk of mankind is that of putting off till to-morrow that which they are not compelled to do to-day. Progress is not natural to any self-contained community; and all peoples now called primitive are so because they have long been self-

contained. The wonderful development witnessed in England first, and afterwards in all the United Kingdom, is due to the intermingling of races, and to their contact with the outside world. To ask why this should lead to progress is to ask for the essence of law, which cannot readily be given. What is done is to note causes and their consequences, and not to ask whence a cause derives its causal power. The inhabitants of Pacific islands have long been left in their isolated position. Their tribes have not intermarried to any appreciable extent; in some parts they have not done it at all. Their present customs must be and are such as they brought with them; and apparently they have changed very little, and probably never for the better. At this moment one of the points of most interest to us is that of the tenure upon which they hold the land. Normally all the land belongs to all the people who are living on the island. But it is quite possible that they themselves have never thought of it in that light. Private ownership, as we understand that term, probably is not known amongst them. It is an invention of an age later than that at which they broke away from one of the main lands. They brought with them to their present home such notions of ownership as prevailed in the home of their tribes, and with these they began their new life. Apparently they have never changed. So far as can be ascertained it is that form of ownership called tribal; but there is some doubt if it amounts fully to that. In primitive times there was no such thing as ownership of open land. From the stories told in Old Testament history it appears that tribes, or families like those of the patriarchs, wandered from place to place in a given country, and camped here or there as they pleased. The settled inhabitants of these countries seldom disputed the right of wanderers to do so; and ownership, so far as it went, was confined to such settlements as we call villages or towns. But in the course of ages there grew up a form of territorial ownership. Possibly it was tribal first and personal afterwards. From long occupation of a given tract of country the people would come to think of it as their own, no one having a better right to it than another, and

all together not having a right to divide or to alienate it. The difficulty of division or of alienation would arise in this way: The youngest children, male children especially, would have an interest as soon as they were born. Whilst of tender years they could not be consenting parties to any change; and as there would always be a rising generation, there would always be this impediment to any partition or sale. In studying this subject, I do not in history find a trace of one idea sometimes associated with tribal tenure—namely, that it is the unborn generation that is regarded as the coming heir, without whose consent the property cannot be dealt with. I am, therefore, inclined to believe that the tribes of New Guinea regard themselves as owners only of those parts of the country which they happen to possess; that their ownership is a joint one; and that they know of no methods by which that ownership can be permanently divided or alienated. There are two facts to be noted here. In all probability there are portions of the country which have been abandoned by force of circumstances, and as to which ownership has ceased; and it is certain that there are parts of the country never occupied by native tribes. These remarks may be taken to have cleared the way for the statement that in the settlement of Europeans in New Guinea sacred regard should be had to native rights in land. Inferior races are not to be robbed of their rights; and it will be necessary to show cause before an inferior race should be displaced, simply, as is sometimes said, to make way for a superior one. I venture to point out that territory *bonâ fide* in the possession of well-defined tribes should for the present be absolutely reserved to them; and that where they are thrifty and contented they should not be asked to alienate it; territory outside their occupancy may at once be made Crown land and dealt with on the lines of English laws.

What must be the form of British land law to be so applied it is not within the scope of this paper, and perhaps not within the province of this society, to say.

A correct base line on native ownership of land having been laid down, probably all other lines will be correct. But it is

hardly less important that the new settlement should start with a definite and good understanding as to the relations which the new government will hold to the domestic government of the native people. It would be worse than useless to refer to New Zealand for an example, but I may be permitted to refer to Fiji. Formerly in that country native government was tyrannical indeed, but tyranny frequently received a wholesome check by the assassination of a too cruel chief. On the benefits of such a government it is unnecessary to dwell. The Imperial Government have purposely left that native government in its primitive state, barring the assassination. For the support of the chiefs the people still have to contribute, and besides that they have to pay taxes to their British protectors. The results are, the chiefs rule, the British Government defends; the native has to pay both masters, greatly to his grief, and, it is to be feared, to his impoverishment also. In attempting government in New Guinea it is to be hoped that warning will be taken by the mistakes and failures in Fiji. This can be done only by starting with a clearly defined policy—one that will enable the Government to avoid all the evils which have been encountered in New Zealand with native tribes, and all such as those which gave so much trouble in Fiji when it came to be necessary to settle European claims to native lands. It would seem to be necessary to start with the understanding either that the native tribes are to have a chance to live, or that the whole of the land will be taken and dealt with irrespective of native rights, as was done in the case of Australia. To a society like this it will be intensely interesting to see that the former of these policies is adopted, and that every chance is given to the native tribes to work out their humble destiny. It may not be beyond our aims, therefore, humbly to suggest that British settlement in New Guinea shall for the present be an experiment quite apart from native tribes; and that contact should be had with them at as few points as possible. Looking directly at their domestic government, it will be seen that of written laws they have none; of unwritten laws they have a few. These relate, as we have seen, to land; they further relate to

marriage, duties of married persons, of parents and children, masters and servants. The people understand trade; they buy and sell not by barter only, but also by exchange of native coin for work or goods. Usually amongst the first things attempted by Europeans on going amongst these tribes are to advise them to wear clothing, to persuade them to adopt a European diet, and generally it is attempted to thrust upon them usages which ruin their simplicity, destroy their health, and eventually scatter and destroy them. A proof of what may be done by reserving the soil for the people, by introducing amongst them such improvements as they can bear, may be seen in Tonga. Twenty-five years ago there was not money enough in that country to buy a cow. Through the energy of its present Premier, the Hon. S. W. Baker, the people are living under a promising system of self-government; they are as industrious and thrifty as they can be expected to be in the time; they are prosperous and contented, having much less desire to be annexed by any of the great Powers than hope that one of the great Powers may eventually be annexed by them. It would be another star in the crown of our Queen if the people of New Guinea who may fall under her sway are allowed to become not a bad imitation of Englishmen, but loyal Papuans, true to their own nature, surroundings, and prospects; and it will be a matter of pride to us if this society can in any way contribute to that result.

A conversation took place, in which the chairman, the Rev. G. Woolnough, and the Hon. Secretary took part, on the paper read, dealing chiefly with the holding and alienation of land in connexion with native races.

The HON. SECRETARY announced the receipt of the "Journal of Mr. George Hunter on an Expedition from Kappa Kappa to the head of the Kemp Welch River, New Guinea," transmitted to the Society by His Excellency the Hon. John Douglas, C.M.G., Special Commissioner for British New Guinea. After some discussion it was decided that the Journal should be prepared by the Hon. Secretary in a condensed form, and read at next ordinary meeting.

The proceedings then terminated.

DONATIONS

TO THE

GEOGRAPHICAL SOCIETY OF AUSTRALASIA

(QUEENSLAND BRANCH).

[The names of the Donors are in *Italics*.]

ABSTRACT of Proceedings of the Royal Society of Tasmania. -- July, August, September, October, 1886. *From the Society.*

ANNUAL ADDRESS by Sir Edward Strickland, K.C.B., F.R.G.S., President of the New South Wales Branch of the Society. *From the Society.*

ANNUAL ADDRESS by Baron Sir Ferd. von Müeller, K.C.M.G., &c., &c., President of the Victorian Branch of the Society; and Proceedings at the Annual Meeting, January, 1886.

From the Society.

ANTARCTIC EXPLORATION, by Chas. P. Sprent, Deputy-Surveyor-General, Tasmania. *From the Author.*

ANNUAL REPORTS of the Department of Public Lands, Queensland, for the years 1875-85. *From the Hon. the Minister for Public Lands.*

BRITISH AND FOREIGN COLONIES, being the Inaugural Address of Sir Rawson W. Rawson, K.C.M.G., C.B., President of the Statistical Society. *From the Hon. F. T. Gregory, M.L.C., F.R.G.S., &c.*

CONTINENTAL AUSTRALIA, map of (mounted).

From the Surveyor-General of Victoria.

GENERAL REPORT on the Operations of the Survey of India Department.— Administrated under the Government of India during 1884-85.

From the Surveyor-General of India.

IMPERIAL FEDERATION (the Journal of the Imperial Federation League).

From the Hon. F. T. Gregory, M.L.C., F.R.G.S., &c.

NOTES ON WESTERN AUSTRALIA, with Statistics for the year 1885, by the Hon. John Forest, C.M.G., F.R.G.S., &c., Surveyor-General of Western Australia. *From the Author*

- OFFICIAL REPORT of Captain H. C. Everill, leader of the New Guinea Exploring Expedition. *From the N.S.W. Branch of the Society.*
- PAPERS AND PROCEEDINGS of the Royal Society of Tasmania, for 1885. *From the Society.*
- REPORT of Special General Meeting of the Victorian Branch of the Society, November, 1885. *From the Society.*
- REPORT on the Surveys of New Zealand, for the year 1885-86, by James McKerrow, F.R.A.S., Surveyor-General. *From the Surveyor-General of New Zealand.*
- REPORT of the Italian Natural History Society. *From the Society.*
- REPORT on the Geology of the Kimberly District, W.A., 1884-85, by E. T. Hardman. *From the Surveyor-General of Western Australia.*
- REVUE GÉOGRAPHIQUE. Internationale, Journal Mensuel Illustré des Sciences Géographiques, 11e. Année--Nos. 126, 127, 128, 129, Avril, Mai, Juin, Juillet, 1886. *From the Society.*
- THE SCOTTISH GEOGRAPHICAL MAGAZINE, Vol. II., Nos. 8, 9, August and September, 1886. *From the Society, Edinburgh.*
- VOLCANIC ERUPTIONS at Tarawera, New Zealand (Preliminary Report on the), by S. Percy Smith, Assistant-Surveyor-General, Auckland. *From the Surveyor-General of New Zealand.*

Inadvertently omitted from List of Members in Vol. I.

Butcher, Captain J. E.



PROCEEDINGS AND TRANSACTIONS
OF THE
Queensland Branch
OF THE
ROYAL GEOGRAPHICAL SOCIETY
OF
AUSTRALASIA.

2nd SESSION,
1886-7.

EDITED BY
J. P. THOMSON, M.A., C.E.,
Hon. Secretary and Treasurer.
Honorary Corresponding Member of the Société de Géographie Commerciale de Paris
and the Société de Géographie de Marseille.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. II. PART 2.

Brisbane:
WATSON, FERGUSON & CO., PRINTERS, QUEEN STREET.

1887.

NOTICE.

All Donations presented to the Queensland Branch of the Society are acknowledged by letter and in the printed Proceedings of the Society.

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88	27	Rego	Rigo.
89	27, 34 and succeeding folios	Tahoro	Taboro.
98	10	Llewlleyn	Llewellyn.

ADDENDUM.

PAGE 85.—Journal of Mr. George Hunter on an Expedition from Kappa Kappa to the Heads of the Kemp Welch River, was presented to the Society by His Excellency the Hon. John Douglas, C.M.G., &c., Special Commissioner for British New Guinea, who organised and despatched the expedition.

ORDINARY MONTHLY MEETINGS OF MEMBERS
OF THE
QUEENSLAND BRANCH
OF THE
ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA.

26th November, 1886.

Report, to Council, of the Society's Representative to the Meeting of Intercolonial Delegates held in Sydney, N.S.W., on November 10, 1886, was read by the Hon. Sec. A paper by Captain John Mackay, entitled Tucopia, was read. The Journal of Mr. George Hunter on an Expedition from Kappa Kappa to the Heads of the Kemp Welch River, New Guinea, was read.

16th December, 1886.

A paper, entitled Reminiscences of a Surveying Trip from Boulia to the South Australian Border, was read by C. T. Bedford, Esq., Staff Surveyor.

10th February, 1887.

A paper by N. Bartley, Esq., entitled The Mountains of Queensland, was read. Report, to Council, upon an inspection of certain supposed subsiding hills in the Redbank Plains District, was read by the Hon. Sec.



FOURTH ORDINARY MEETING.

THE fourth ordinary monthly meeting of the second session of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of 26th November, 1886. Dr. Waugh occupied the chair, and there was a large attendance of members and visitors. Rev. J. E. Tenison-Woods, an hon. member of the Society, was amongst those present.

After the minutes of the previous meeting had been read and confirmed, the following gentlemen were elected members of the Society, by ballot, viz. :—Messrs. R. J. Gray, Robert Beith, M.B.; A. Henry; Captains Wm. Thomson, W. Sinclair, and J. B. S. Medley.

THE HON. SECRETARY announced the receipt of thirty-four donations to the Society, and read the following letters from Captain W. Thomson and J. C. Roundings, F.R.G.S.:—

S.S. "City of Melbourne,"
Brisbane, Nov. 26, 1886.

The Hon. Secretary of the
Queensland Branch of the
Royal Geographical Society of Australasia.

Dear Sir,

It may interest your Society to know that the cairn of stones supposed to have been erected by Captain Cook on one of the hills on the north side of the Endeavour River, Queensland, remains intact. I formed a party the other day for the purpose of examining the top of the high hill referred to, and if possible to discover the cairn. The Hon. H. Littleton and I were the only two of the party able to reach the summit of the hill, when to our intense delight we found the object of our search. We burned the grass down all round, and chopped down a tree that was growing up through the side of the cairn, causing some of the stones to fall off.

Such a relic ought, I think, to be preserved by erecting a small fence around it. Trusting you will take the matter up,

I remain, &c.,

WILLIAM THOMSON,
Master S.S. "City of Melbourne."

332, Victoria Street, Darlinghurst, Sydney,
November 22nd, 1886.

To the Hon. Secretary of the
Queensland Branch of the
Royal Geographical Society of Australasia.

Dear Sir,

Having read of the discovery of a cairn at Cooktown, supposed to have been erected by Captain Cook, would it not be as well to closely examine it, and see if there are any documents or relics which would be of some value to your Society?

I remain, dear sir,

Yours truly,

J. C. ROUNDINGS, F.R.G.S.

The HON. SECRETARY read an extract from the account of "Capt. Cook's Voyages," wherein reference was made to his ascent of one of the high hills on the north side of the Endeavour River, on June 18th, 1770, during his first voyage.

The HON. SECRETARY informed the meeting that negotiations for reciprocity were taking place between the various branches of the Society with a view to the exchange of publications for distribution amongst the members. He said that such an arrangement would be a great advantage, as members would receive copies of publications from the affiliated branches of the Society.

The HON. SECRETARY then read the following report:—

Report to Council,

By J. P. THOMSON, M.A., C.E., *the Society's Representative to the Meeting of Intercolonial Delegates, held in Sydney, on 10th November, 1886.*

Gentlemen,

As it was your will, at the meeting of Council, held on 26th October, to appoint me the Society's Representative for the purpose of attending a meeting of Intercolonial Delegates in Sydney, with a special view to the formation of an Australasian Association for the Advancement of Science, it now becomes my special duty, mingled with feelings of pleasure, to complete my commission in the usual way. I, therefore, have the honour to present to you this report.

Your Representative left Brisbane in the S.S. "Ranelagh," on Monday afternoon, 8th November, 1886, at 3.30, and arrived in Sydney on Wednesday, 10th, at 9 a.m., on which day the meeting was held at 3 o'clock in the afternoon, in the Royal Society's Rooms, Elizabeth Street.

The following delegates were present:—

NEW SOUTH WALES.

Linnean Society of New South Wales, Professor Stephen, M.A.
 Royal Society of New South Wales, H. C. Russell, B.A., F.R.A.S.;
 Professor Liversidge, F.R.S.; C. S. Wilkinson, F.G.S., F.L.S.
 Geographical Society of Australasia, New South Wales Branch, Sir Edward
 Strickland, K.C.B., F.R.G.S.
 New South Wales Zoological Society, Dr. A. T. Holroyd, F.L.S.

NEW ZEALAND.

Philosophical Institute of Canterbury, S. Herbert Cox, F.C.S., F.G.S.

QUEENSLAND.

Geographical Society of Australasia, Queensland Branch, J. P. Thomson,
 M.A., C.E.
 Royal Society of Queensland, Henry Tryon, Esq.

TASMANIA.

Royal Society of Tasmania, James Barnard, Esq.

VICTORIA.

Field Naturalists' Club of Victoria, Rev. Dr. Woolls, F.L.S.
 Geological Society of Australasia, and Historical Society of Australasia,
 R. T. Litton, F.L.S.
 Royal Society of Victoria, K. L. Murray, Esq.
 Victorian Institute of Surveyors, W. J. Conder and W. H. Nash, Esqs.
 Victorian Engineering Association, Professor Kernot, M.A., and K. L.
 Murray, Esq.

Mr. H. C. RUSSELL, Government Astronomer, was voted to the chair, and, in opening the proceedings, explained to the meeting that he had never expected to be called upon to occupy the position of chairman, and, consequently, he had very little knowledge of what was proposed to be done. He would, however, call on Professor Liversidge, who was more conversant with the objects in view.

Professor LIVERSIDGE explained that the object of the meeting was the formation of an Australasian Association for the Advancement of Science. He referred to the invitations sent out, and stated that the business before the meeting was to frame consti-

tutional rules, and to appoint a date for the first meeting in 1888. When the subject was proposed it was thought there would be an exhibition in Sydney that year, which has since been laid aside. He thought, however, that as the Association was to be formed for the advancement of science, the fact of the exhibition not being held in 1888 would in no way prevent the successful formation of the Association.

The CHAIRMAN said the first resolution on the business paper was one about which there could not be much question, and it became his duty to move it. The resolution was, "That an Association of the Scientific Societies of Australasia be formed under the name of 'The Australasian Association for the Advancement of Science.'" Heretofore, there had been in these colonies a great want of united action, and many subjects which might have been taken up had not been. It was therefore desirable that they should, by every means in their power, form associations for the furtherance of investigation. He further referred to the progress of science in the old country, and the wonderful effect of its development on the people. He considered that Australasia presented a wide field for investigation and scientific discovery, which men, coming from other parts of the world, took the honour and credit of studying, which ought to belong to the colonies. The formation of the Association would be the means of stirring up the energy of many able men which has heretofore been latent, and would create a healthy stimulus in the public mind, and provoke their sympathy in the cause of science. It would also be the means of encouraging the colonial youths in scientific study by the example of others, and their having access to scientific institutions.

SIR EDWARD STRICKLAND seconded the motion, which was carried unanimously.

Professor STEPHEN moved—"That the rules of the British Association shall be adopted by the Australasian Association for the Advancement of Science, and such other rules of the British Association be followed as may be necessary until the first meeting of the Australasian Association."

Your Representative seconded the motion, which was carried unanimously.

Professor KERNOT moved—"That the President, Hon. Secretaries, and Hon. Treasurer shall be elected annually by ballot from amongst the representatives of the colony in which the meeting is to be held. The first election of officers shall be held in Sydney, in March, 1888." He said that the three bodies which he had the honour of being connected with in Victoria had all received the proposal for the formation of an Australasian Association for the Advancement of Science with the greatest heartiness and enthusiasm. No one, he said, had any shadow of doubt or misgiving as to the goodness of the cause, and the sooner it was carried out the better. He assured the scientific gentlemen present that the three bodies he represented gave this scheme of federation of the scientific societies their hearty adherence, and would be most happy in every possible way to support it. He referred to the great influence the association would exercise over the scientific community, the promotion of harmonious intercourse amongst scientific men, and the great advantage to the colonial youths. He said federation in science was of manifold advantage, and essential to progression. The formation of such an association was of the greatest public importance, and deserved the heartiest support, not only of every man with the smallest pretensions to science, but that of the public generally. Professor Kernot's remarks were both able and encouraging, and ought to carry additional weight, emanating from such an able authority.

Mr. R. T. LITTON seconded the motion.

Your Representative desired to know whether the election of officers in March, 1888, would necessitate the attendance of delegates in Sydney, as such a course would be very inconvenient to his colleague, Mr. Tryon, and himself, who, in Queensland, in addition to the duties connected with the societies they represented, had to attend to daily occupations, and could not at all times find it convenient to get away; besides the societies were put to some expense in sending

representatives to Sydney. He thought that some provisional organisation ought to be formed, as he failed to see how the meeting could transact business without recognising in itself some form of constitution necessary for present and future action.

Professor LIVERSIDGE said that he would arrange for the election of officers by ballot, so as to avoid the necessity of again meeting for that purpose.

Mr. HENRY TRYON referred to several clauses in the Constitution of the British Association bearing on the election of officers, and their applicability to an Australasian Association for the Advancement of Science. He concurred in the remarks made by your representative, and after some further conversation by other delegates the motion was carried.

Mr. S. H. COX moved—"That the first meeting of the Association be held in the first week in September, 1888."

Mr. W. J. CONDER seconded the motion, which was carried unanimously.

Mr. H. TRYON then moved—"That a convener of the first meeting be appointed, and that Professor Liversidge be the convener."

Mr. W. H. NASH seconded this motion, which was also carried unanimously.

On the motion of Professor STEPHEN, a unanimous vote of thanks was accorded to Professor Liversidge for the part he had taken in promoting the movement.

Professor LIVERSIDGE then briefly acknowledged the honour conferred upon him by the adoption of this resolution, and dwelt upon the interest manifested in the formation of the Association.

As per commission, your Representative conveyed to the meeting the congratulations of the Society, and the hearty good wishes of the Council for the successful inauguration of the Australasian Association for the Advancement of Science.

The CHAIRMAN said that he considered the meeting had been most successful, and trusted that the same unanimity and good fellowship exhibited amongst the delegates present would

characterise the future labours of the Association. The proceedings then terminated.

Your Representative would beg to point out to you that the meetings of the Association will have to be carefully arranged for the various colonies of Australasia. In that respect it may not do to work on the lines of the British Association, as the scientific societies in the mother country are more numerous and older established, with a larger supply of funds; the facilities for travelling are also greater than in Australasia, which on these grounds alone, would warrant a slight departure from the arrangements followed out by the British Association. Your Representative feels certain that a healthier stimulus would be disseminated through the public mind, and greater encouragement given to scientific institutions, if the Press would report to the public the results of meetings of the intercolonial scientific societies, several of which transact business which the various colonies claim an interest in. Important meetings of scientific bodies are held in other parts of Australasia, of which the public of this colony are ignorant.

J. P. THOMSON, Hon. Sec.

On the motion of MR. JAS. MUIR, seconded by MR. A. A. HULL, the report was unanimously adopted, with expressions of appreciation by the Chairman and the mover as to its satisfactory nature.

In the absence of the author, the following paper was read by Mr. C. T. Bedford:—

Tucopia.

By CAPTAIN JOHN MACKAY.

FAR away in the Western Pacific, in latitude $12^{\circ} 21'$ south and longitude $168^{\circ} 40'$ east, lies the lonely little isle of Tucopia, which for an isolated place, not comprised within the limits of any group, is perhaps the smallest inhabited island in that vast expanse of ocean. It may be five miles in circumference, and rises in the form of a rugged compressed cone to a height of nearly 3,000 feet. It is thickly covered to the highest peak with

dense tropical forest and vegetation, amongst which can be observed from seaward occasional clumps of breadfruit trees and cocoanut palms—their bright variegated foliage offering a pleasing contrast to the dark and sombre jungle which clothes the mountain sides. On the S.W. side, jutting out from the mountain base, is a low sandy flat, covered with palms, which appears to be the centre of population, and off which point is the only anchorage the island affords.

It was discovered by Quiros, the Spanish navigator, and afterwards visited by Capt. Edwards in H.M.S. "Pandora," sent from England in search of the mutineers of the "Bounty." In the early part of this century it was frequently touched at by some of the Hon. East India Company's ships on their voyages from Calcutta to Fiji; but situated as it is, out of the highways of ocean commerce, it has—with the exception of an occasional visit from an American whale ship—of late years been but seldom visited.

In 1875, the brig I commanded having been chartered in Sydney to recruit labourers for the plantations in Queensland. I arrived at Brisbane in February of that year, when, the ship having been fitted up in accordance with the requirements of the *Polynesian Immigration Act*, I received on board ninety (90) islanders for conveyance to their homes in the New Hebrides and Banks' Group. Sailing in March, I found on my arrival in the New Hebrides that in consequence of the unfortunate introduction of measles from Fiji pervading every island of the group, I should be compelled to look elsewhere and push beyond any of the islands having intercourse with that country. After a brief consultation with the Government agent it was resolved to run for the low Atoll Islands of the Marshall Group, north of the equator, then, if unsuccessful, to push on to the Caroline Islands. So, taking a departure from Tutuna, where we landed the last of our returns, on the evening of the fourth day cut the high land of Tucopia was sighted from the foretopsail yard; but being marked on Imray's charts of the Pacific twenty miles west of its true position, we found ourselves considerably to leeward,

involving a beat to windward on alternate tacks. By midnight we could distinguish the torches carried by the fishermen along shore, and at 4 a.m., being close in shore, hove to, with ship's head to the southward.

At daybreak several canoes were seen approaching the ship, and being doubtful as to the reception they might accord us we loaded both carronades and ran them out, which precautions, however, proved unnecessary, as on arrival alongside we were pleased to observe that barter and not war was their intention, each canoe containing some yams, taro, and fish for that purpose. I also discovered that my knowledge of the Fijian language enabled me to carry on a trading conversation with a young chief who had been to that country and who, exulting in the prophetic name of "Sam," presented to us one of the handsomest young savages we had met. Coming forward to rub noses (the usual mode of salutation), he placed his hands on my shoulders with that intention; but on my explaining that mine was rather short and not intended for that purpose, he took from one of his companions a piece of tappa, or native cloth, and tied it round my neck, which act of friendship I reciprocated by presenting him with some yards of coloured calico, and a treaty of peace was thereby established.

These people present, physically, the finest race in the Western Pacific. Of a bright copper complexion, most of them show regular and highly-intelligent features, without the slightest taint of the Papuan negro. Scarcely one could be found under 6 feet, and stout in proportion. Sam measured 5 feet 11 inches in height and 42 inches round the bare chest. The hair, which is worn long, is, by the constant application of lime, burnt to a reddish colour. They are tatoed over the chest, thighs, and arms with forms of fish and other savage devices. Like the Malays, they chew the betel nut, which imparts to the lips a bright red colour, and to the teeth an enamel resembling black marble. They believe in a good and bad Spirit, and, like the natives of Rotumah, in the worship of ancestors. Their manners, customs, and traditions, with the construction of their language,

point unerringly, in my opinion, to a common origin with the Samoans of Eastern Polynesia.

Irrespective of the peculiarities of Tucopia and its people, it is to Europeans fraught with a melancholy interest, inasmuch as on it were found certain relics of the ill-fated expedition of La Perouse, the French navigator, whose voyage is one of the interesting points in maritime history. It was undertaken in order to the extension of French commerce at the time when Cook's voyages had given so great an impetus to trade in the Pacific. And one of the first objects of the voyage of the ships "Le Astrolabe" and "La Bussole," under La Perouse, was to examine the Pacific coast of America, thence to the Navigator Islands, and lastly New South Wales. After the ships quitted the latter place nothing more was heard of them, notwithstanding all the search that was made, until in 1826, Capt. Dillon, of the H. E. I. Co.'s ship "Research," on his voyage from the Pacific to Calcutta, landed at Tucopia a Prussian named Bushart, who narrowly escaped massacre in Fiji. On his return voyage from India the following year, and calling at the island, he was told by Bushart, who had acquired a knowledge of the language in the interval, that he observed amongst the natives several articles of European manufacture which they had obtained by barter with the natives of the distant island of Vanikoro. Amongst the articles Capt. Dillon observed some silver spoons and a sword hilt, upon which was engraved the crest and motto of the long-lost navigator. The following year Capt. Dillon, accompanied by the French ship "Recherche" (Capt. Durville), proceeded to Vanikoro and there found on the reef, off the S.W. end, the remains of the ships, procuring therefrom several articles belonging to the expedition. Some cleared ground was also observed in the vicinity, where the survivors were supposed to have built and launched a vessel. In 1873, accompanied by Capt. Chase, of the whale ship "Hunter," of New Bedford, I, with melancholy interest, walked over this clear space of ground, which is manifestly artificial, and every evidence, even at this recent date, tends to confirm Capt. Dillon's supposition. These relics now

form a sad though interesting trophy in the Galerie de Marine, Louvre, Paris, being all that was ever found of the brave La Perouse, whose ships were wrecked at Vanikoro; but the ultimate fate of himself and crew must, alas, like many others, remain a mystery. Perhaps the most sad reminiscence of this ill-fated expedition is a fact established by the authenticity characteristic of the maritime history of the last century—that, while La Perouse, with his companions, was spending a miserable captivity on Vanikoro, anxiously waiting for the help that never came, until, “Hope withering fled, and mercy sighed ‘Farewell.’” —D’Entrecasteaux, who was sent from France in search of them, had twice sighted the island, the last time narrowly escaping shipwreck on the reef encircling its northern shores.

On the motion of the HON. SECRETARY, seconded by Mr. BEDFORD, the following journal was taken as read:—

Journal of Mr. George Hunter on an Expedition from Kappa Kappa to the Heads of the Kemp Welch River.

WEDNESDAY, JULY 14, 1886.

Left Port Moresby in the cutter “Ada,” accompanied by Dr. Clarkson and Peter Lifu, at 12.15 p.m. Had strong south-east winds to Kaile, where we anchored at 8 p.m.

On arriving at Kaile, found the natives in great fear, they having heard from the teacher at Kappa Kappa that the Garier tribe had started down to make raids on them and the Vahoure natives, while at work in their gardens. I told them I was going to Kappa Kappa in the morning, and from there into the bush to visit the bush people, and that I should hear the truth as to whether Garier was coming or not. If I found, whilst in the bush, that it was their intention to attack them, I should return with the cutter into port, at the same time flying a red flag. If they saw the cutter going in without the flag Garier would not be on the war path.

THURSDAY, JULY 15.

Left Kaile at 7.30 a.m.; wind right off the land. Shortly afterwards it fell calm, and we got no wind until 3.30 p.m., when a light breeze from the south-east set in. Anchored at Kappa Kappa at 4 p.m.

Most of the Kappa Kappa natives have taken to living on the water again for the first time since four of the tribe were killed in an attack by the Hula natives. Some are living in their old houses, and others have built new ones; a great many of the other houses are falling down. The teacher's premises are also greatly in want of repairs.

FRIDAY, JULY 16.

Started from Kappa Kappa for Rigo at 10 a.m. (distance eight miles). Crossed the creek which runs into the sea at Kappa Kappa three times. Passed through thick scrub lands to the foot of the coast range. After ascending the range the country becomes more hilly, with open grass flats, up to the village of Rigo. This village, with the village of Borno, some time ago contained about 200 houses, but it has been partly burnt down through the careless use of fire by one of the native women. They have quite recently started to build new houses in some of the places where the old ones stood, but many of the natives have left and formed new villages close to their gardens, which are scattered over the country between Rigo and Kappa Kappa.

The mission station at Rigo faces the centre of the village. It consists of a church about sixty feet long and twenty-five feet broad, and is thatched with long grass. It is about fifty yards from the dwelling-house, which is built on piles eight or ten feet high, is twenty-five feet long and ten broad, has doors back and front, and a small platform on the front side. The fence round the house is in ruins; in fact, the whole of the premises are in a dilapidated condition.

On arriving at Rigo I had an interview with the chiefs of Borno, Rigo, Sarowah-kè, and Garier. I asked them if the Garier people had left their villages to attack Kaile and Vahoure. They told me they had not. Being sure on the point, after long

questioning, I returned to Kappa Kappa, so as to send the cutter back into port.

SATURDAY, JULY 17.

Sent cutter back to Port Moresby, with letter to Assistant Deputy-Commissioner.

SUNDAY, JULY 18.

Remained at Rigo all day.

MONDAY, JULY 19.

Started from Rigo, with thirty-two Sarowah natives as packers, at 8 a.m. Thick scrub lands and grass flats between Rigo and Sarowah. The Garier Hills, bearing about north-west, are in many parts thickly grassed to the summits; on the tops of the hills are situated six of the principal and most warlike villages of the tribe; they cultivate sugar cane, bananas, yams, and taro. They are very seldom visited by Mission Teachers, I, myself, being the first white man who went amongst them, two years ago. Their villages are built on the highest and rockiest points of the hills. Being a strong tribe, mustering between two and three thousand, they don't build in trees, as many weaker tribes do, for safety. They are tall and strong men, rather darker in skin and coarser in feature than the coast tribes.

The houses are smaller than on the flat country, owing to the difficulty of procuring building material. The gardens are made in scrub lands on the sides of the mountains. Great quantities of pigs run about the villages, and are very tame, following their owners to and from the gardens.

The fences round the gardens are made by putting stakes in the ground at intervals of four or five feet and crossing small timber in lengthways, and tying the tops of the stakes together about four feet from the ground. Some of the gardens are four or six acres, but owned by many people.

The natives do not bury their dead as the coast natives do, but when one of them dies, the relations build a stage alongside of the house, and leave the body exposed on it until putrified, putting their wooden dishes underneath to catch the matter which comes away from the body. This they mix with yams

and eat. They have only two feast days during the year—the one the banana, and the other the yam feast; at the latter of which they have their dances. Many of the different tribes are invited to the feasts. The “yam” being the great feast, is the only time when they kill any quantity of pigs. They hunt kangaroos for some days before the feast, and preserve the meat by smoking it. When going on the war path they have a feast and kill a good many pigs.

When a chief dies, the natives leave the village and live in the bush for a time. They don't think that a man dies from natural causes, but think he is killed by the “devil” of some other tribe, and very often kill some other man they think is the cause of it.

There are very few cocoanut trees in this village, nothing like the number grown at Rigo, Borno, Sarowah, and the surrounding villages, all of which grow a large quantity.

Sarowah is a large village one mile and a-half from Rigo, and has the most powerful chief of the tribe. It has over 100 houses. The people speak a different language to the Garier tribes. They dry their dead in the sun and put them away in the bush, tied up in the bark of the palm tree.

Sarowah-kè and Bobo Bobber are the largest villages in the district, but the natives had all left and are living out at their gardens on the Kemp Welch River. These people speak the same tongue as all the natives in towards the coast.

The names of the principal villages forming the large tribe are Commeeté, Kennier, Lelo-Lelo, Rego, Paka-Paka, Borno, Sarowah, Keeto-Barta, Sarowah-kè, and Bobo Bobber. There are some smaller villages in towards the coast which I don't know the names of. * The tribe, when all together, should number about five to six thousand fighting men.

After leaving Sarowah-kè we passed by bald hills and open country for miles over to the coast range with running creeks and sago and cocoanut palms. Came to a creek, which I named Rocky Creek, distant four miles from Sarowah-kè. The hills here turn to the north-west; we, keeping along east and east by

west, passed another creek running north and south, found all the country well grassed, with open flats with here and there patches of scrub. We then came on to Paradise Creek and camped two and a-half miles from the Kemp Welch River. Here the country is flat for about three miles to the north. The Kemp Welch overflows its banks during heavy rains, but there are fine dry ridges running down to its banks.

There are some hundreds of acres under cultivation on the creeks running into the river. The chief and people came to see us after our camp was pitched, bringing yams and bananas to trade for tobacco.

All the country along the banks of the Kemp Welch is well suited for stock as far as Rigo and over towards the coast on to the beach at Round Head, to Hula, and from there to Kalo. There are also portions well suited to sugar-cane and other cultivation. The soil is black on the flats and dark on the ridges, with wonderfully thick grasses.

We had over 100 of the natives to visit us, bringing sugar-cane and bananas.

Heavy dews at night and thick mist.

TUESDAY, JULY 20.

Dr. Clarkson and Peter left early to go shooting.

WEDNESDAY, JULY 21.

Left camp to explore up the river, and returned at 1.30 p.m.

THURSDAY, JULY 22.

Left camp with whole party, intending to start up the river to the junction, where the Tahoro crossing is. Splendid open country right back and up to the junction. Arrived at the crossing and found the river too high to cross and unsafe to camp on its banks, for fear of being flooded during the night, as it looked like heavy rains up in the ranges.

FRIDAY, JULY 23.

Dr. Clarkson and myself remained in camp, as I expected some of the Tahoro natives to come in. They came at about one o'clock (twelve men and twelve women). I gave them some tobacco. They were very shy. I told them that I should be up

at their village in a few days; but I found it useless to try to get any of them to pack us up, it being the first time they had seen a white man. Went down to the river in the afternoon and found it a good deal higher from the last night's rains.

SATURDAY, JULY 24.

Went up on to a high bald hill with Dr. Clarkson, to take observations. Had a good view of Mount Owen Stanley (N.), Mount Obree (N.E. by E.), and Mount Brown.

SUNDAY, JULY 25.

Stayed in camp until mid-day.

MONDAY, JULY 26.

Started back to camp at 7.30 a.m. with about fifty natives. Took all the things down to the river and rafted them across—nearly sundown by the time I had finished. Then carried things about a quarter of a mile through scrub and came on open country and bald hills and camped close to the other branch of the river, the two branches being only one mile apart. After making some soup I turned in for the night.

TUESDAY, JULY 27.

Sent the Sarowah-kè men back.

Followed the bank of the river for about four miles through thick scrub and not flooded, the river here being much broader than the other branch, with any amount of sugar-cane and bananas on its banks. Came to the crossing and found the stream about 150 yards wide and four feet deep, running very strong. Flat country on both banks. Half a mile above the crossing, to the north, high hills with well grassed and open ridges.

Had dinner and started the packers on, following the east side of the river for some distance, then turned off at right angles and went out of scrub into open grassed country. Followed up the hills for some time and then came on to a creek named after the village, Tahoro. Followed it for some time—till very nearly sundown—and then left the creek and ascended a high hill with little scrub and very thickly grassed. Arrived at the top just as the sun was setting. About 100 Tahoro natives came to meet

us and took the packs from our men on into camp. The doctor was very tired—did not get into camp until half an hour afterwards. All the natives were very friendly.

WEDNESDAY, JULY 28.

Dr. Clarkson had fever and ague at daylight. Many of the people and chiefs came from Tahoro village this morning. I had a long talk with them and told them I did not come to do them any harm, only to see their village and country and to make friends. I then asked who was their chief, as I was going to give them a "Maino"* from the big chief of the white people; and as long as they did not kill any whites we would be, for ever and ever, their friend. They then pointed out their big chief and told me his name was Kennerpo. He is a fine-looking man, about middle age, and can be known by a large spear wound on his ribs. I gave him one half-axe, one pearl shell, one cane knife, one small knife, some beads, one looking-glass, and 1lb. of tobacco. I gave the lesser chiefs ten sticks of tobacco each. They stayed in camp a little while and I then went with them up to their village, which stands on a mountain over 2,000 feet high and very steep. It is grassed nearly all the way up on the south end, with thick scrub on the east and west sides. The distance from the river is about $1\frac{1}{2}$ miles.

The village, which consists of forty-five houses built on the ground and twelve dobos built in trees, is surrounded by a stockade of bamboos to the height of about twenty feet. I had a good look round the village and found it very clean, although there are plenty of pigs about. I bought a large pig for a half-axe and pearl shell and five sticks of tobacco.

I could see the sea in the direction of Kerepund, but it was a great distance off.

I have named the mountain opposite Tahoro, nearly 3,000 feet high, Mount Douglas. It has two villages on top, named Voepe and Quirley. The natives speak a different language to the Tahoro natives.

* Peace offering.

After having a good look round I returned to camp, a few of the natives coming with me to carry the pig.

On arriving in camp at 4 p.m. found the doctor better. All the chiefs and people came down with wooden dishes full of cooked yams and put them down in front of me. It is a sure sign of friendship when they bring their women and children near the camp.

THURSDAY, JULY 29.

Started from camp early with two natives, leaving the doctor and Peter behind to look after the camp. Making due easterly course, went down side of the ridge, which is thickly grassed. Barometer fell 30·20 in Tahoro Creek, which runs at the foot of this hill. Followed the creek up about a mile, then ascended the hill, going to a village called Tuborogoro. Barometer 28·85. This village has a stockade all round it. Some of the houses, fourteen in all, not more than 8×5. Mostly scrub round this hill. Had to send the Tahoro natives that were with me on ahead to tell the natives I was coming.

When I went into the village all had cleared out but one old man and woman who could not have run away if they had wanted to. When the people found that I did not kill them they came back from the scrub where they had been hiding. I stayed there a few minutes and then went on to the next village. The country is very hilly, with dense scrubs and running creeks. The only fault I had to find with the walking was that I had to go down to the bottom of the hills and then ascend to the very tops.

The name of the next village was Enogoro—only five houses built on the top of a high hill. Barometer reading 28·95. As it was mid-day did not stop long, as I was making for the big range called Bogoro.

Arrived at the top, 2.30 p.m. Barometer reading 28·50. The day was too cloudy for me to see any distance ahead. This range is due east, and then runs in a south-east direction. Stopped on the range for a little time and then came down, passing through another village of thirty houses—Keberrey.

Barometer 29.0. Found the natives all the same on this side of the river. I could see many villages in the distance towards the main range. All the gardens are on the side of the mountain. The natives have a long way to go up and down these hills for water, which they carry over their shoulders in long bamboos. Their cooking is done by heating a heap of stones and putting their yams on, covering them over with banana leaves. As I found the sun getting low, I could not make a long stay in any of the villages. Came to another village, called Modorgoro—eight houses on top of a very rocky hill.

Getting close on sundown, and four miles away from the camp, with high hills yet to go over, passed through another village of twenty-five houses, called Dedomerer. Barometer 29.45. Found the natives very frightened in all these villages, and had always to send my boys on ahead to let them know I was coming up to the village and not to be afraid. Night was just closing in and I had two high hills yet to go over before reaching camp. My boys got torches to light the way for me. Did not get up to Tahoro village until 8 p.m. As soon as the people in this village heard I was coming they all got grass and lighted it to show me the way through, a great many of them going down ahead to camp, which I reached at 9 p.m. Had not been in long before I heard the shell sounding for war. Asked the natives what it was for. They told me it was Gerreropo and Boko villages, under the main range back of Kerepund, coming to attack them, so I sent six or eight of them back to the village for their spears and their shields, and they came back with the spears and more men.

FRIDAY, JULY 30.

Struck camp 9 a.m., following the hill down to the river. Pitched camp about two miles from last camp, on the opposite side of the river, under Mount Douglas. The people in the villages of Voepe and Quirley speak a different language to those on the south side. Mount Douglas has dense scrub to the top, but grassy hills to the south-west and open country down the river, with very high and mountainous country up the river.

SATURDAY, JULY 31.

Got up with the intention of starting to-day. Had breakfast. Suddenly had an attack of fever and ague, so was forced to remain in camp all day.

SUNDAY, AUGUST 1.

Got over the fever and started up the river to see how the country was ahead. Crossed the river (about four feet deep) three times. The river here about 100 yards wide. All scrub and flat country. Higher up the country gets rougher, with dense scrub, in which wild sorghum grows very thick and would make fine feed for horses. A few natives could, in a very short time, pull enough for ten or fifteen horses. Horses could easily be brought up here with packs on.

The natives pointed out to me six villages on the north side of the river, all on mountain tops. Tahoro is the first village up the river for ten miles on the south, and Quirley and Voepe are the first on the north side. In conversation with some of the natives, they told me that three or four days' journey from here I should get to water like Kalo and Kerepund. The first-named place can be seen from Tahoro village. The native name for the big range is Dokoro, and there is a village of the same name there. The people, they say, are cannibals. I made up my mind not to shift the camp any further up the river, but to take my blanket and rations for a few days and go up as far as I could, starting to-morrow.

The chief of Tahoro was blowing the conch shell several times after sundown. I picked six men as carriers to-morrow (one chief of Quirley, four men from Tahoro and one Garier chief)—six in all. The last has been with me all the time.

MONDAY, AUGUST 2.

Rose early. The doctor and myself rolled up our blankets, took a few provisions, and started up the river at 7.30 with the six natives mentioned yesterday, to whom I agreed to give a pearl shell each on our return.

Crossed the river three times in four miles. Came to a large creek which the natives called Arumè, coming down in a N.W.

direction. By the size of the creek I should take it to be flat country up it. After crossing the creek, had to go on to the range as I wished to visit a village called Keberrey, about ten miles up the river. Kept along the top of the range until we came to the village, where we arrived at 3 p.m. The people were much afraid at first; if the doctor simply took out his compass they ran away. Had been there only a few minutes when I saw some Tahoro natives coming along in great haste. When they got up they gave me a letter from my brother, which had been sent from Sarowah. They stayed only a few minutes and then returned back to Peter at the camp, where I had left orders to construct a raft to return down the river by. Stayed about an hour in the village and gave the chiefs and people some tobacco and made friends with them. Then started down the mountain, which was very steep, and camped up the river about twelve miles from the camp.

The natives of Keberrey brought a pig down to the camp just at sundown, for which I gave them a cane knife and ten sticks of tobacco. These are as fine a race of natives as I have seen in New Guinea.

TUESDAY, AUGUST 3.

Rose early and started across a large bend in the river, and came on to it again in about two miles, where it is very broad, with a deep stony channel, with very high peaked mountains on the other side towards the east, and a high range on the north side running parallel to the river. Followed the range about a mile up the river with the doctor and two or three natives. As we came to another bend in the river we saw a lot of natives on this side; they plunged in at seeing me, who was in the lead, and swam across to the other side, clearing into the bush.

Here the mountain was very steep to the water's edge—all grass and no scrub. This seems to be the end of this range, and the country appears to be all level on ahead, right out to the foot of the main range, leaving Mount Obree on our left.

I left ten men about a mile back making a raft, as they seemed frightened to go any higher up with us. By the time

the doctor came up there were twelve men on the opposite bank with spears to prevent us crossing. The natives that were with me sang out to them to go away, and they then bounded into the bush close by. I wanted to cross here, but the river was very deep and I should have had to swim. Beautiful flat country on the other side, but my natives would not go over. The name of this village is Dokoro, some fifteen miles up the river from our camp.

Returned to where I left the men making the raft. Could not get any of the Dokoro people up nearer than 200 yards or so. Tried in every way.

The rafts being finished, we started to return, as I knew that I should have to remain here for a few days if I wanted to get in any further, by making friends with the natives of Dokoro.

Put all things on board the rafts and started back at 12 a.m. with one small raft and one large one. It is quite easy to bring horses, packed, up the river as far as I went; and by the look of the country on ahead it appears to be a good deal flatter than the last fourteen miles.

Got down to camp at 4 p.m. Found Peter all right and rafts ready to start. As the doctor wished to get into Port as quickly as possible, I paid my men off and got everything ready for an early start in the morning.

Had a long talk with the Tahoro natives, and told them not to be afraid if I came up again at any time. They said they would not be afraid as they know my name.

WEDNESDAY, AUGUST 4.

Started with two rafts; the doctor and myself in one, Peter in the other. Found the river all the way to the junction very broad, with a noticeable absence of dead logs. Beautiful scrub and open country on its banks.

After passing the junction, found the river much wider, with a good deal of dead timber floating about. Went down about eight miles, and, after landing our things, left the rafts to proceed to Kalo on their own account. Packed on about five miles towards Sarowah-kè, some of the Tahoro natives coming with us.

On the west side of the Kemp Welch, from Kalo to the junction of the Musgrave, and for ten miles up to Mount Douglas, there are no villages, except a few houses belonging to Sarowah-kè people when they leave the large village and go out to work in their gardens.

THURSDAY, AUGUST 5.

Started from camp 7 a.m. and packed as far as Sarowah with Sarowah-kè natives, and paid them off. Got Sarowah people to pack to Rigo. Arrived at Rigo 1 p.m. Staid there a little while and then went on to Kappa Kappa, and arrived there at sundown. Found the teacher away in Port, but he came home during the night.

FRIDAY, AUGUST 6.

Left Kappa Kappa in the teacher's boat for Port Moresby, putting stores, &c., into a canoe and sending them in by natives. Called at Tupeselei and had dinner. Arrived at Port Moresby 7 p.m.

Mr. C. T. BEDFORD, on the invitation of the Chairman, said he desired to bring before the meeting a matter of much interest, having reference to the subsidence of one of the hills in the Redbank Plains district. The gradual subsidence had been observed for several years, and from a scientific point of view he considered the circumstances connected therewith sufficiently interesting to bring before the Society, with the probability of observations being made with a view of ascertaining the probable cause of subsidence.

The CHAIRMAN informed the meeting that a Meteorological Society of Australasia had been formed by Mr. Clement R. Wragge, and desired any of the members interested in meteorology to favourably consider the existence of the society referred to. He further intimated that at the next meeting a paper would be read by Mr. C. T. Bedford.

The proceedings then terminated.

FIFTH ORDINARY MEETING.

THE fifth ordinary monthly meeting of the second session of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of December 16, 1886. Dr. Waugh occupied the chair.

After the minutes of the previous meeting had been read and confirmed, the following gentlemen were elected members of the Society, by ballot, viz.:—Honorary member, the Hon. Sir Arthur Hamilton-Gordon, G.C.M.G., &c.; corresponding member, the Hon. Sir William McGregor, K.C.M.G.; members, the Hon. Sir S. W. Griffith, K.C.M.G., Messrs. H. W. Llewellyn, H. J. Hemmy, and A. Crawford.

The receipt of seven donations was announced to the Society.

The CHAIRMAN informed the meeting that Her Majesty the Queen had graciously granted to the Society the right to assume the title "Royal."

On the invitation of the Chairman, Mr. C. T. BEDFORD read a letter from Mr. Daniel Jones, of Redbank Plains, conveying additional information regarding the subsidence of one of the hills in the district of Redbank Plains, and the appearance of additional springs in the locality of the supposed subsidence.

Mr. BEDFORD moved that the Hon. Secretary be deputed by the Society to proceed to the locality and make the necessary observations to determine the rate of subsidence of the hill referred to, and also any other existing phenomena connected therewith which might be of scientific interest to the Society.

Mr. E. McDONNELL, in seconding the motion, suggested that Mr. Bedford should be asked to accompany Mr. Thomson.

Mr. BEDFORD said that he would be glad to render any assistance in his power; adding that Mr. Jones had kindly offered to meet any representatives sent by the Society, and convey them from the railway station to the locality.

Mr. THOMSON said that he would be glad of Mr. Bedford's valuable assistance as a companion on the occasion.

The motion was unanimously carried.

The following paper was then read by the author:—

Reminiscences of a Surveying Trip from Boulia to the South Australian Border.

By C. TWISDEN BEDFORD, Esq., Staff Surveyor.

ON the 30th of April, 1885, I had the honour of receiving instructions from Mr. W. Alcock Tully, B.A., Surveyor-General of Queensland, to proceed to Boulia, a small township in the far west of Queensland, in the North Gregory district, situated (approximately) in longitude 140° E., and latitude $22^{\circ} 54' 20''$ S., in order to carefully measure the distance between the telegraph station at Boulia and any point on the western boundary of Queensland lately defined by the South Australian Government, with a view of eventually determining the differences of local time between Brisbane and Boulia by an exchange of electric signals, and thereby longitude of Boulia, and by this means, taken in conjunction with the measurements from Boulia to the South Australian border line, ascertaining to what degree of accuracy the survey by the South Australian Government, presumably along the 138th meridian line, had been carried out.

Before commencing my duties I had to travel from where I was at that time located, at Cardwell, on the eastern coast of Queensland, across the whole breadth of the colony in a westerly direction, *viâ* Hughenden and Cloncurry, to Boulia, and from thence, by the route most suitable for accurate measurements, to the South Australian border, and I have been asked to place on record incidents happening and observations of the country, soil, timber, &c., taken *en route*, that may be of any interest to the Geographical Society of Australasia.

I may premise my record by the statement that I saw the whole of the country passed over at its very worst, owing to the severe drought experienced by the colonies during 1885 and part of 1886.

After leaving Cardwell on the 15th of May, 1885, and passing through the mountainous country lying between the coast and Bett's Creek—which latter place was at that time the terminus of the Northern Railway from Townsville—we passed through a strip of heavy sandy country, between Bett's Creek and Hughenden, on the Flinders River. While travelling through this strip of country I had to be exceedingly careful of my horses, as the poison pea plant grew in great profusion, and the grass being so scarce and dry, and the poison plant so green and tempting in appearance to equine eyes, it was no wonder that horses would try and sample it. We managed, however, to get through without any casualties on this score, and arrived on the Flinders country—rolling black soil plains. After a few days' delay in the vicinity of Hughenden, owing to a heavy thunderstorm rendering the roads too heavy for traffic, we resumed our journey down the Flinders River towards Richmond, but, alas! we found that the rain had been only local, and twenty miles from Hughenden the country was very dry and burnt up; no grass and but little water along the road. I may here state that the shower we had at Hughenden in June was the last rain we experienced until the end of the year.

On passing Richmond one of my horses succumbed to the effects of no feed and water, but at about fifty miles from Richmond we found the best grass and water we had seen since leaving the coast, and gave our tired horses a spell thereat for two days. On resuming our journey we found that the good feed did not extend for more than about twenty miles, and from this point to the town of Cloncurry we found little or no grass, and water proportionately scarce and long stages apart.

I had to remain for three weeks near Cloncurry to execute some Government survey work, and resumed my journey to Boulia on August 6th, following the general course of the Cloncurry River upwards for fifty or sixty miles, and thence crossing the watershed on to the Burke River, upon which river Boulia is situated, about 150 miles farther down its course. One peculiarity of this watershed between the Cloncurry and Burke rivers

is noticeable. Where the main Cloncurry to Boulia road crosses it, it is almost impossible to say at what point it does cross. The surrounding country is slightly undulating, but nothing to denote a watershed between two large rivers. From this point to Boulia the main road follows the general course of the Burke River, and the country consists mostly of open downs, stony back from the river, with thick fringes of coolibah timber on flooded country along the numerous channels and billabongs that comprise the Burke River.

We reached Boulia on August 21st, and found it also suffering from the effects of the prolonged drought. The township is situated on the western side of the southern end of a waterhole in the river, about three miles in length when it is full, but which dwindles down to insignificance during a drought. The town is comprised of a courthouse, telegraph and post office, three stores, four public-houses, a blacksmith and wheelwright's shop, chemist, and a saddler, with the ever-present Chinese gardener; and has a resident police magistrate, clerk of petty sessions, with the attendant sergeant of police, constables, and lockup. It consists of one street, and I do not think would require the use of three figures to enumerate its adult population; but if children be included, perchance the enumeration would amount to over the century.

I have thus far given a mere outline of my journey to Boulia from the coast, for far more graphic pens than mine have oftentimes portrayed in glowing colours the rich rolling pastures on the Flinders, Cloncurry, and Burke rivers, and their several respective watercourses; but how truly does the old saying of "circumstances altering cases" apply to the descriptions I would feel inclined to give of the same country, owing to the effects of the severe drought so prevalent during and prior to my transit, and the hardships both men and horses underwent through scarcity of grass and water on the main roads.

After the preliminary stellar observations necessary before commencing my work, we started running "Westward Ho" in September, 1885, the course I had taken—a few degrees to the

south of west—being a nearly parallel one to the course of the Burke River downwards from Boulia, and intended to strike in the immediate vicinity of a large waterhole, fifteen miles in length, distant about thirty miles from Boulia, in the main channel of the Herbert or Georgina River, about four or five miles above the junction of the Burke and Georgina rivers. My first fixed camp from Boulia was at a small mudhole (but styled a waterhole in that part of the country) in the Bandyacker Creek, a tributary of the Burke River, about five miles from Boulia. This was the last water I saw on the line of country I crossed with my survey for another forty-five miles. The country from Boulia to the Bandyacker Creek, and for fifteen miles from Boulia, can be fitly described as open gravelly downs, interspersed with a few scattered clumps of giddea, with a few clumps of a kind of timber called, locally, Minnie-ritchie, which grows tall and straight, seldom more than about six inches in diameter, not unlike the giddea wood in grain, very hard, and splits easily, and is greatly prized for fencing purposes, as it lasts well in the ground. I found it exceedingly suitable for making my posts and pegs out of, and whenever procurable used it in preference to any other kind of wood. After progressing about ten miles with my work, the Bandyacker Creek mud became undrinkable, and I had to remove my main camp to another misnomer known as the Corriggia waterhole, situated in the main channel of the Burke River, about fifteen miles below Boulia. Here we obtained a fair supply of good drinking water by sinking a cask in the sandy bed of the river, and making a trough out of a hollow log for our horses to drink out of; but our troubles from this time commenced. Our Corriggia camp was too far to return to every night from work, as the surveyed line at its most accessible point was seven or eight miles distant, so that from this time to the end of our work we used to start out every Monday morning—five, and subsequently seven thirsty souls in party—with a 36-gallon cask of water on our American waggon, which quantity had to suffice us for both drinking and washing purposes until the Saturday night following. One pint

per man each morning and evening was the allowance for washing, and whenever it became exceptionally hot weather, and thereby more than the usual quantity being used for drinking, I am afraid we often sacrificed cleanliness to thirstiness, and satisfied the needs of the inner rather than the outer man. The horses used for each day's work had to be brought every morning from and return each evening to the main camp at Corriggia for water, and for our food sent out to us daily by our camp-keeper.

At about twenty-five miles from Boulia the nature of the country entirely changed from open downs to thick giddea forest, yclept scrub in the North Gregory district. But to anyone accustomed to the dense tropical scrubs of our eastern coast line the faee of terming any thick giddea forest a scrub is obvious. This thick belt of giddea continued for seven or eight miles before we entered on the low flooded devil-devil cooliba flats of the Georgina River. And the change in one sense was a relief to members of my party, for their hands were one mass of festering sores, caused by abrasions of the skin by the giddea—which is poisonous to a certain extent—and aggravated by the fly pest, added to the want of vegetable diet so unobtainable and yet so necessary in the far west.

At twenty-four miles on my road westward I again found it necessary to shift my main camp onwards to the Paravituary waterhole, but here we missed the good water we had at the Corriggia, for the Paravituary unfortunately was very brackish. This otherwise magnificent waterhole, fifteen or sixteen miles in length, is quite salt at its upper or northern end, and therefore undrinkable, whereas at its lower or southern end it is fresh. We were encamped about the centre, and whenever the wind blew from the northwards the water became so salt as to be almost unfit for use, but if calm or blowing from the southwards it was only slightly brackish; but the effects on all of us—both men and horses—during the few weeks we were obliged to use this water were plainly perceptible. It made us thin and emaciated, and on one of our party—our camp-keeper—the after

effects lasted for months, nearly causing his death from chronic dysentery. caused, he firmly believes, from the constant use of this saline water. Fish—principally bream—are plentiful in the Paravituary; one party of men camped close to us caught from thirty to forty pounds weight of fish within an hour. A member of my party was also fairly fortunate, but I never was lucky at fishing, probably through not using the proper bait, combined with the absence of that *sine qua non* virtue in all piscatorial pursuits—namely, patience. I ascertained from the aborigines subsequently that Paravituary means in their language “big fellow saltwater.” Another pest from which the North Gregory district was suffering at this time was a plague of rats. They were everywhere in thousands. Nothing came amiss to their insatiable appetites—rations, saddlery, boots, water bags—all were sampled by these voracious rodents. A boy we had in camp used to amuse himself after supper by propping up a box with a stick attached to a piece of string within the light of the camp fire, and dragging the stick suddenly away whenever rats ventured underneath the box, tempted by the bait placed for them; by this means he often caught dozens of an evening. These rats move in battalions all over the country. Water seems to be no object to them, for I have found them just as numerous fifteen or twenty miles away from any water as they were on the banks of the Paravituary. From about thirty miles from Boulia we entered on the low-lying, flooded, loose, black soil flats of the Georgina. Here during the hot weather the soil cracks and fissures occur in the surface, some of considerable depth, and dangerous for horse or vehicle traffic, while the devil-devil, or lumpy nature of the ground—destitute of vegetation at the time of my passing, with the exception of blue bush and nardoo—rendered progress slow and tedious, and glad were we to enter once more the giddea forest country at thirty-six miles from our start.

The nardoo seed is extensively used by the aborigines as an article of food. They grind it up between two stones, sifting the husks from the grain with great dexterity by a peculiar trembling

motion of their coolimans or wooden vessels containing it, which method I have seen several white men try and imitate without success. The flour or meal they thus obtain is then baked into a kind of bread, which is not at all unpalatable. After two or three miles of open giddea forest, we traversed open, level, gravelly downs, crossing the main Georgina road at about forty-two miles, and continuing to crossing of Cotton-bush Creek at forty-five miles. Up to this point we had crossed no defined water channel worth calling a creek since leaving Bendyacker.

The cotton-bush plant, I am informed, is greedily eaten by stock, and is famed for its fattening properties, but the specimen I saw of it looked like dead wiry sticks, and my horses certainly would not look at it as an article of food, probably from vitiated tastes or through ignorance.

While in the vicinity of Cotton-bush Creek I had the greatest difficulty in obtaining feed of any kind for my horses, all the frontage on both sides of the Georgina being as bare and destitute of grass as a billiard table, and I had in consequence to send my horses four or five miles back from the river to obtain for them the least semblance of feed; and yet, if only good seasons were the rule, this Georgina country must be a grand pastoral district, for even with the great disadvantages under which the country laboured during my trip, Dr. Mein's herd of cattle on Herbert Downs station looked remarkably well, wherever they obtained their feed, which must have been long distances back from the river frontage, judging from the numerous well-beaten cattle paths leading from every direction to the few permanent water-holes in the Georgina River. My horses would readily eat of the giant salt bush on the flooded river flats; this indeed was the only edible plant the poor brutes could get near the river. but I do not think that this kind of salt bush has the same fattening properties as its namesake on the Warrego River and on the back tracks of New South Wales.

From Cotton-bush Creek my course took me across numerous dry billabongs and anabranches of the river—all flooded country in wet weather—and by the time we reached the 48-mile post

there was every sign of the drought breaking up, and the long-wished-for rain coming at last. During this part of my survey, up to the 52-mile, we worked under great dread of the floods coming on and catching us on the flooded country between billabongs, for there was every sign of heavy rain falling up the river, and the Georgina has been known to come down a banker very suddenly, and within twenty-four hours be four or five miles in width, where previously not a vestige of water was to be seen; for the part of the river on which we were working is one mass of anabranches and billabongs, extending over an area of four or five miles in width, and it is a most difficult matter in many places to decide which is the main branch where all are equally large. However, we pushed on as rapidly as we could, crossed a waterhole at fifty miles in what we considered to be the main branch of the river (being the first water on our line since leaving Bendyacker); thence crossed another large anabranch at fifty-one and a-half miles, previously shifting our main camp from off the flooded country to safe and high ground at Herbert Downs station, on the west bank of an outside billabong of the Georgina River. The very day we crossed the last anabranch, at fifty-one and a-half miles, down came the river, and within twenty-four hours every anabranch and billabong were bankers; but everything was safe, and although completely isolated from communication with the outside world in accepting the station hospitality, life once more appeared worth living, as we had vegetable diet and fresh meat in lieu of the previous salt junk, and I have spent less merry Christmases and happy New Years than that spent under the hospitable roof of the genial manager of Herbert Downs station, Mr. Jerome Walford.

On the cessation of the rain in the first week of January, 1886, we resumed work and produced the surveyed line across the outside western billabong of the river on to some open, stony, hilly country, up to a point fifty-five miles in one straight line from Boulia, where I changed the direction in which we had been hitherto running to a bearing nearly north-west, with the object of striking Pituri Creek, a western tributary of the

Georgina, and running a parallel line to its general course upwards to the border.

Pituri Creek runs in a south-easterly direction from the South Australian territory, junctioning with the Georgina River about twenty miles above Herbert Downs station. But before proceeding far with this new line, at six and a-half miles I ran into a deep-flooded channel of the Georgina, not shown on the feature chart of the country from which I worked. This unforeseen obstacle prevented my further progress, as it would probably take several weeks for the anabranch, swelled by the late heavy rains, to be crossable; and, as it was my intention to have run up Pituri Creek to the South Australian border, I was now informed on the best authority that unless I at once took advantage of the present supply of water I would in a few weeks' time have great difficulty in obtaining water, except at long distances apart in Pituri Creek, so I decided to take my party up to the border line where it crossed this creek, and from thence make a traverse down Pituri Creek, finishing where I had been obliged to cease operations *pro tem*.

In travelling towards the border we passed Idamea, or as it is now known, Glenormiston station, owned by Mr. James Tyson. Glenormiston is prettily situated at a point of a stony ridge overlooking the Idamea Lake, a fine sheet of water, swelled by the late heavy rains to its fullest size, about two miles in length and about 400 yards in width at its broadest part, opposite the station. Pituri Creek enters this lake at its north-western end and emerges therefrom at its south-eastern end, from thence finding its way into the Georgina by a very tortuous channel at a point about five or six miles, as the crow flies, from the lake. The lake's waters also, during heavy floods, overflow at its south-eastern end across low-lying blue bush flats, and find a nearer access to the Georgina than by the circuitous channel of the creek, rendering traffic along the Boullia road, which crosses these low-lying flats, impracticable during very heavy floods. It was in Idamea Lake, almost dry at the time of the occurrence, that the South Australian survey party, employed at the border survey under

the command of Mr. Surveyor Peebles, lost some fine camels and a portion of their equipment. They were encamped on the dry bed of the lake. Sudden and heavy rains came on, and before they had time to remove the whole of their effects to high and dry ground Pituri Creek came down a banker and caught them, and what had been an hour previously a perfectly dry flat became, by the enormous rush of water, a swimmable lake. Some of the camels, with their proverbial stupidity in water, refused to move, the men diving to unloose their hobbles, and even when free the camels preferred to stand and drown rather than make any efforts to reach the high ground within a few yards of them.

Pituri Creek has a well-defined channel for about twenty-five miles upwards from Lake Idamea. At twenty miles from Glenormiston is Lake Wanditta, through which Pituri Creek also runs. Lake Wanditta is considered a permanent supply of water; it is not so large as Lake Idamea, but apparently it is deeper. There are no permanent waterholes between Idamea and Wanditta. For the first few miles the stony ridges or gibbers, as they are termed, come very close into the creek—these gibbers being richly timbered with giddea and a kind of dense low bush, called turpentine. Gum and bloodwood gullies run back in places from the creek among the gibbers. At about four or five miles from Glenormiston the creek flats, devil-devil, and blue bush country widen out from half to a mile and a-half in width, the gibbers here and there closely proximating to the vicinity of the creek channels. Thick belts of giddea forest extend back on both sides of the creek for from one to three miles, beyond which is open, well-grassed downs country. At Wanditta are erected a stockman's hut and fine large newly-erected stockyards, with all appliances for working a large herd of cattle. A few miles above Wanditta the southern branch of Pituri, called Toko, or Linda Creek, joins the main branch, and this creek also heads from the South Australian territory, and is the route for travelling stock into South Australia, leading to the Toko waterhole in Queensland, and also to a newly-formed

station in South Australia, within thirty miles of the Queensland border, called Allanageer, formed and managed by Mr. L. O'B. Ffrench.

After passing Toko Creek, a traveller would find great difficulty in following Pituri Creek, especially if he had any expectations of being able to follow a well-defined channel, for it breaks off into blue bush flats without the sign of a channel of any kind for miles, then re-forms into a well-defined creek, and again within a short distance loses itself in blue bush flats. The next well-defined tributary of Pituri Creek is the Teta Creek on the north-east side, joining with Pituri at the Teta waterhole—a fine deep permanent waterhole, about a mile long and about thirty yards wide. Passing onward, in about another ten miles Wallayah waterhole is reached, where Mr. Fredk. Donner, has pitched his camp, built a stockyard, and manages a small herd of cattle running on a few blocks of country owned by himself and his brother, the well-known manager of Carandotta station on the Georgina River. Wallayah waterhole is about twenty miles from the border, and as we press onwards, now travelling through thick giddea, and again ploughing our way across heavy blue bush, flooded devil-devil flats, though such a short time has elapsed since the rains, we find difficulty in getting a drink of water. The creek becomes more difficult to follow, open patches of blue bush run up into the hilly country on each side, and we often stop and have a consultation as to which open glade it will be advisable to follow. Sundown is drawing nigh, and we are regularly nonplussed as to which direction to steer to get water to camp at for the night. Standing in the middle of a large open devil-devil flat, our horses tired with the constant dragging of a heavy load through the loose black soil since sunrise, the welcome sight of a flock of galahs about a mile or so away decides our movements, announcing the probability of the existence of water, and the screaming and screeching which greeted us on drawing closer, combined with the sight of flocks of ibis and ducks and waterfowl of various descriptions which rose from the water and circled round our heads at our approach, was music to our ears

and a pleasant sight to our eyes, as all fears of having to camp without water ceased. I found subsequently that the waterhole we approached was known by the native name of Corriggerree or Ellahno. This was on a Saturday night, and on the following day of rest we feasted on roast duck *ad libitum*, for the ducks were very tame and easily shot, seldom being disturbed by the white man.

The creek channel is well defined for the remaining ten miles between Corriggerree and the border, and we had no difficulty in reaching the Elladdah waterhole on the following Monday. Elladdah waterhole, in Pituri Creek, is just inside the present surveyed eastern boundary of South Australia, on the South Australian side of the border line, which crosses the eastern end of the waterhole, and is a permanent one.

While working in the neighbourhood of the border, and indeed from the time we left Wanditta until we returned to Wanditta, all members of my party carried firearms, as we were informed the aborigines were not to be trusted; but during the whole course of our work we were not molested in any way by them, and the few natives we did see were camped near the stations passed, and were semi-civilised. Of weapons they seem to have a very poor supply, consisting principally of the usual spear, boomerang, and waddy (or nullah-nullah). I obtained a few stone spear heads, knives, and tomahawks, but as a rule they seem less well supplied than most of the far western tribes I have seen in the course of my wanderings. They are great consumers of the pituri, a narcotic herb they obtain on some of the neighbouring rivers to the southward, and as a description of the method in which the aborigines prepare it for consumption may be of interest, I here append a portion of a letter of mine which appeared in the *Queenslander* last July, descriptive of the process:—

“They (the aborigines) first place a portion of the pituri in their mouths and chew it into a pulp. This is spit out on to a piece of bark, and some of the whitewood leaves are burnt and added thereto, then the whole worked up with the fingers to the

consistency of putty. It now undergoes a second process of chewing and spitting out, and more ashes are added to it. After this has been done repeatedly it is ready for use, and it is a comical sight to see half a dozen nude niggers, squatted on their hams, gravely passing this, no doubt, to them, delicious morsel from one to another, each chewing it in turn until the effects begin to appear in their staring eyes and a stupid look. I can only compare it to the appearance of an habitual opium consumer after indulging in his favourite drug. The effect on some is stupefaction, others again begin their corroboree, and the different effects on different aboriginals are just as apparent as the very different effects alcoholic liquors have on others of the *genus homo*. On the completion of the chewing and passing round business, it generally finds its way back to the original preparer, who disposes of it by sticking it behind his ear for future consumption. The pituri is an extensive article of trade among the blacks, the happy possessors being able to obtain in exchange for it any article dear to the aboriginal heart from their less fortunate black brethren, and I am informed on good authority that it finds its way to the tribes on the Diamantina on the one side and to the Gregory River natives on the other side of the circumscribed area wherein it is obtained. The sample I send you was obtained from the south of the Mulligan River, from about twelve or fifteen miles westward of the Sandringham station. On Pituri Creek none whatever grows, being only another instance of a misnomer so noticeable in the names of Queensland creeks."

A note by the editor at the end of my letter says: "The pituri of the Australian aboriginal is the leaf of the *Duboisia hopwoodii*. Dr. Bancroft, of Brisbane, investigated its peculiar properties, and his papers about the subject are recorded in the transactions of the Philosophical Society of Queensland. The active principle is nearly, if not quite, identical with nicotine."

On the Mulligan River, which lies to the southward of Pituri Creek, are extensive salt pans, from which many stations on the Georgina, Burke, and Pituri watercourses obtain their supplies

of salt, stacking it during the dry seasons, and sending their drays for it as required.

There are also soda springs on the Mulligan. One gentleman who has lived many years in the neighbourhood related to me an amusing incident in reference to these springs. They bubble up so strongly that if a man were to jump into one of them bolt upright, the force of the spring would raise him waist high out of the water. On one occasion my informant was trying to elicit from some aboriginals their opinion as to when the ensuing rainy season would commence. The aboriginals decided to consult their oracle, who, they said, lived at the bottom of one of these soda springs. An adjournment was made to the place, and one aboriginal taking a big stone in each hand, dived head first into the bubbling water. A second aboriginal jumped in immediately afterwards, and catching hold of his predecessor's legs, which just appeared above the surface of the water, forced him further down. A third aboriginal then jumped in and forced the second down, all remaining under the water for as long a time as they could hold their breathing in abeyance. They then all came to the surface, when the leading native gravely announced that he had interviewed the big fellow masser, and that big fellow flood come up along a one-fellow moon. And what is more, the flood did come in another month as predicted.

The aboriginals as a rule are incomparable mimics and copiers of the ways of white men. I was very much amused at one who, for the first time, saw my surveyed line from a slight eminence, clear as a telegraph line for miles on both sides of him. He turned to his master in his astonishment at the novel sight, and said, "My word Marmey all the same adjective crow." No doubt he had at some time or other heard the expression of "straight as a crow flies," and applied it in his untutored way to the novel sight of a straight line cut through the timber.

I have little more to add: suffice to say that I was accurately informed as to the scarcity of water in Pituri Creek. A few weeks after the cessation of the periodical rains, and during my

return trip surveying the traverse line, as I proceeded I had long distances to cart water for the use of my party, for, with the exception of the waterholes I have mentioned, there existed little or none in the creek on our downward course.

Here on the Pituri Creek, as on the Georgina River, stock looked remarkably well, but to get any grass for my horses I had to send them back three or four miles from the creek, although the country when travelling up the creek looked like the proverbial wheatfield, with grasses and herbs of various descriptions.

I cannot conclude my reminiscences without special allusion to the kind and generous treatment I personally experienced from Messrs. Alexander Lamond, manager of Glenormiston station, and Mr. Frederick Dommer, of Pituri Creek. The difficulties we had to contend with in procuring the barest necessaries of life would have been intensified fourfold had it not been for the kind aid I received in every possible way from these two gentlemen.

My work being completed the first week in July of the present year (1886), I was recalled to Brisbane, where I arrived during August, heartily glad once more to be within the confines of civilisation, and shall always look back on my surveying trip from Boulia to the South Australian border as one of the roughest ten months of bush life I have experienced during a sojourn of nearly twenty years in these colonies, the greater part of which time has been spent in the back tracks of Queensland.

A joint conversation took place between the Chairman, Hon. Secretary, Messrs. R. Gailey, and E. McDonnell, who spoke in complimentary terms of the paper read, and after a few responsive remarks by Mr. Bedford, the proceedings terminated.

SEVENTH ORDINARY MEETING.*

THE seventh ordinary monthly meeting of the second session of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of February 10th, 1887. Dr. WAUGH occupied the chair.

After reading and confirming the minutes of the previous meeting, the following gentlemen were elected members of the Society, by ballot. viz.:—Messrs. A. Starcke, D. L. Brown, and W. R. Unsworth.

The HON. SECRETARY announced the receipt of forty-five donations to the Society, and read the following letter from His Excellency Sir Anthony Musgrave, G.C.M.G., in reply to a communication from the Hon. Secretary inviting His Excellency to become the patron of the Society:—

Government House,
Brisbane, 24th January, 1887.

Sir,—I am directed by His Excellency the Governor to acknowledge your letter of the 21st instant; and to say that he accepts with pleasure, and appreciates most highly the honour which the council of the Queensland Branch of the Royal Geographical Society of Australasia is so good as to offer him.

I have the honour to be, Sir,

Your obedient servant,

W. A. B. MUSGRAVE,

Private Secretary.

J. P. THOMSON, ESQ.,

Hon. Sec. and Treasurer,

Royal Geographical Society of Australasia, Brisbane.

The Rev. G. WOOLNOUGH asked the Chairman if a letter had not been received from Mr. Edelfelt, of New Guinea.

The HON. SECRETARY, in reply, stated that a letter had been received by the Council from Mr. Edelfelt, asking the Society to assist him with funds to enable him to further extend his explorations in New Guinea, and thereby procure for the Society additional information; but the Council had not yet decided to take action in the matter.

* No papers read at sixth ordinary meeting.

The CHAIRMAN pointed out that the real facts of the case were that the Society was not in the position, at present, to assist Mr. Edelfelt with funds.

The Rev. G. WOOLNOUGH said he did not think that all the expense should be borne by the members of the Society, but that it should be mentioned to the public.

It was proposed by Mr. JAS. MUIR, and seconded by the Rev. G. WOOLNOUGH, that the matter be left in the hands of the Council for consideration at their next meeting.

On the invitation of the Chairman, Mr. GALLOP, a visitor at the meeting, stated that he had travelled with the Special Commissioner for New Guinea, who took over Mr. and Mrs. Edelfelt to Motu Motu, where they were the only white people in the midst of one of the most powerful tribes of New Guinea.

In the absence of the author, the following paper was read by Mr. C. T. BEDFORD:—

The Mountains of Queensland.

By N. BARTLEY, Esq.

I HAVE been asked to make a few notes on the mountains of Queensland, and I feel tempted to use metaphor and to say that there are none (at least none worthy of the name) in the colony.

Comparatively little is known of the height of the mountains in Queensland, and yet the subject is one of some importance in more than one aspect. It must ever be a source of regret to all well-wishers of our colony that we are so poorly supplied with mountains at all. How different a destiny would be ours, if a grand river like the Nile flowed through our territory—a river that, owing to the rich dower of its teeming sources, sustains a course of hundreds of miles without a tributary or an assistant shower of rain, and travels undiminished in volume through a thousand miles of dry, absorbent country, an ordeal, the fractional part of which, would dry up any river our colony can boast of. The St. Lawrence, another mighty and richly endowed river, would suit as well, but even it does not maintain existence

under such difficulties as the magnificent Nile faces, in the way of evaporation and absorption. Now, had we in Central Australia a range the height of Kilimanjaro, 20,000 feet, snow-crowned, extensive and table-topped, with one river flowing thence into the Gulf of Carpentaria northwards, and another eastward, say to Keppel Bay, how the face and history of our colony would be changed and enhanced! As it is, we have to depend for our rivers on the scanty and irregular rainfall that accompanies mountains of low elevation in warm climates, but not fairly within the dominion of the true tropics and their rain-cloud endowment, which is, with few exceptions, guaranteed by Dame Nature herself all the world over. In Queensland, we ought to learn something of the elevation of our tablelands, for the subject is intimately connected with the storage of water at high levels with a view to irrigation and other purposes on lower country, a subject that the old Romans well understood. They left their mark in Spain and other lands they had conquered. It is a science which has fallen into abeyance for many centuries, only to be lately revived in America and elsewhere at the bidding of stern necessity and competition. There is another aspect in which a knowledge of the heights of our hills and mountains will prove of use and interest—namely, for residential and sanitary considerations in this warm latitude. It is an ascertained fact that a slight elevation above the sea in southern Queensland reduces the summer and increases the winter temperature to an extent unparalleled in Europe at similar heights, provided, of course, that the site be not too far from the sea. The resulting dryness of the air, at an elevation of from 400 to 1,000 feet above the sea and within twenty miles of it, tones down and softens the sting of heat and cold alike, and no more perfect climate could be found or imagined on earth than at an elevation of from 1,500 to 2,000 feet above the sea, and from seven to fifteen miles back from it, and between the latitudes of 30 degrees and 26 degrees, in eastern Australia. Lung and liver invalids would alike be benefited by the voracious and healthful appetite which outdoor living—and outdoor feed-

ing, too—would engender in such a climate, and under such circumstances. Many people will have observed the improved quality and freshness of atmospheric air after a heavy shower of rain, and in some quarters it is attributed to the supply of purer air which the raindrops bring down with them from a height of 3,000 to 4,000 feet above the earth. Be this as it may, it is certain that a moderate elevation in a residence site in this part of the world brings with it feelings and results in the way of invigoration and health such as are never felt in low levels; hence another reason for studying and collecting information about our hills and mounts. Mr. Thomas Lade, vigneron, of Kedron Brook, informed me that he and his sons had frequently visited the level summit of Mount Bartley (Government portion 376, Enoggera parish), 1,000 feet high, and he states that in summer it is a “blanket and a suit of clothes” cooler than Brisbane. This would put it on a par with Melbourne almost in average temperature, and barely seven miles from our post office either. I quote this, an instance of a moderately high local hill near the sea and blessed with the dry air that moderates both heat and cold. Along our southern border is some grand tableland, 3,000 feet high, well watered, and fit for English fruits and wheat. It was fully explored by the surveyors who ran the border line many years ago between this Colony and New South Wales, but it is yet untouched by any railway. Two picturesque but—save as a rallying point for clouds and thunderstorms—useless peaks are Mounts Lindsay and Barney, near the border, and they are a little over and a little under 5,000 feet respectively in height. To come nearer Brisbane, Mount Tambourine, nine miles west of Southport, is a grand specimen of a useful mountain. It is triangular, table-topped, and covered with rich deep soil, and commands a glorious sweep of sea and plain and mountain in various directions. It would have made a grand reservoir or a giant tank in Julius Cæsar’s days, had the Romans been here. Its three angle buttresses are 1,850, 1,790, and 1,750 feet high, and the north border of portion 91 there gives, by the aneroid, 1,760 feet elevation above the sea. The temperature (indoors)

is about 65 degrees in January, and 50 degrees at the beginning of May on Tambourine Mountain. The lower hills which head the Pimpama River enjoy a grand climate at a height of 1,200 feet. Mounts Mitchell and Cordeaux, which border the famous pass of Cunningham's Gap on the Main Range, rise to a height of 4,460 feet, and between them and Toowoomba a flat-topped mountain not far from the Pilton Run, but unnamed (as far as I know), must be nearly 5,000 feet in height. Proceeding northward, the Bunya Mountains, plainly visible from the Jondaryan Plains, loom so high above them at 1,600 feet that they must be close on 4,000 feet elevation in places. The highest mountains in any country are generally found where two transverse ranges cross each other. Mont Blanc, as depicted on the old feature maps of Savoy, is an example of this, and such a prominent peak is said to be near Taabinga, in the Burnett district, where two cross ranges mark four watersheds, and its height is given at 3,600 feet, which would put it above any part of the broken, difficult, mountainous country that intervenes between Brisbane and Maryborough, but which can boast of no giant or prominent peak, at least I never saw any such in an overland trip from Ipswich to Gayndah, though I was nearly always amongst the ranges the while. The Blackall Range and Buderim Mountain are examples of elevated land and rich soil near the sea, but I have no data to enable me to say whether their elevation (about 1,500 feet) gives the same cool, even temperature as Tambourine Mountain does, or whether the rich soil there is tableland or not. Mount Samson, the peak of D'Aguiar's Range, the southern branch of the Blackall Range, is 2,460 feet high. Mount Flinders, twelve miles south of Ipswich, reaches to nearly 2,000 feet. Glancing north and north-east from the range summits near Toowoomba, no peak, no high range, meets the view. Far different is the outlook south-east from the summit of the pass, on the old Ipswich and Warwick road, between Spicer's Peak and Mount Mitchell. I have traversed some of the best mountain scenery of Tahiti, the Sandwich Islands, New South Wales, Tasmania, and Victoria, and in none was there the peculiar beauty

that shows in the view from Spicer's Peak looking over towards the heads of the Clarence and Richmond rivers. The Macpherson Range, dividing our colony from New South Wales, is of immense height, quite equal in places to the loftiest scarp of the Main Range, and from it to Killarney extends the fine wheat country previously referred to. North Queensland is even worse supplied with mountains than the southern part of the colony. Indeed, nowhere can we boast of such grand water sources as the Australian Alps afford. Anyone who has seen the Murrumbidgee River in full flood, after the melting of the head snows, ten miles wide and three feet deep outside its banks, can estimate the water wealth of its fountain springs; and the Murray, rising in another part of the same main range, amongst the walls of dolomite, is a still grander river, though not so subject to overflow. The same mountains, however, would need to be about twice as high to send forth the same volume of water in this colony, fifteen degrees nearer the equator. To return, North Queensland has some grand tableland in the Cape York Peninsula, fully double the height of any we have down south. But their rain supply is so regular and plentiful that they have little need of cloud-catching highlands except for sanitary and residential uses. In conclusion, we must tap the strata, and embank the tablelands of Queensland for our water supply, for the skies cannot be depended on in any part of Australia, and the sooner the heights of all our hills become known the better able shall we be to reckon up our wealth in this direction, and I am only sorry that I can afford so little information on the subject.

The following report was read by the Hon. Secretary:—

The Hon. Secretary's Report to the Council upon the preliminary examination of a hill (supposed to be subsiding) in the Redbank Plains District.

Gentlemen,

In accordance with your resolution, I visited and examined the locality in the Redbank Plains District, reported to the Society

by Mr. C. T. Bedford as subsiding. The result of my recent examination will not, however, furnish you with sufficient proof as to the actual conditions of subsiding progress—if any—but it will supply you with sufficient information concerning the general features and geological character of the district, from which premises certain deductions may be assumed as to probable past and present conditions.

The locality supposed to be affected by subsidence or upward action is comprised within a radius of about three-quarters of a mile, and consists of three low ridges in consecutive order running in an easterly direction, and so formed that longitudinally they are nearly parallel to one another; being entirely free of timber and scrub; the only vegetation growing on their surface is grass. On the most northerly ridge there are two or three wooden houses erected. The intermediate ridge, which is the one supposed to be subsiding, is slightly depressed in its central section, and free from buildings of any kind; while the third in order is utilised by Mr. Hillier for the site of his house, from whence the first indication of the supposed subsidence was observed, during the last five years. Mr. Hillier has resided on the latter place for about sixteen years, and some five years ago, when he first became aware of a change in the locality, he could only see the house tops on the farther ridge, whereas at present, not only the tops of the houses themselves but a portion of the apex of the ridge on which they are built is plainly visible over the crown of the intermediate ridge, showing plainly that in the levels an alteration of some fifteen to twenty feet has taken place. Although previous reports have been based on the supposition that the intermediate ridge is subsiding, yet there are no available data sufficient to verify it. Supposing a change in levels has actually taken place and is at present progressing, the influence of the disturbing agency on any one of the three ridges in question will answer the conditions of former observations; that is to say, subsiding agency may be going on in the intermediate ridge, and simultaneously one or both of the terminal ridges may be rising; or, on the other hand, the intermediate

ridge may not be affected by change, while one of the other ridges may be gradually raised above the usual level.

To determine whether or not disturbing action is really going on, and, if so, the rate thereof, a system of contour levels, or angular measurements at intervals of time, is necessary, and, with the view of avoiding complication, the latter method is, I think, preferable. The *modus operandi* I propose to carry out will be angular measurement from one point only, which will ensure greater accuracy, and be less liable to displacement through local influences, than a series of observing stations would be. Diagrammatically demonstrated, the method will be as follows, viz. :—



Let A (the central ridge) be the point of observation, C'D the terminal ridges, BB¹ the plane of the horizon, and BAC, BAD the angles of elevation or depression observed. The second set of observations will simply be a repetition of the first, and the action of subsidence or elevation of any of the three points will be indicated by the value of the former angles, plus or minus the difference of the angles determined by the first measurement from that of the last; the distance between the points AC and AD can, of course, be determined by the ordinary method of steel band measurement at any time.

Probably seams of coal may be found in the district, which is closely bordering on the Ipswich coal measures.

The general formation of the locality is basaltic, with indications of thermal springs; the surface soil is black, and fairly deep. Although there are no reasons for doubting the accuracy of the information already supplied to the Society concerning the subsidence of the hills referred to, yet the physical features of the locality do not furnish any indication of such.

In conclusion, I embrace this occasion to thank Mr. Daniel Jones, of Redbank Plains, for his kindness in meeting me at the Goodua Railway Station and conveying me in his buggy to the locality described.

J. P. THOMSON, Hon. Secretary.

The HON. SECRETARY then read a paper which he had prepared, entitled "Comets, their Orbits, and the Method of Computing their Elements," with special reference to the recent comet.

In a few preliminary remarks Mr. THOMSON stated that he had been induced to prepare the paper at the special request of a few friends, and he took the opportunity of reading it before the meeting of the Society, specially with a view of supplying the members with information which might otherwise be unavailable.

The paper was illustrated with diagrams demonstrating the method of computing the orbit of comets, and showing the projected orbit of the comet visible in the southern heavens for a short time during the month of January last.

DONATIONS

TO THE

ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA

(QUEENSLAND BRANCH).

[The names of the Donors are in *Italics*.]

ABSTRACT of Proceedings of the Royal Society of Tasmania.—November, 1886. *From the Society.*

ABSTRACT of Proceedings of the Linnean Society of New South Wales.—October, November, and December, 1886; and January, 1887. *From the Society.*

ANUARIO del Observatorio Astronómico Nacional de Tacubaya, para el Año De. 1887, Año VII, Mexico. Coordinadas Geograficas de Guanajuato, Gachupines, Lagos, Leon, Guadalajara, Encarnacion de Diaz y Aguascalientes determinadas por el ingeniero. Angel Anguiano, director del Observatorio Astronómico Nacional de Tacubaya. *From the Director.*

BOLETIN de la Sociedad Geografica de Madrid. Tomo XXI, Nos. 1-4, 1886. *From the Society.*

BULLETIN de la Société de Géographie de Paris. 7e serie. Tome VII, 1886. *From the Society.*

BULLETIN de la Société de Géographie de Marseille. Tome X, Nos. 1, 3, and 4, 1886; Tome XI, No. 2, 1886; and Tome XI, No. 1, 1887. *From the Society.*

BULLETIN, Société de Géographie Commerciale de Bordeaux (section centrale). Nos. 1-24, 1886; and No. 2, 1887. *From the Society.*

IMPERIAL FEDERATION (the Journal of the Imperial Federation League). No. 10, Vol. I, August and October, 1886. *From the Hon. F. T. Gregory.*

- JOURNAL of Australian Explorations, by the Hons. A. C. and F. T. Gregory.
From the Authors.
- JOURNAL and PROCEEDINGS of the Royal Society of New South Wales.
Vol. XIX, 1885. *From the Society.*
- MAP of the Colony of Queensland (mounted).
From R. H. Lawson, Esq.
- MITTEILUNGEN der Geographischen Gesellschaft (Für thüringen) zu Jena
zugleich organ des Botanischen Vereins für Gesamtthüringen.
Band V, Heft 1 und 2. *From the Society.*
- MITTEILUNGEN der Ostschweizerischen Geogr.-Commerc. Gesellschaft, in
St. Gallen. 1886. 11 heft. *From the Society.*
- NOTE sur les Roches et Gisements, Metalliferes de la Nouvelle-Caledonie,
et Catalogue Explicatif de la collection envoyée a Paris en 1878.
Nouvelle-Caledonie catalogue de Roches Minérales et Minerais
Recueillis en 1876-79, par F. Ratte.
From the Hon. A. C. Gregory, President.
- PHOTOGRAPHS of the New Guinea Exploration Expedition and the Admin-
istrative Council of Exploratory Committee of the Geographical
Society of Australasia.
From the Artists, Messrs. Kerry and Jones, Sydney.
- PROCEEDINGS of the Victorian Branch of the Royal Geographical Society
of Australasia.—Seventh ordinary meeting, 1886. South Polar
Chart. Photograph of the Illuminated Testimonial presented to
the leader and the officers of the Society's Exploration Expedition
to New Guinea. *From the Victorian Branch of the Society.*
- RECORDS of the Geological Survey of India.—Vol. XIX, Parts 1 to 4, 1886;
and Vol. XX, Part 1, 1887.
From the Director of Geological Survey of India.
- REPORT upon the Geology and Mineralogy of the Northern Territory of
South Australia, by Tenison-Woods. Published under authority
of the South Australian Government. *From the Publishers.*
- RESULTS of Meteorological Observations made at the Private Observatory
of John Tebbutt, the Peninsula, Windsor, New South Wales, in
the years 1877-85, by John Tebbutt, F.R.A.S.
From the Author.
- REVUE GEOGRAPHIQUE. Internationale. 11e. Année—Nos. 130, 131,
132, 133, and 134, 1886. *From the Publishers.*

SOCIÉTÉ de Géographie de Paris. *Compte Rendu des Seances.* Nos. 1-19, 1886; and Nos. 1 and 2, 1887. *From the Society.*

THE SCOTTISH GEOGRAPHICAL MAGAZINE. Vol. II, Nos. 10-12, October, November, and December, 1886; and Vol. III, No. 1, 1887.

From the Society.

THE INDUSTRIES of New South Wales (by Lyne). Fish and Fisheries of New South Wales (Tenison-Woods). Notes on Drilling and Boring Artesian Wells, as practised in the United States of America (by Darley). Results of Rain and River Observations made in New South Wales during 1885 (by Russell). Royal Commission—Conservation of Water.—First Report of the Commissioners, New South Wales, in 1886. Remarks on the Sedimentary Formations of New South Wales, illustrated by references to other provinces of Australasia (by Clark). Fourth Edition Australian Museum Catalogue of the Australian Hydroid Zoophytes (by Bale). The Plants of New South Wales, with introductory essay and occasional notes (by Woolls). Local Variations and Vibrations of the Earth's Surface (by Russell). New South Wales, its progress, present condition, and resources; with detailed statistical information. Railway Map of New South Wales, with a brief account of the character and the resources of the Colony (by Walker). Plants indigenous in the neighbourhood of Sydney (by Woolls). Report of the Proceedings attending the presentation of the portrait of Sir Jas. Martin, C.J., by the Bar of New South Wales, on the 2nd day of May, 1885. The Timber Trees of New South Wales (by Nilson). Track from Katoomba to Jenolan Caves (by Cooper). Catalogue of the Fishes of New South Wales, with their principal synonyms (by Douglas-Ogilby). The Aborigines of Australia (by Saddleir). Mammalia, recent and extinct.—An elementary treatise for the use of the public schools (by Scott). Proceedings of the Geographical Society of Australasia, New South Wales and Victorian Branches, Vols. I, II; and special volume. Journal and Proceedings of the Royal Society of New South Wales for the year 1875, Vol. IX; and for the years 1878 to 1885, Vols. XII to XIX. Sydney Harbour, New South Wales; view from the North Shore, with statistical returns showing the relative positions and aggregate importance of the Australian Colonies at the close of the year, 1881.

From the Government Printer, Sydney, through the agency of the Hon. Secretary.

THE SCOTTISH REVIEW, Vol. IX, No. 17, 1887. *From the Proprietor.*

THIRD ANNUAL REPORT of the Goulburn Mechanics' Institute.

From J. T. Gannon, Esq., President.

TRANSACTIONS AND PROCEEDINGS of the New Zealand Institute. Vol.
XVIII, 1885. *From the Institute.*

TRANSACTIONS AND PROCEEDINGS of the Royal Society of Victoria. Vol.
XXII, 1886. *From the Society.*



PROCEEDINGS AND TRANSACTIONS

OF THE

Queensland Branch

OF THE

ROYAL GEOGRAPHICAL SOCIETY

OF

A U S T R A L A S I A .

2nd SESSION,
1886-7.

EDITED BY

J. P. THOMSON, M.A., C.E.,

Hon. Secretary and Treasurer.

Honorary Corresponding Member of the Société de Géographie Commerciale de Paris
the Société de Géographie de Marseille, and the Royal Scottish
Geographical Society.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. II. PART 3.

Brisbane:

WATSON, FERGUSON & CO., PRINTERS, QUEEN STREET.

1887.

NOTICE.

All Donations presented to the Queensland Branch of the Society are acknowledged by letter and in the printed Proceedings of the Society.

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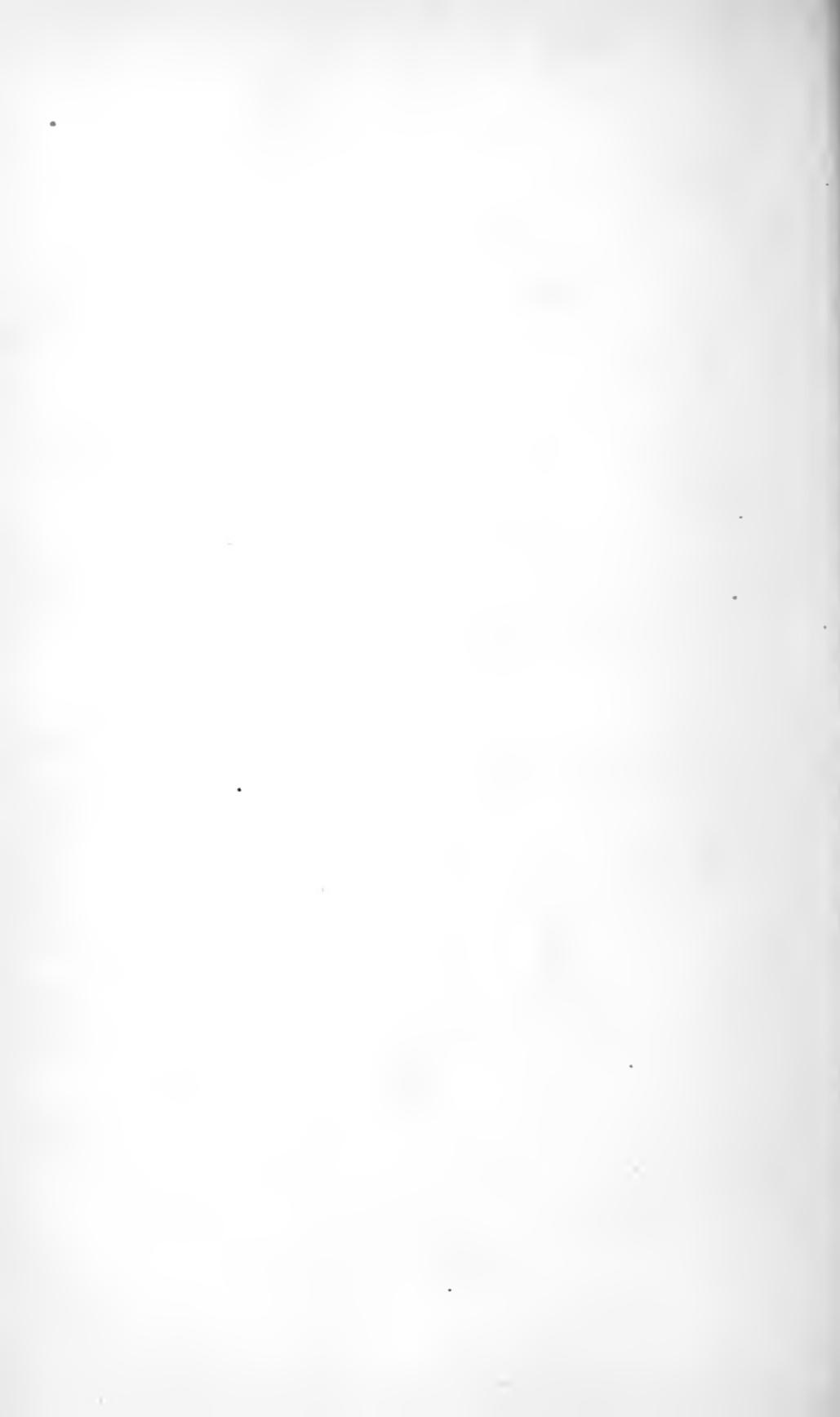
ORDINARY MONTHLY MEETINGS OF MEMBERS
OF THE
QUEENSLAND BRANCH
OF THE
ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA.

16th March, 1887.

A paper by Captain W. Thomson, entitled "History of North-east Coast of Australia," was read.

29th July, 1887.

The Annual Address was delivered by the Hon. A. C. Gregory, C.M.G., M.L.C., F.R.G.S., &c.



EIGHTH ORDINARY MEETING.

THE eighth ordinary monthly meeting of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of March 16, 1887.

Mr. W. H. Miskin occupied the chair.

After reading and confirming the minutes of the previous meeting, the following gentlemen were elected members of the Society, by ballot:—Honorary corresponding members, John Tebbutt, Esq., F.R.A.S., &c., Windsor, N.S.W.; and Charles Ganthiot, Esq., Paris; members, R. H. Lawson and Douglas Rannie.

A letter was read from Sir Wm. McGregor, K.C.M.G., Fiji, who was recently elected an hon. corresponding member of the Society, expressing thanks to the members, and promising to do all in his power to further their interests.

The HON. SECRETARY also announced the receipt of 39 donations to the Society, including a mounted map of the Colony of Queensland from Mr. R. H. Lawson.

The HON. SECRETARY then read a paper, entitled

History of North-east Coast of Australia.

By CAPTAIN W. THOMSON.

THE unwritten history of the east coast of Australia, as evidenced by the many stories heard from the old navigators, is of so much interest that I have endeavoured to collect some of them, and by reference to the works of Captain Cook and the valuable digest of Australian history, also the personal experience of Captain Flinders, together with others who sailed along the coast, hope to be able to lay the foundation of a most interesting volume in the hands of a more competent compiler.

Of the pre-historic appearance of the east coast, from Cape Moreton round through Torres Straits, leading proofs assist the imagination to see an unbroken line, and what is now

the Barrier Reef was the coast line, and that New Guinea was joined together with the adjacent island, forming one mass; that the subsidence may have taken place when the vast continent, now only known as the Polynesian Islands, disappeared, leaving but the mountain peaks as monuments of countries and nations passed away; that the track now used by the shipping, known as the Inner Route, was the valley behind the coast range, and the several islands on the Barrier Reef are all that remain to mark the then coast line. The general character of the soundings alone point to this conclusion; added to this, the researches of Wallace, in his "Malay Archipelago," show that the flora and fauna are similar throughout.

The history proper goes back to the time when the Dutch were in power in the East; when their enterprising spirit was so stimulated by reports of the Malays and Chinese of a great south land, said to have been visited by them in the early part of the fifteenth century, that they despatched the "Duyfhen." She sailed from Bantam on November 18th, 1605, and sighted the north-west coast of New Guinea, passed southward across the west entrance of Torres Straits, but evidently seeing the tops of the islands lying between New Guinea and Australia, believed them to be but a continuation of the land just seen, and finding a strong current setting to the westward, concluded that they were passing the mouth of a great river, they continued a southerly course and landed at a point in latitude $12^{\circ} 35'$ south, where they had a boat's crew murdered while trying to procure wood and water. They proceeded as far south as latitude 14° , when from the unfavourable appearance of the land they decided to return, calling the land then abreast Cape Keer Weer (Turn again). They speak of the country in anything but flattering terms—"This extensive country was found for the most part desert; but in some places inhabited by wild, cruel, black savages." The "Duyfhen" returned to Bantam on or before June, 1606, so that it would have been about the month of March, 1606, that they landed first in Australia.

The next navigator we hear of who visited Australia was

Torres, the second in command under Queros, who sailed from Callao with three vessels, in 1605; the Spaniards no doubt getting the idea from the Papal seat of this great south land, who would have received it from the Portuguese, then settled in the East. They sailed to the westward, taking possession of several of the islands, principally the Caroline Islands. This act was confirmed by the Pope; and the other day, in the dispute, when the Germans hoisted their flag there, they had to pull it down again in deference to this confirmation. After this they came to a land which Queros called "Australia Del Espirito Santo," believing it to be the great south land, which was afterwards proved to be the New Hebrides; Spirito Santo being the island mentioned. About this time a gale of wind separated the vessels, and it is presumed that Queros returned to the eastward, as there are many islands in the Pacific on which forts or other relics of early navigators can be traced. Torres sighted the Louisiade Group, passing to the southward, and entered the Straits, keeping on the north side. It may be reasonably supposed that one of the two vessels now left was wrecked on Jarvis Island, as a gun, supposed to be of Spanish origin, was found near the remains of a wreck on this island a few years ago, and is now used as a time-gun in Maryborough. Torres mentioned the many islands in his passage, probably alluding to the Prince of Wales Group. He deposited a copy of his letters, dated July 12th, 1607, in the archives of Manilla, and these were found when the city was taken by the British forces in 1762. It would appear that Cook acted upon this information, for on his first voyage, after leaving the south part of the east coast, he coasted along, naming the many headlands; keeping close inside the Barrier Reef until he passed out, after leaving the Endeavour River, at the Lizard Islands, August 12th, 1770. He again entered in, calling the pass Providential Channel, naming many of the capes and islands on his way; passing round he named Cape York, and following the land to the south-westward landed on an island, and hoisted the flag in the

name of King George III, taking possession of all the east coast round to that point, calling the island Possession Island. Continuing a westerly course, he passed into the open sea, and called the passage the Endeavour Straits; confirming the report of Torres, and exploding the idea of the great river believed in by the Dutch, which they called the Spuils River.

Captain William Bligh is the next who visited the east coast after the mutiny of the "Bounty." He entered the Barrier Reef abreast of Cape Direction, May 29th, 1789, about ten miles south of the pass taken by Cook: he passed through Torres Straits, to the north of Prince of Wales Island, and out towards Timor.

Captain Edwards follows next, his vessel, the "Pandora," having been lost on the Barrier, with the mutineers of the "Bounty" on board, August 26th, 1791.

In September, 1792, Captain Bligh, H.M.S. "Providence," and the brig "Assistant," commanded by Captain Portlock, passed through the Straits, from the South Sea Islands, with bread-fruit trees; and at the time did not know of the loss of the "Pandora."

In 1793 the ships "Hormuzer" and "Chesterfield" took their departure from Norfolk Island after landing convicts there, and after beating about in the Straits for seventy-two days, succeeded in getting to the open sea to the westward.

The next in order was Captain Flinders, who sailed in the "Investigator," from Sydney, July 22nd, 1802; he sailed in the track of Captain Cook up to near the Cumberland Islands, when he passed outside the Barrier Reef, and did not enter again until he was near the latitude mentioned by Captain Bligh; he passed through the Prince of Wales Group, and sailed down the Gulf of Carpentaria, November, 1802. On July 10th, 1803, Captain Flinders again left Sydney in the "Porpoise," to survey Torres Straits and the Gulf of Carpentaria. He was accompanied by the East India Company's ship "Bridgewater," and the ship "Cato," Captain J. Park, but unhappily met with disaster; the "Porpoise" and "Cato" were lost on Wreck Reef,

and were abandoned by the "Bridgewater." On August 17th, Flinders again started from Sydney in the colonial schooner "Cumberland," of twenty-nine tons, returned to Wreck Reef, and after taking the people off, and sending some back to Sydney, proceeded on his voyage, and passed through the Straits.

Since that time the Straits have been used as the highway to India and China, and surveys have been made from time to time. Many vessels pass through to and fro, availing themselves of the favourable monsoons. The vessels bound through to the westward often sailed in company, and invariably brought up at Booby Island; a box was left on this island with a book, and any fresh information gleaned on the voyage was entered in this book, for the benefit of ships entering in. Vessels would meet there, and captains, like old soldiers, would fight their battles over again, and tell each other of the anxious times they had coming through. Other visitors, less happily situated, would make for Booby Island, having lost their vessels on the reefs to the eastward, to find provisions stored in the cave on the west side; and then either make for Timor, or return to the southward, according to the time of the year.

Scarcely an island or reef between Cape Moreton and Booby Island but has its story of shipwreck and adventure with the natives. Here you see the frames of a vessel, with all traces of who and what she was gone, and the page of her history turned down for ever. Anchors and cables are strewn about the reefs, the last evidence of perhaps a terrible shock, as the vessel some dark night struck on the Barrier, and none left to tell the tale. What sad stories are wrapped up in some of those pretty isles, that look so lovely with the beautiful shades of colour, from the coral below up to the light sandy beach; behind which the dark green foliage tempts the visitor to penetrate, there to find, perhaps, the remains of some shipwrecked crew, and perhaps on the beach a broken spar, other debris or wreckage—"Shreads of that mysterious scroll on which the secrets of the deep are writ," are all that is left to bear record of shipwreck and suffering! We purpose to begin at the southern part of the

Colony of Queensland, and glance at the different points of interest along the coast, out to the west side of the Torres Straits.

Beginning at Point Lookout, the north end of Stradbroke Island, the first account we have is from Captain Cook's voyages, that on May 13th, 1770, at sunset, they were off this point. He anchored that night in fifty-two fathoms, proceeded next morning, and passed the point he named Cape Moreton. From a slight mistake of Cook's biographer, we are left in doubt whether the indent of the coast line between Point Lookout and Cape Moreton forms what he called Moreton Bay, or whether the bay seen to the westward of the Cape next morning is intended for that name; mention is made of a probable river, from the discolouration of the water. The passage between Stradbroke Island and Moreton Island, now known as the South Passage, was the scene of the wreck of the s.s. "Sovereign," when forty-four lives were lost, March 11th, 1847. A few years ago the s.s. "Keilawarra" struck on this bar, and was nearly lost. Moreton Bay was visited by Captain Flinders in 1799, when he landed on Skirmish Point, and was attacked by the natives August 16th; he also mentions the rocks to the north of the Cape, which he called Flinders Reef. The first occupation of Moreton Bay was on September 1st, 1824, when a convict settlement was formed, and was afterwards abandoned; the natives finding the houses falling into decay, called the place "Humpty Bong" (house dead).

The next point of interest is Double Island Point, named by Cook; here the land trends to the westward forming Wide Bay, and here the wreck of the "St. Magnus" was washed ashore, supposed to have been dismasted off Cape Moreton. The passage into Maryborough is at the bottom of Wide Bay, and divides Fraser Island from the mainland; this name was given to the island through the loss of a vessel called "Stirling Castle," on a reef to the eastward. Captain Fraser with his wife and crew landed on the island in 1836—they were all murdered with the exception of Mrs. Fraser and two Malay boys; the latter

succeeded in reaching the settlement formed in Moreton Bay by swimming across the Narrows. The schooner "Cumberland" was sent with the man Mr. Petrie found when he discovered the Mary River; this man had been many years with the natives, and was able to act as interpreter; they succeeded in getting Mrs. Fraser away from the natives, after having passed years of terrible suffering.

The next point of interest was named by Cook, May 19th, 1770; on this point he saw a large number of natives assembled, from this he called it Indian Head. The north end of this island he most appropriately named Sandy Cape, from the large sand patches on the hills. By his attention to the soundings, he hauled off in time to clear the reef, which he called Break-sea Spit; passing to the westward, he named Hervey Bay, after Captain Hervey, R.N.

Lady Elliot Island, the southernmost limit of the Barrier Reef, was named by a ship of that name in 1815. The Bunker and Capricorn Groups follow next, in order. The former was reported by Mr. Bunker of the whaler "Albion," sometime in 1772. They form quite a network of islands, and have been surveyed from time to time by Her Majesty's ships; one of which, the "Bramble," that afterwards for many years did service as a light-ship in Sydney Harbour, is now an old hulk rotting in Johnson Bay. How many old stories are connected with these islands, and the last chapter in the history of many vessels, is summed up into the few words, "Here a wreck was found."

Mast Head Island, the north-west island of the Capricorn Group, has witnessed the wreck of a large number of vessels, from it having been placed wrong on the chart; the "Polmáuz," "James Patterson," "Tambaroora," "Dutchland," and "Jane Lockhart," were wrecked here. Captain Cook, after rounding Break-sea Spit, stood to the south-west until six miles off the land abreast of what is known as Burnett Heads, then stood to the northward, and anchored at the back of Round Hill Head, where he landed. He distinctly mentions the creek where they shot

a bird weighing seventeen pounds, and as it was the first they had since leaving England, they called the bay Bustard Bay in honour of the seventeen-pounder, which, no doubt, was a most acceptable meal.

From Bustard Head the land falls in to the westward, to the entrance of Port Curtis. The island was named by Captain Flinders, in honour of Sir R. Curtis, Governor of Cape of Good Hope. August 8th, 1802. Gladstone was one of the early settlements after Moreton Bay, and was of some importance in 1855, a steamer running between there and Brisbane. In the harbour, on the south side, the remains of the yacht belonging to George IV (Prince Regent) is lying; she had been in the cattle trade, and was in need of repairs, but ultimately abandoned. The place was brought before the public by the gold rush known as the Port Curtis rush, in 1858.

Cape Capricorn, named by Cook, from its being directly under the tropic. In passing inside some of the islands he called them after Admiral Keppel. On a sandbank here the ship "Timandra" was lost in 1858, and the "Florence Irving" struck in 1877, on Ship Rock. Some years ago, a tribe of natives of a very low type lived on Keppel Islands, subsisting wholly on roots and fish; they were adepts at stone throwing, but were very shy, and have since all died off. Flinders went to South Hill August 14th, 1802. The entrance to the Fitzroy River is to strangers somewhat difficult to find, and a good story goes, that one of our old sea captains, on a voyage to Rockhampton, got up the wrong passage, and after steaming for a whole tide and finding no familiar landmarks, had to return to his first starting point. The next land of note is Cape Manifold, also named by Cook; Cape Clinton, after Colonel Clinton, 85th regiment; Madeira, discovered by Flinders, August 21st, 1802; also Port Bowen on the same date, and named after Captain Bowen, R.N.

East from here, about 250 miles, is the scene of the wreck of the "Porpoise" and "Cato," the vessels under the command of Flinders, on a reef that he named Wreck Reef. They were

abandoned to their fate by Captain Palmer who sailed in their company, and afterwards reported in Bombay the loss; but in a dispute between him and his chief officer, the latter exposed the cowardly desertion. In the meantime, the shipwrecked party, under good discipline, fitted up the pinnace, and christened her the "Hope;" Captains Flinders and Parkes left on August 26th, and arrived in Sydney, September 8th. Flinders returned in the "Cumberland," accompanied by the "Rolla" and "Francis," and arrived October 7th, just six weeks from the time he left the reef. Great was the joy at this reunion, many of the men returning to Sydney in the "Francis." Flinders planted oats, maize, and pumpkins, and he comments strongly on the necessity of having cocconut palms planted on these islets to act as a beacon, and afford succour to the hungry. Flinders left this on October 11th, and parting from the "Rolla," stood N.N.W. for Torres Straits.

The Swain and Saumarez Reefs lie about north-east 150 miles off Cape Manifold; the latter was the scene of the wreck of the "Noumea" schooner, 107 men all told, of whom 104 were saved by the s.s. "Leichhardt." The captain made for Keppel Bay, and piloted the steamer out to the wreck. Cape Townsend is the next cape named by Cook; from here he was drifted by the tide, and barely missed grounding on what is known now as Donovan's Shoal. He came to an anchor in the passage known as Thirsty Sound, giving it that name from the scanty supply of water. It was here Cook first saw those peculiar little fish so much resembling seal, about the size of a minnow, that are found all along the coast. May 30th, 1770, he anchored again off Broad Sound, giving it that name. June 1st, passed nine miles off the land, calling the point Cape Palmerston. To the eastward of this, and in the present track of shipping are Percy Islands, named by Flinders; the group he called Northumberland, after the Duke, Tuesday, September 28th, 1802. This group comprises Percy Islands, Beverley Group, and Prudhoe. On these islands are found those beautiful pines peculiar to the east coast of Australia, called *Araucaria*; and strange to say these are found

in the fossil state in the London clay of the Oolitic Period. This geological peculiarity is common to Australia; for the *Eucalyptus* and the remains of marsupials are found in the London clay; and to the north the *Ventriculilis* is growing abundantly, and is found in the chalk formation in England. The *Micronicus* is washed up on the beach after a strong breeze, and these are found in a fossil state in the Chalk Period of England.

On the north island, called Middle Island, Mr. Strange, the Government Geologist was murdered by the natives, February, 1855. These islands were visited by Captain King in January, 1818, and Captain Deuham, July, 1859. Off this island the mail steamer "Normanby" struck on a sunken rock, and was afterwards beached and repaired on this islet.

Twenty-six miles from Prudhoe Island is Port Mackay, also known as Flat-top Island; this used to be called Champion's Island, and was the landing place for the port. The Pioneer River, with its sugar-growing advantages, were first made known by Captain Mackay of Cooktown.

The Cumberland Islands, named by Cook in honour of the Duke of Cumberland. He passed through here, naming Whitsunday Island from the day of his passing. There is a wreck at the north end of Long Island that points to some very early navigator who evidently went there with the intention of heaving down to repair his ship, when he must have been overpowered by the natives. The vessel, in 1843, had the appearance of a man-of-war, or at least had gun-ports. All that remains now is the keel and part of frame, the latter charred, so, evidently, she must have been fired. A quantity of coal was found on the beach near her. She was built of oak, with iron fastenings. Might not this have been one of La Perousé's vessels that had been blown on to the Barrier and had come here for repairs?

On one of the adjacent islands, Cid Island, the natives took and burnt a schooner called "Louisa" and murdered one of the crew, 13th August, 1878; the others escaped to Port Denison.

The Portuguese barque "Vallora" was lost on Pioneer Rock,

February, 1881. About here the tracks of Captain Cook in 1770 and Captain Flinders in 1802 diverge, the former keeping along the coast while the latter stood out to the N.E. Captain Cook named Cape Gloucester and Edgecumbe Bay, at the bottom of which is Port Denison. The first settlers came here in the "Jenny Dove" schooner, April, 1861. They had to live on Stone Island, as the natives on the mainland were so hostile, until the arrival of Mr. Dalrymple with the native troops. While camped here one of the men shot himself by accident, and was buried on the island.

In 1864, the ship "Wandsfell" ran the gauntlet through the Barrier Reef abreast of here, with a large number of emigrants, and arrived safely at Bowen. Truly "fools rush in where angels fear to tread."

Holborn Island, named by Cook, June, 1770. On the reefs to the north-east of this the "Gottenberg" steamer was lost, February 23rd, 1875, on a passage from Port Darwin to Adelaide. One hundred lives were lost; the survivors were picked up in the boats, and two were found on Holborn Island. Cape Upstart was named by Cook in passing along; its appearance suggested the name. He mentions passing the low land of Cape Bowling Green. In 1843, the boats of H.M. ship "Fly" ascended the Wickham River, and for a time were in a maze, owing to the number of mouths in the delta. James Munell, the only survivor of the "Peruvian" barque, from Sydney to China, wrecked on March 8th, 1846, on the Barrier, lived with the natives about here until rescued in 1863.

The next point of interest, Cape Cleveland, was also named by Cook, June, 1770. Here he observed a change in the compasses which he attributed to the magnetic influence of the land, and he called the island forming the north side of the bay Magnetic Isle. This was also observed by Captain King. Townsville was formed in 1859 at the bottom of the bay, and called after Captain Towns, of Sydney, who formed a cotton plantation on Ross Island. The bay to the northward of this Cook called Halifax Bay. The mainland near the coast is low, and offers a fine field

for the geologist, and fossils of the Miocene Period are likely to be found. In 1815, the ship "Lady Elliot" struck on a reef in this bay. The islands in this vicinity all bear record of the visits of the men-of-war in the early days, viz., "Rattlesnake," "Corelilia," "Brisk," "Eclipse," "Havana," "Dido," "Curacao," "Bramble," and "Fly," and several others.

In 1848, a small cutter, called "Will-'o-the-Wisp," was attacked by natives while anchored under Rattlesnake Island. Several of the crew were severely wounded, and the vessel nearly burnt by the natives throwing wads of burning bark into the hold. In 1834, H.M. ship "Zebra" passed outside the Palm Islands, and named Zebra Shoal. At the time she was looking for a shoal on which the "San Antonio" struck in 1821. Cook passed up inside Palm Islands, but makes no mention of the passage inside Hinchinbrook Island, leading up to the Herbert River and Cardwell. Cardwell was founded in 1863. He mentions Hillock Point, Cape Sandwich, and Rockingham Bay. East from Hillock Point the "Banshee," a small steamer from Townsville to Cooktown, was lost in [?]. Between Hillock Point and Cape Sandwich the barque "Harriet Armitage" was lost in 1878. East from here is the scene of the wreck of the "Maria" brig on Bramble Reef. The "Maria" left Sydney, [?] with an expedition to New Guinea. She was badly found in everything, and not at all suitable for such an undertaking. When she struck she soon went to pieces, and the party had to take to boats and rafts without saving anything. One boat landed at the back of Dunk Island, and the crew were murdered and eaten by the natives; one raft was picked up north of the Johnstone River, near the mountain called Mount Maria; two boats made for Eva Islet, where they spent a night, then went south, passed up Hinchinbrook Channel, and reported the matter at Cardwell, where the "Tinonee" steamer was sent out to the rescue. The "Governor Blackall" steamer afterwards went out and visited the coast, and punished the natives for their behaviour to the shipwrecked party, many of whom escaped drowning and were murdered or died from exhaustion. A little to the north

ward is the Britomart Reef. The next reef to the northward was called after Mr. Kennedy, who passed along here. He landed at the back of Dunk Island, with his exploring party on his way to Cape York, from the schooner "Tam o' Shanter," calling the place after the name of the vessel, May 31st, 1848. Cook named Dunk Island in June, 1770. To the northward of this, and on the shore side, is King's Reef, the scene of the stranding of several of the coasting steamers, viz., "Boomerang," in June, 1874; and the "Ranelagh" and "Glaucus" a short time ago. Passing the Barnard Islands, and due east from there, some *bêche-de-mer* fishers found, in 1884, the remains of a wreck—on one of the detached coral patches forming the inner edge of the Barrier—together with a quantity of pig lead marked with the broad arrow, and four guns, about 12-pounders. This, no doubt, is the "Mermaid" man-of-war, which was supposed to have been lost hereabout. The mainland here is high, and the valleys are fertile; and small townships have sprung up within the last few years.

Frankland Islands, named by Cook, is where the "Naval Brigade," one of the Black Ball line of ships was lost in 1864. In 1848 cocoanuts were growing on the South Frankland. Captain Cook named Fitzroy Island, and Cape Grafton; he came to an anchor under this cape, where he landed in search of water. Green Island was called after Mr. Green, the astronomer on board the "Endeavour." The reefs in the vicinity of Green Island are studded with wrecks; on the charts the common epitaph "Here a wreck was found," is the only account we have. Due east from Fitzroy Island the remains of the ship "Merchant" is lying, she was caught in a hurricane when making for Trinity Opening, bound to Melbourne from the Daintree River. In the south-west corner of Trinity Bay is the port of Cairns, one of the finest harbours in Queensland. About here great geological changes have taken place, and there is every appearance of the Mulgrave River, which empties in the sea on the south side of Cape Grafton, having once had its mouth where Cairns now stands. Port Douglas, about thirty miles north

along the coast, was at one time much better known than at present, as the cedar-getters between the Daintree River and Liverpool Creek, near Tam O'Shanter Point, made this their headquarters. Nine miles to the north-east is Low Island, mentioned by Cook, also Schnapper Island. Twelve miles from here is Cape Tribulation, so named by Cook, as hitherto he had met with no disaster; but in standing off from here during the night of 11th June, he struck on a reef and sustained considerable damage. The ship was lightened, and several guns thrown overboard; he mentions sandstone boulders where the vessel was laying, this formation is somewhat strange, and may assist in finding the exact spot to look for the guns. After he floated off the vessel was found to be leaking badly, keeping all hands at the pumps; as he was making in for the land he called the indent Weary Bay. Mr. Monkhouse suggested what is known as the thrummed sail, which was passed under the bottom of the vessel and thus reduced the leak within the control of one pump, whereas before the water was gaining on three. He then steered up outside of the islands, he named Hope Islands. Near here is a reef on which lay the remains of the schooner "Black Dog" and cutter "Ella," the latter had a load of pigs, and many got ashore, and now there are hundreds to be found all along the beach and in the swamps, especially north of the Annan River.

Monkhouse Point was named after Mr. Monkhouse; Cook sent boats ahead, and ultimately got into the mouth of the river, where he put the vessel on the ground and repaired her. It was here that the first kangaroo was seen. In the meantime, Captain Cook made several excursions to the top of the hills; he went on one of the high hills on the north side—which he particularly mentions—where he had a look at the reefs, but could see no passage clear out to sea. Captain Cook left here on August 4, 1770, and called the river Endeavour River; he stood to the north-east, naming Turtle Reef and Cape Bedford. The appearance of the next land being like an island, he thought he was clear, but finding it a continuation of the mainland he called

it Cape Flattery; he also named Point Lookout. He then stood out and anchored under the high islands, and ascending the highest called it Lizard Island; from this he saw a passage out between the reefs, and getting under weigh from an island he called Eagle Island—having found a large eagle's nest there—he cleared the reef August 12th. The Lizard Island tragedy will still be fresh in the minds of many. Mr. Watson with his wife and child lived on the island, which he left to look for a fresh fishing ground, leaving Mrs. Watson and child with two Chinamen on the island; in the meantime the natives made an attack, but were driven off, after killing one Chinaman and severely wounding the other. Mrs. Watson knew but too well that the natives had discovered their defenceless position, and would return again; so she prepared to leave with her child and the Chinaman in the half of a four-hundred-gallon tank, and make for a place of safety. The diary she kept will give an idea of the terrible time she had before death put an end to her sufferings; her conduct is one of the highest records of heroism and maternal affection that in time of danger is shown by the softer sex. Mr. Watson returned to find his home desolate, and a search party ultimately found the remains of the sufferers on No. 5 Howick, an island about thirty miles to the westward.

FIRST PART OF DIARY, FOUND ON LIZARD ISLAND.

September 27th.—Blowing gale of wind S.E. Ah Sam saw smoke on S. Direction Island, supposed to be from native's camp; steamer bound N. very close about 6 a.m.; "Corea," I think."

September 28th.—Blowing strong S.E. breeze.

September 29th.—Blowing strong S.E. breeze, although not so strong as yesterday. No eggs. Ah Leong killed by the blacks out at the farm (a quarter of a mile from the cottage). Ah Sam found his hat, which is the only proof.

September 30th.—Natives down on beach at 7 p.m. Fired off rifle and revolver, and they went away.

October 1st.—Natives (4) speared Ah Sam four places on right side, and three on shoulder; got three spears from natives; saw ten altogether.

DIARY NO. 2, FOUND ON NO. 5 HOWICK ISLAND.

Left Lizard Island, October 2nd, Sunday afternoon. Got three miles or four from Lizards.

October 4th.—Made for sandbank off Lizards, but could not reach it ; got on reef.

October 5th.—Remained on reef all day on look-out for a boat, but could see none.

October 6th.—Very calm morning ; able to pull tank up to an island with three small mountains on it (No. 1 Howick). Ah Sam went ashore to try and get water, as ours was done. There were natives camped there, so we were afraid to go far away. We had to wait return of tide. Anchored under mangroves ; got on reef ; very calm.

October 7th.—Made for another island four or five miles from the one spoken of yesterday. Ashore, but could not find water. Cooked some rice and clam fish. Moderate S.E. breeze. Stayed here all night. Saw steamer bound N. ; hoisted Ferrier's (her baby boy) white and pink wrap, but did not answer us.

October 8th.—Changed anchorage of boat, as the wind was freshening ; went down to a kind of lake on same island ; this done last night. Remained here all day looking out for boat, but did not see any. Very cold night ; blowing very hard. No water.

October 9th.—Brought tank ashore as far as possible with this morning's tide : made camp all day under trees. Blowing very hard. No water. Gave Ferrier a dip in sea, he is showing symptoms of thirst ; and I took a dip myself. Ah Sam and self very parched with thirst ; Ferrier is showing symptoms.

October 10th.—Ferrier very bad with inflammation. Very much alarmed. No fresh water, and no milk but condensed. Self very weak ; really I thought I should die last night, Sunday.

October 11.—Still all alive. Ferrier very much better this morning ; self very weak. I think it will rain to-day ; clouds very heavy ; wind not quite so high.

No rain ; morning ; fine weather. Ah Sam prepared to die ; have not seen him since 9. Ferrier more cheerful. Self not feeling well at all. Have not seen any boat of any description. No water ; nearly dead with thirst.

The search party found the tank nearly full of water, with Mrs. Watson and her baby lying in it. Evidently it had rained the day after she had died.

Numerous islands and reefs are about here that all have their tale.

Cape Melville seems to be one mass of boulders thrown down in a heap, or is it that the plumpness of youth has passed and the sharp points of the bones of old age are showing as the soil has been washed down by the rains of many years ? Are mountains, then, the fertilizing stores for the valleys ? Nature seems to have ordered it thus.

At the back of the cape a watering party from the "Bramble" were attacked in August, 1848.

Passing on we come to the Flinders Group, which rises to a considerable height; the peak being called Castle Hill. The formation is peculiar all up the face of the cliffs, and where it has broken away it is sedimentary deposit, with pudding stone on the beach. The general appearance reminds you of the coal-bearing districts of the south. Abreast of here is a shoal on which H.M.S. "Satellite" grounded, June, 1822. On the right Clack Island is seen rising abruptly to an altitude of sixty feet from the reef. On the cliffs rude drawings, coloured in red and white, of turtle, fish, crabs, spears, mushroom coral, and several other things were seen by Mr. G. H. Inskip, H.M.S. "Bramble," in 1848. After rounding Cape Flinders the land falls back, forming Princess Charlotte Bay, into which several rivers fall. A story is told of several Frenchmen appearing one morning at the Palmer diggings, dressed like sailors with sea boots. They said they had pulled up a river, then left the boat, and began to travel in quest of food. There is no doubt they came from New Caledonia. Continuing a northerly course, the Claremont Islands are passed. Several show a recent upheaval, as the concrete formed from coral is several feet above the tide mark. Abreast of here is a great gap in the hills. This, apparently, was the natural outlet for the York Peninsula; the distance through from here to the water on the other side not being more than 105 miles. The next island of interest is a few miles to the northward, and is called Night Island. It was here that the "John Bell," pearl fishing vessel, found the young Frenchman, April 11th, 1875. He belonged to the French barque "St. Paul," from China to Sydney, with 350 Chinamen. She was wrecked on the Louisaide Islands. The ship's company took to the boats, leaving the Chinamen to their fate. A few years afterwards a passing vessel took off seventeen, all that remained; the others were eaten by the natives. The cannibals would come and pick out the fattest, and give him the preference—a compliment not appreciated by John—and leave the others to get into

good condition, ready for the next family gathering of the native clans. In the meantime, the boats reached the mainland near Cape Direction, but, meeting with a number of natives, they returned to the boats again, leaving a little boy behind; he became a great favourite with the blacks, and was reluctant to leave them after his seventeen years' sojourn amongst them. Cape Direction was named by Captain Bligh, who entered through the Barrier, abreast of here, after the mutiny of the "Bounty," 1789. He landed on Restoration Island, May 29th, 1789, on the anniversary of the restoration of Charles II. North of the passage taken by Captain Bligh in his boat is a passage taken by the ship "Hibernia," Captain Ashmore, on her way to India from Fiji, with oil and sandal-wood, in 1810. A son of Captain Ashmore was many years master of a vessel in the Fiji trade.

The passage through which Captain Cook entered he called Providential Channel, on August 14th, 1770. He was becalmed, and the tide setting him near to the reef—several times the "Endeavour" was not more than 200 yards off—and all the boats were out towing, when this channel was discovered; he passed in, and anchored about Piper Island. Getting under weigh next morning, he passed between the N and M Reefs and outside Haggerstone Island.

The bay to the northward of Cape Weymouth he called Weymouth Bay. It was in this bay, at the mouth of the Pascoe River, that Kennedy, the explorer, formed his last camp; leaving his sick men, he pushed on with only one blackfellow to get assistance at the place of rendezvous at Cape York. Mr. Kennedy was murdered, but Jackey succeeded in reaching the schooner in the Albany Pass. They returned and picked up the survivors, many of the party having died from starvation and fever. The natives found amusement in harassing them at first, but afterwards took pity on them in their miserable position. The next point is Fair Cape, also named by Cook, on August 15th, 1770. Abreast of Bolt Head, which is a little to the northward, and named by Cook, the remains of the schooner

“Kate Kounley” is lying. She left Port Douglas with the “Merchant,” laden with cedar, and was next seen drifting bottom up in Temple Bay, where she grounded; the natives burned a hole in her bottom to see what was inside.

Abreast of here, and on the outer edge of the Barrier Reef, are several wrecks; the “Ferguson” wrecked in 1841, and “Martha Ridgeway” of Liverpool, in 1842, by drifting on the reef at night. To the northward of this is the Great Detached Reef, where the “Chesterholm” was wrecked in 1858. Near here is Raine Island from which the passage takes the name; this used to be the route generally taken, and many are the vessels that missed the entrance, and were carried on to the reefs. In 1844 a tower was built on the island, under the directions of Captain Blackwood, by the crews of the “Bramble” and “Fly,” to act as a guide, and provisions were stored there; also a large tank for rain water. The “Sapphire” was wrecked near here,

[?] and her two boats, after working down as far as Fair Cape, went back and made for Booby Island, where they remained until the end of the south-east season, when they again made for the south. The captain and several of the crew were murdered at Hammond Island; the others, after passing through the Albany Pass, found the “Mariner,” timber laden, from New Zealand, bound for India. She was abandoned. They went on board, and anchored her to keep her off the reefs. This was in latitude [?] longitude [?]. They returned to the wreck of their own vessel for provisions, then worked to the southward with this water-logged vessel, and arrived in Port Curtis [?]

where her former crew arrived but a short time before. The “Mariner” fell into the hands of Captain Towns, and when Captain Curphy was taking her to Sydney, accompanied by the schooner “Don Juan,” she foundered off Cape Moreton.

Raine Island was occupied by a party of *bêche-de-mer* fishermen, who were murdered one night by the natives from the mainland. The channel trends to the south-west and round the Sir Charles Hardy Group, named by Cook, August 16th, 1770. It was here that the relief party, sent out under Landsborough

to proceed to the Gulf to find Burke and Wills, were driven ashore in the storm, in 1861. They succeeded in getting off by the assistance of the captain of the man-of-war "Victoria." While there they found traces of the vessel "Lady Kinnard." The nearest point of the mainland from here was named by Cook Cape Grenville; the islands lying off the cape were named by some later navigator Home Islands, in honour of Sir E. Home, [∴] . The reef and islands to the north-east, named by Cook Cockburn Islands, is where the steamer "Ganges" with a large number of horses was stranded; the horses were thrown overboard, and the remains of several were found on the Bird Islands, a group named by Cook, some distance to leeward. About ten miles north of Raine Island the "Pandora" (commanded by Captain Edwards, who was sent out after the mutineers of the "Bounty") was lost, having drifted on to the reef during the night of August 28th, 1791. Captain Edwards with his ship's company, almost destitute of provisions, set sail for the westward in four boats after they saw their vessel sink inside the reef in fifteen fathoms. The ship "Olinder," Captain Sinclair, passed through an opening about ten miles north of the Pandora Entrance, in June, 1849.

Newcastle Bay, named by Cook in 1770, is the last indent on the coast line. At the bottom of this bay Mr. Kennedy was murdered, when his faithful henchman Jacky Jacky made for the rendezvous in Albany Pass, where the schooner was lying waiting for the arrival of the expedition. Several islands lay along near the track of shipping. The Boydong Cays, seen to the right, where the crew of the "Charles Eaton," from Sydney to India, were wrecked on the Detached Reef. After days of terrible suffering on a raft, they were shown to one of these islands by natives in a canoe, and afterwards murdered with the exception of a lad named Ireland and a mere infant, that was taken up by a gin as the child lay in the arms of the mother, whose head was cut off and thrown on the sand with the others, August 15th, 1834. The lad recognised the head of Mrs. D'Oyley by the long hair. Bushy Island, is where the

“Newcastle” was wrecked; this was one of Green’s famous line of frigate-built ships. Cairncross Island is where the vessels bound to the westward would anchor the first night after entering the reefs. In the centre of this island is a large tree with a number of names carved on it, but now nearly grown out. In 1846, the ship “Nile,” with horses, anchored here; Mr. Cairncross, one of the officers, cut his name on a board and nailed it on a tree, and a surveying party finding this later on gave the island his name.

Captain Cook passed between this island and [?]. Passing through what is now known as the Albany Pass, he named the islands to the northward the York Islands. Captain Edwards landed here for water. [?]; and, in 1848, the “Bramble” and “Rattlesnake” rescued a white woman from the natives at Cape York. She told them that a white man called Wynee had been living with the natives on Mulgrave Island for many years; that he had reached that island after killing and eating his companions. The natives had a superstitious dread of him; and his behaviour would not insure a hospitable reception to any white man going there. The islands Tuesday, Wednesday, Thursday, and Friday, were named by Captain Bligh, when passing through in the launch of the “Bounty.” Flinders named Goode Island after Mr. Goode, the botanist. He went on to the top of the hill on which the lighthouse now stands to take observations on November 2nd, 1802. On a reef off this island the “Phoenix,” a paddle steamer belonging to Captain Towns, on her way to China to be sold, was wrecked about 1855; also the “Mecca” steamer, 23rd December, 1878. The bay to the southward of Goode Island, Captain Edwards called Sandwich Sound. Captain Flinders heard the native dogs howling at night, while anchored there on his way to Timor, and called it Wolf’s Bay; it is now known as Normanby Sound. Of the islands to the north and north-east of this group, as far north as New Guinea, and out to the eastward to the outer edge of the Barrier, their history abounds with the adventures of the early navigators, which alone would fill a volume of great in-

terest. For the present we shall merely take a running glance, beginning with Torres, who kept his vessel well over to the coast of New Guinea. He mentions having seen many large islands to the southward—probably the York Islands of Cook and the Prince of Wales group. The next who passed along here was Captain Bligh, in H.M.S. "Providence," on his second voyage, accompanied by Captain Portock, of the brig "Assistance." They discovered and named Portock Reef, Anchor Cay, Murray Islands, and Darnly Islands, naming the passage through the Barrier Bligh's Entrance. At Darnly Island they were attacked by natives who showed great spirit and determination, but the superior arms of the white men told against them, and they had to retire. Next day several canoes came off, and asked for toore-tooree, by which they meant iron. It is remarkable that the natives of Tahiti call iron ture-turee. They named Stephens and Campbell Islands, also Warrior reef; the latter name was given owing to the warlike natives met with. On September 10th, 1792, they were again attacked by the natives in great form, they evidently having planned the attack. Several of the men on board the "Assistance" were wounded with arrows, one of whom afterwards died from the effects. Captain Bligh took formal possession of all these islands, in the name of King George III, on September 16th, 1792. He named Jarvis and Mulgrave Islands, and passed out into the open sea, calling the pass Bligh's Farewell, on September 18th.

The next who came this way were the ships "Hormuzer" and "Chesterfield," in company, commanded by Messrs. W. Bampton and Mathew Alt. They made Murray Island June 20th, and had a continuation of misfortunes until they cleared the reef on August 31st—just seventy-two days.

The "Chesterfield" sent a boat ashore at Darnly Island, where five of the crew were murdered; three succeeded in reaching the boat, and got adrift with neither provisions nor compass. At the end of ten days of terrible suffering they made the land, which proved to be the Timor coast, where they received attention. In the meantime the crew of the "Chesterfield" landed and

destroyed all the houses and canoes. In one of the houses they found suspended several human skulls and strings of hands. These were hung round a wooden image, rudely carved and painted, and some gun was found burning before them. On July 30th, Captain Bampton saw a volcano burning with great violence on Cap Island. They anchored for seventeen days in a maze of reefs, unable to work to windward and afraid to run to leeward. They ultimately cleared the reefs, calling the island from which they took their departure Deliverance Island.

Captain Flinders discovered and named the Eastern Fields (the scene of many a wreck), and passed inside the reefs, close to Murray Island, being to the southward of Bligh's Entrance; and, benefiting by the mistake made by the "Hormuzer" and "Chesterfield," who ran to leeward, he kept well to the southward, and passed through what is known as the Prince of Wales Channel. On one of the reefs in this vicinity the ship "John D'Costa" can still be seen lying as if she was at anchor.

We now come to Booby Island, the last in the straits. It was first visited by Captain Cook on August 23rd, 1770. He anchored off the north-west end, and he and Mr. Banks went ashore. It is probable that Captain Bligh landed here, and that he recommended that provisions should be sent there for the benefit of shipwrecked people. Captain Flinders landed here October 29th, 1803. Since then, as already has been mentioned, vessels of all nations made the place a starting point; and in the cave where the provisions were kept the names of vessels are marked on the side, many of them beyond deciphering. The ship "Medway," bound west, while at anchor here, met a French barque from Melbourne, 1863. She left Melbourne bound to the westward, but, meeting with strong westerly gales, the captain turned back and ran through Bass Straits with a strong southerly wind, and ran along the east coast. He had a small map, out of a book, sixty miles to the inch. His chief officer had once been through the straits by Raine Island Passage. He made for Raine Island, making it about 5 p.m., ran through and anchored in fourteen fathoms. Next day he got under weigh,

and next night anchored at Booby Island ; a feat worthy of the days of Drake and Dampier.

Most of the men-of-war cruising in the Pacific have visited this island from time to time. Since the settlement at Somerset, and afterwards at Thursday Island, no provisions have been sent there, and the floor of the cave is strewn with hoops, staves, remains of stores, and beef bones. On the top of the island is the remains of a building, about four feet square, built of rough stones ; this probably was where the chest containing the book of record was kept. On the north-east side is another cave, with Malay inscriptions on the walls. The north-east and south-east sides of the island are fringed with a coral reef ; here can be seen the coral in all its different stages, from the soft spongy state, until it assumes the feel and appearance of a bullock's liver, up to the hard inanimated piece, in the pores of which are innumerable parasites, that are credited with the formation.

The chest for the post office was left by H.M.S. "Bramble," in 1845. The brig "Freak" struck on the reef in 1848.

In closing this paper, I take the opportunity to thank my many nautical friends who have given me much interesting information, much of which has been necessary to omit here, but I hope to be able to give a more detailed account at some later date.

The CHAIRMAN, in commenting favourably on the paper, said the Society were much indebted to the author. He invited discussion.

A conversation then ensued, in which the Chairman, Dr. Waugh, and Mr. C. T. Bedford took part, regarding Mourilyan Harbour being omitted in the paper.

The HON. SECRETARY made special reference to the record of Mrs. Watson's untimely death, and expressed surprise that the people of Brisbane had taken no steps to memorialise her.

ANNUAL MEETING.

THE second annual meeting of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of Friday, July 29th, 1887, at 8 o'clock. The Hon. A. C. Gregory, C.M.G., M.L.C., &c. (Vice-President), occupied the chair.

After the minutes of the previous meeting had been read and confirmed, the following gentlemen were elected, by ballot, members of the Council of the Society for the session 1887-8:—Messrs. W. H. Miskin, James Muir, W. A. Tully, B.A., F.R.G.S., Richard Gailey, H. C. Luck, F.R.G.S., and R. H. Lawson.

On the motion of Mr. W. H. Miskin, seconded by Mr. J. Muir, the Hon. A. C. Gregory, C.M.G., &c., was unanimously re-elected Vice-President of the Society, and on the motion of Mr. J. Muir, seconded by Mr. H. C. Luck, Mr. J. P. Thomson, M.A., C.E., &c., was re-elected Hon. Sec. and Treasurer.

The HON. SECRETARY read a letter from Dr. Waugh, which stated that illness prevented his attendance at the meeting, and expressing a desire, in consideration of the Society's welfare, that for the ensuing session his name should be left out of the list of Council members. The Hon. Sec. concluded the reading of the letter by expressing regret at the temporary loss of Dr. Waugh's valuable services to the Society.

The following gentlemen were elected, by ballot, members of the Society:—Messrs. C. B. Lethem and C. Burdorff.

On the motion of Mr. J. Muir, seconded by Mr. H. J. Hemmy, Mr. H. C. Luck was elected Hon. Auditor for the session 1887-8.

A letter was read from His Excellency Sir Anthony Musgrave, G.C.M.G., &c., expressing regret that a prior engagement prevented his and Lady Musgrave's attendance at the meeting.

Also the following letter from Lady Brassey:—

“Sunbeam,” R. Y. S.,
July 27th, 1887.

J. P. THOMSON, Esq., Hon. Secretary,
Royal Geographical Society of Australasia,
Queensland Branch, Brisbane.

Dear Sir,

Lord Brassey begs me to acknowledge on his own behalf, as well as mine, your kind courtesy in presenting us with the most interesting publications of your Society, and to express our great regret that the shortness of our stay here prevents our being present at your most interesting meeting on Friday next, which it would otherwise have given us the greatest possible pleasure to have attended.

Believe me,
Yours sincerely,
ANNIE BRASSEY.

Letters were also read from the Australian Antarctic Exploration Committee, containing the following transcription of an extract from a letter from Admiral Sir Erasmus Ommanney, Secretary of the Antarctic Committee of the British Association:—*Extract*.—“My committee will be required to make their report to the British Association at their next meeting at Manchester, at the end of August. Therefore it might be desirable for your scientific Association to draw up some representation from the Australian Colonies for research in the Antarctic regions.” The Society was asked to concur in the representation which the Australian Antarctic Exploration Committee proposed drawing up. From Mr. E. G. Edelfelt, of Motu Motu, New Guinea, reporting the discovery by him of two rivers and two islands in south-eastern New Guinea. One river and one island is in latitude $8^{\circ} 5' 15''$ south, and longitude $146^{\circ} 5' 10''$ east; the other river and island is in about latitude $8^{\circ} 7'$ south, and longitude $146^{\circ} 4' 30''$ east. The former river is named the Edelfelt, and the latter, which is a tributary of the former, the Isabelle Gater. From Mr. C. B. Lethem, railway surveyor, referring to Mr. N. Bartley's paper on “The Moun-

tains of Queensland," and the inaccurate heights of some of the mountains therein described. Mr. Lethem supplies the following corrected heights in lieu of those given by the author of the paper referred to:—Mt. Mitchell 3,830 feet, and Mt. Cordeaux 3,760 feet above high water at Ipswich. As additional information he gives the height of Cunningham's Gap as 2,480 feet. From Capt. John Mackay, harbour master, Cooktown, furnishing, as requested, the Society with his report upon the cairn of stones recently discovered by Capt. W. Thomson, of the S.S. "City of Melbourne," and by him reported to the Society as being erected by the illustrious navigator, Capt. Cook. Captain Mackay, after describing the locality upon which the supposed cairn is erected, concludes by expressing a strong opinion that the cairn is of more recent origin than Capt. Cook's time, and may probably have been erected by the aboriginals who frequent the locality.

The HON. SECRETARY informed the meeting that the Council had made application to the Government to have the publications of the Society printed by the Government Printer, but a reply had been received in the negative.

The HON. SECRETARY then read the following report:—

Report of Council, Session 1886-7.

The Council have the honour to submit the following annual report:—

MEMBERSHIP.

The Society completed its second session on June 30th, 1887, during which time one honorary, three honorary corresponding, and thirty-three new ordinary members were elected, which makes the total list of members as follows, viz.:—five honorary, three honorary corresponding, and 106 ordinary members. The three honorary corresponding members were elected in consideration of their distinguished scientific attainments, and the interest they have shown in promoting the objects of the Society.

FINANCE.

The Council beg to submit the following financial statement:—

ANNUAL BALANCE SHEET
OF THE

QUEENSLAND BRANCH OF THE ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA,

Dr.

FROM JULY 1ST, 1886, TO JUNE 30TH, 1887.

Cr.

	£	s.	d.		£	s.	d.
To Balance in Q. N. Bank, June 30th, 1886 ...	81	16	1	By Printing, Stationery, and Postage ...	129	8	6
„ Entrance Fees and Subscriptions from July 1st, 1886, to June 30th, 1887 ...	100	18	6	„ Preparation of Maps for Lithography ...	12	6	0
				„ Caretaker of Museum for Attendance at Meetings ...	2	5	0
				„ Brisbane Newspaper Co., for Advertising ...	2	18	6
				„ Freight on Books, and Hire of School of Arts for Annual Meeting ...	0	19	6
				„ Delegate's Expenses in Sydney ...	10	0	0
				„ Balance in Q. N. Bank ...	24	17	1
					£182	14	7
					£182	14	7

J. P. THOMSON, HON. TREASURER.

Compared with the Vouchers, Bank Pass Book, &c., and found correct,

29TH JULY, 1887.

JAS. MUIR.

MEETINGS OF THE SOCIETY.

The Society have held eight ordinary monthly meetings during the session, which have been fairly well attended. The original papers read at these meetings (nine papers and two reports) were contributed by the following gentlemen, to whom the Council desire to express their best thanks, viz.:—The Hon. A. C. Gregory, C.M.G., President, who delivered the anniversary address; Messrs. E. G. Edelfelt, J. P. Thomson, Rev. G. Woolnough, Capt. John Mackay, His Excellency The Hon. John Douglas, C.M.G., Messrs. C. T. Bedford, N. Bartley and Capt. W. Thomson.

COUNCIL MEETINGS.

The Council have held nine ordinary and one special meeting during the session, during which time many important matters referring to the government of the Society, and also geographical science, have been discussed and dealt with. The absence of Mr. W. A. Tully, on his visit to Europe, has deprived the Council of the personal attendance of one of its members; nevertheless, they feel certain that Mr. Tully's absence will, in a certain measure, prove advantageous to the Society, as he still retained his seat on the Council, and agreed to officially represent the Society at the gatherings of cognate bodies in Europe. The Council authorised the disbursement of £10 of the general funds of the Society, for the purpose of defraying the expenses of Mr. J. P. Thomson, in representing the Society at a meeting of intercolonial delegates held in Sydney, for the purpose of forming an "Australasian Association for the Advancement of Science." Mr. Thomson's official report was presented to the members at the November meeting, and is now published in Vol. II, Part 2, of the proceedings and transactions of the Society.

PUBLICATIONS.

The Society has continued to publish, quarterly, its proceedings and transactions, and, in so doing, the Council have endeavoured to procure the best workmanship in the execution of

the Society's Journal; their efforts in that respect have, so far, proved successful, as testified by the congratulatory expressions of many recipients outside the colony. The Council would beg to direct the special attention of members to the importance of publishing and circulating a report of the proceedings of the Society, by which means the objects of the Society can only be fully accomplished, and its vital existence upheld; that in order to maintain this important fundamental basis, the members of the Society, while willing to admit the applicability of the law of demand to the Society's exchequer, must not lose sight of the fact that the law of supply is equally applicable, and its conditions only fulfilled when their contributions are tendered promptly and regularly.

It is unnecessary for the Council to refer to the heavy expenses connected with publishing, as the members only require to glance at the annual balance-sheet to satisfy themselves on that point, nevertheless the Council would earnestly recommend their special notice to a matter of such vital importance.

The Council desire to express their recognition of the valuable aid accorded to the Editor by Mr. D. Mills, also to Messrs. C. Edmonds, J. D. Caldwell, and R. Alton, for gratuitous services rendered in the preparation of maps and illustrations for the proceedings of the Society, and to Mr. D. Munro for taking shorthand notes of discussions at several ordinary meetings of the Society.

LIBRARY.

During the session many valuable and substantial additions have been made to the Society's Library. These consist of books, maps, charts, atlases and periodicals, chiefly acquired in exchange for the Society's publications, from kindred institutions in other parts of the world. The large number of foreign publications received is an important factor of the Society's possessions, and would afford a valuable means of reference if the Society was fortunate enough to possess a room suitable for their exhibition.

The Council desire to express their best thanks to the

following governments and institutions for special donations and contributions:—The Queensland Government, the N.S.W. Government, the Victorian Government, the Western Australian Government, and the Indian Government; the N.S.W., Victorian, and South Australian Branches of the Society; the Royal Scottish Geographical Society, the Paris Geographical Society, the Marseilles Geographical Society, and the Geographical and Commercial Society of Bordeaux. The Council also gratefully acknowledge donations from the following private donors:—The Hon. A. C. Gregory, C.M.G., the Hon. F. T. Gregory, M.L.C., John Tebbutt, Esq., and J. T. Gannon, Esq.

The Council desire to express their best thanks to the Trustees of the Queensland Museum, for the privilege the Society has enjoyed in holding meetings in the Library Room of the Museum, during the past session.

The Council regret their inability to procure a room suitable for the exhibition of the books and maps belonging to the Society. The contributions of members, if regularly remitted, are barely sufficient to meet the current expenditure connected with the working of the Society and the production of its literature, and until such time as the public begin to more fully recognise the importance of its chief institutions, and to exhibit more liberality in extending their support and sympathy towards them, the Council fear that there are only slight hopes of laying claim to such a valuable and important auxiliary to the Society's acquirements as a library of reference.

For the Council,

J. P. THOMSON,

Hon. Sec. and Treasurer.

On the motion of Mr. W. H. MISKIN, seconded by Mr. H. C. LUCK, the report and balance-sheet were adopted.

On the motion of the HON. SECRETARY, seconded by Mr. J. MUIR, votes of thanks were accorded the retiring members of the Council and the Press.

The PRESIDENT then delivered the following address:—

Annual Address.

By the Hon. A. C. GREGORY, C.M.G., M.L.C., F.R.G.S., &c.

DURING the past year of the existence of the Queensland Branch of the Royal Geographical Society of Australasia, nine papers and two reports on Australian geography have been contributed and printed in our proceedings, while many donations of maps and books have been received, and our relations with cognate societies in other countries considerably extended by the interchange of volumes of our respective journals. The number of members on the list is now 106.

The several branches of the Society having made joint application, Her Majesty the Queen has been pleased to authorise our adoption of the title of "The Royal Geographical Society of Australasia." This has placed our Society on the list of recognised scientific bodies, and is a matter of some importance in conducting correspondence with similar associations in other countries.

The number of books, maps, and records is increasing so rapidly that it will soon be necessary to provide more suitable accommodation, so that members of the society may have opportunity for consulting at all times, and the question arises whether some arrangement might be made with other scientific societies for the establishment of a joint library, or even more intimate co-operative action.

The past year has not been characterised by any extraordinary geographical discoveries in Australasia, but there has been a steady development in our knowledge as regards the details of the features of New Guinea (or, as it should be more correctly designated, Papua), where several rivers have been explored towards their sources, and much additional information obtained as to the physical condition of the country and its inhabitants. And though it is a matter for regret that the explorations commenced by Mr. Forbes have been discontinued, yet it is to be hoped that the expedition organised by the Victorian Branch of

our Society will prove successful in the investigation of the ranges of mountains which form so conspicuous a feature of the Papuan interior.

Our Victorian Branch is also specially engaged in pressing forward Antarctic exploration, and communications have been opened with Sir E. Ommanney with a view of expediting the movement as a question of scientific investigation. All the Australian Colonies are deeply interested, inasmuch as it is probable that our seasons are governed more by the periodical breaking up of polar ice than by cycles of astronomical recurrence, it having been found that the state of the ice on the west coast of Greenland governs the climate of North America, while the passage south of icebergs between Iceland and Greenland causes wet seasons in Western Europe.

The commercial results of Antarctic investigation will probably depend on the discovery of convenient whale fisheries and sealing grounds, and, though important to the colonies of the south coast of Australia, would not be of special interest to Queensland.

IMPORTANCE OF PHYSICAL GEOGRAPHY.

The physical geography of the Australian continent has made important progress in determining the boundaries of the older series of rocks which contain important auriferous deposits, and it may be observed that a knowledge of the limits of prevalent geological formations in new countries is as important to the development of its industrial resources as the surveys of its coasts, ranges, and watercourses.

AREA OF AURIFEROUS DEPOSITS.

The earlier discoveries of gold and silver were almost entirely restricted to the mountain ranges of the east coast and Tasmania, from Cape York to Cape Pillar, and it was surmised that following the direction of this great dislocation of strata in a northerly direction gold would be found in New Guinea, and though some parts of that island have been prospected for gold without material success, these investigations have only been made con-

siderably to the east of a continuation of the Australian line of development, while on that line the country remains unexamined.

The more recent discoveries of gold have, however, shown that the deposits of that metal are by no means confined to the meridional ranges of the eastern coast line, and that wherever the Devonian or older crystalline rocks are uncovered in northern Australia they show auriferous veins, and that a broad belt, having its central axis running north-west from Cape Byron to Cambridge Gulf, would more completely include the gold-bearing developments than the meridional line.

There is one feature of these auriferous deposits that may be found important in an economic as well as scientific point of view.

CONDITION OF AURIFEROUS DEPOSITS.

In the south, as Victoria and New South Wales, gold is principally found as free gold in a matrix of quartz, and, therefore, best worked by simple crushing and amalgamation; but, proceeding northward, iron pyrites and calcespar are more abundant, then copper pyrites, bismuth, lead, and silver are associated, the gold itself is in more minute particles, often so intimately mixed with the baser ores that only a part of the precious metal can be separated by amalgamation, making it necessary to resort to chemical processes for extraction.

It has been from this special condition of the auriferous lodes in northern Queensland that prospectors from the south have often failed to recognise valuable mines, seeking for gold in quartz and neglecting the oxide of iron forming the outcrops of pyriteous veins; while it also accounts for the large number of mines which have been worked with profit on the weathered and decomposed upper parts of mineral veins and subsequently abandoned when the unaltered sulphides became predominant.

In the first instance the outcrops were so much decomposed by atmospheric influence that the miner had little to deal with but oxide of iron, free gold, and quartz gangue, such ores being suited for direct crushing and amalgamation with mercury; but when at greater depth auriferous pyrites and other metalliferous

sulphides appear in a normal state, it is necessary to resort to special means for the elimination of the sulphur and release the gold from combination, and even then the auriferous particles are often so minute as to escape collection by amalgamation.

ECONOMIC WORKING OF QUEENSLAND AURIFEROUS ORES.

Under these conditions the best economic solution appears to be in the adoption of the methods now in use in some of the American mining districts, such as Nevada, where the ore is crushed and the coarse gold separated by mercury. The metallic sulphides are then concentrated by washing, which removes the quartz and earthy minerals. Then slow roasting at a low heat, with the addition of common salt to expel the last traces of sulphur, and finally dissolving out the gold by chlorine gas and the silver by hyposulphite of soda.

It must be, however, borne in mind that the above process, while adapted to the bulk of Queensland ores, is not suited to ores which include any notable proportion of lead, such must be carefully sorted out and subjected to fusion, with the addition, when the quantity of lead is small, of galena, so as to produce metallic lead rich in bullion.

AREA OF CARBONIFEROUS DEPOSITS.

Though the determination of the areas of auriferous deposits has naturally a special interest because gold is the tangible representative of wealth, yet it should not be forgotten that our deposits of coal may prove equally important, and it is desirable that we should endeavour to ascertain their position, extent, and facilities for working.

So far as has yet been ascertained, the great anticlinal axis of the country at the time that the coal was deposited followed closely along the present line of the east coast at a distance varying from twenty to fifty miles. On each flank of this axis the carboniferous beds were deposited in what appears to have been a moderately undulating country.

If the coal measures were of any great extent on the eastern side, they have been submerged by the ocean, except the narrow

belt along the coast from the Logan River to the Fitzroy River, the greatest breadth being between Maryborough and Bundaberg, where the Burrum coal mines have an important commercial value in consequence of the good quality of the coal and facilities of access. The area is, however, small as compared with the carboniferous deposits on the western slopes of the anticlinal line, where a tract of at least 200 miles in width extends from the southern boundary of the colony north to the watershed of the rivers flowing to the Gulf of Carpentaria. Ipswich, Warwick, and Toowoomba were all in the same level tract of country. The present main range had no existence, and the coal was being formed almost uninterruptedly from Ipswich, Warwick, and Roma to Peak Downs and Muttaborra.

COMMENCEMENT OF CRETACEOUS PERIOD.

At the close of the mesozoic carbonaceous period, there were great geological disturbances, and the strata broken up and tilted in some parts to a high angle, and at the same time there was a general depression of the whole land to such an extent that all but the higher summits of the more prominent ranges were submerged by the ocean, and only the eastern limits of the future continent indicated by a series of rocky islands extending from Tasmania nearly to Cape York, though there were many wide gaps between. The higher lands in South Australia, from Adelaide some 200 miles north, also escaped. Some isolated peaks along the south coast of Western Australia seem to have kept their summits above the ocean, and served as a refuge for many of the peculiar forms of the Australian flora, from which to again spread over the new continent which was to arise. There were also some groups of islands about 300 miles S.E. from the present N.W. cape.

In all these anciently insular positions, the sedimentary strata of the cretaceous period are found abutting horizontally on the older rocks, like the sands and mud of a sea shore; but over the rest of Australia these sedimentary deposits cover the summits of even the higher ranges, and have filled the depressions, more especially in the central parts of the present continent.

These deposits, which in the lower parts are chiefly soft shales, and the upper sandstones, are remarkably devoid of fossils to denote their geological age, and it is only from the occurrence of some interstratified limestones, containing fossil shells of the cretaceous area, that the date can be determined; as the actual constituents of these strata have been derived from the enormous denudation of the older formations.

This condition of submergence must have continued for a long time, probably until the commencement of the tertiary period, as the shales have attained a great thickness, having been penetrated in boring for water for 500 feet at Roma, and 1,400 feet at Blackall, without reaching the lower strata.

Just before the termination of submergence, a ferruginous mud and grit covered nearly the whole area, and following this there was a general rise above the ocean, and Australia must have appeared as a continent with nearly its present outline; though the interior, either from its previous deeper submergence, or less rapid elevation, probably long retained the condition of a shallow, inland sea, communicating with the main ocean through Spencer Gulf.

After the emergence of the land, denudation commenced, and assumed an active condition; as in many parts, areas of even a thousand square miles have been excavated, leaving only the escarpments of surrounding hills and table-lands to mark the original level of the surface.

QUEENSLAND'S FIRST APPEARANCE IN PROPER CHARACTER.

Queensland had now existence, but her troubles were not over; for after it had become covered with terrestrial vegetation, a new line of dislocation of strata appeared about 100 miles west of the original great anticlinal, and from the fissures, floods—not of water, but molten lava—burst forth, forming mountains and table-lands such as the Main Range, Mt. Flinders, Mt. Barney, &c. The courses of rivers were obstructed, and the waters were pent up into large lakes on Darling Downs, on the margins of which, subsequently, the massive diprotodon, huge kangaroo, and

other marsupial animals lived on the coarse reeds, amongst which the alligator and turtle found a congenial home, while the ubiquitous dingo left the marks of his teeth on the bones of his herbiferous associates.

The climate was then much moister, as is evidenced by the traces of extensive floods, which could only have resulted from heavier rainfall than at the present time. Gradually, however, the climate became drier, while the channels of the rivers eroded to greater depth, the lakes changed to dry plains, the soft marsh plants disappeared, and the massively-framed animals which had fed on them became extinct. Grass, gumtrees, and kangaroo replaced the former order of things, leaving the dingo to sustain a link in the chain of passing ages.

On the motion of **MR. MISKIN**, seconded by the **HON. SECRETARY**, it was unanimously resolved that the President's Address be published in the proceedings of the Society.

The proceedings then terminated.

ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA.

QUEENSLAND BRANCH.

LIST OF FOUNDERS AND MEMBERS.

(P) Members who have contributed papers which are published in the Society's Proceedings. The numerals indicate the number of such contributions.

A dagger (†) prefixed to a name indicates a member of the Council.

Should any error or omission be found in this list it is requested that notice thereof be given to the Hon. Secretary.

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TO THE

ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA

(QUEENSLAND BRANCH).

[The names of the Donors are in *Italics*.]

ABSTRACT of Proceedings of the Linnean Society of New South Wales.—
March to July, 1887. *From the Society.*

AGRICULTURAL and Industrial Association of Fiji. Inaugural Address by
The Hon. J. B. Thurston, C.M.G., F.L.S., &c.
From W. Mune, Esq.

ANNUAIRE Géologique Universel et Guide du Géologue. Paris, 1885 and
1886, Vols. I and II. *From the Director.*

BOLETIN de la Sociedad Geografica de Madrid. Tomo XXI, Nos. 1-6,
1886. *From the Society.*

BULLETIN de la Société de Géographie Commerciale de Paris. Tome IX,
Nos. 1-5, 1886-7. *From the Society.*

BULLETIN de la Société de Géographie Commerciale de Bordeaux. Nos.
3-11, 1887. *From the Society.*

BULLETIN de la Société de Géographie de Paris. Tome VII, 7 serie, 1887.
From the Society.

BULLETIN de la Société de Géographie de Marseille. Tome XL, No. 2,
1887. *From the Society.*

CATALOGUE of Books in the Brisbane School of Arts.
From the Secretary.

CATALOGUE of Plants in the Two Metropolitan Gardens (The Brisbane
Botanic Gardens and Bowen Park, 1885.) "Queensland Woods"
(Catalogue of the Indigenous Woods contained in the Queensland
Court, Colonial and Indian Exhibition of 1886, by F. M. Bailey,
F.L.S.). *From Wm. Scuttar, Esq.*

DESCRIPTIVE Notes on Papuan Plants, VI and VII. Native Plants of Victoria, Part I. Key to the System of Victorian Plants, II. Systematic Census of Australian Plants, Part I. Vasculares, with 1st, 2nd, and 3rd Annual Supplements. Myoporinous Plants of Australia, II (by Mueller). The Aborigines of Victoria, Vols. I and II (by Smyth). Natural History of Victoria. Prodrum of the Zoology of Victoria, decades I-XIII. Victorian Year Book for 1884-5 (by Hayter). Victorian Prize Essays, 1860. Planisphere of the Southern Heavens (by Ellery).

From the Victorian Government.

“IMPERIAL FEDERATION” (The Journal of the Imperial Federation League). No. 18, June, 1887. *From the Hon. F. T. Gregory.*

JOURNAL of the China Branch of the Royal Asiatic Society. Vol. XXI, Nos. 3 and 4, 1886. *From the Society.*

JOURNAL of the Manchester Geographical Society. Vol. II, Nos. 7-12, 1886. *From the Society.*

LE GLOBE Journal Geographique organe de la Société de Géographie de Genève. Tome VI, Nos. 1 and 2. *From the Society.*

LINNEAN Society of New South Wales (Abstract of Proceedings). May, June, and July, 1887. *From the Society.*

LIST of the Members of the Geological Society of Australasia; also a Catalogue of Works added to the Library of the Society during Sessions 1886-7. *From the Society.*

MEMOIRS of the Geological Survey of India—Palæontologia Indica. 2, 1 (1862). The Fossil Flora of the Rajmahal Series, Pts. 22 and 23, Ser. II, Vol. I; Pt. 1, Pls. XIX-XXXV (by T. Oldham and J. Morris); Ser. II, Vol. I, Pts. 1-4, and Supplement. The Fossil Flora of the Upper Gondwanas, Ser. XI, Pts. 1 and 2, Vol. II; Ser. XXI, Pts. 1 and 2, Vol. III. Fossil Flora of the Gondwana System, Ser. II, XI, XII, Vol. III, Pts. 1 and 2. The Fossil Flora of the Lower Gondwanas, Ser. XII, Vol. IV, Pts. 1 and 2. The Fossil Flora of the Gondwana System, Ser. XI, Pts. 1 and 2. Jurassic (Oolitic) Flora of Kach, Ser. II, Pts. 2 and 3. (Liassic) Flora of the Rajmahal Group, in the Rajmahal Hills (by O. Feistmantel).

From the Director of the Geological Survey of India.

MITTEILUNGEN der Ostschweizerischen Geogr.-Commerc. Gesellschaft, in St. Gallen. 1887, 1 Haft. *From the Society.*

PAPERS and Proceedings of the Royal Society of Tasmania for 1886.

From the Society.

- PROCEEDINGS of the Geographical Society of Australasia, South Australian Branch. Vol. I (50 copies). *From the Society.*
- QUEENSLAND MUSEUM.—Report of Board of Trustees for the Year 1886. *From the Trustees.*
- RECORDS of the Geological Survey of India. Vol. XX, Pt. 2, 1887. *From the Director.*
- REVUE Geographique Internationale de Paris. Nos. 135, 136, and 137. *From the Publisher.*
- SOCIETE de Géographie de Paris. Compte Rendu des Seances. Nos. 3-11, 1887. *From the Society.*
- THE FIJI OBSERVER. (Printed on Tapa). *From W. Mane, Esq.*
- THE IMPORTANCE of Geography (by Sir Edward Strickland). *From the Author.*
- THE ISLANDS of the New Britain Group (by H. H. Romilly, Esq). *From the Author.*
- THE SCOTTISH Geographical Magazine. Vol. III, Nos. 2-6, February to June, 1887. *From the Society.*
- THE SOURCES OF THE MISSISSIPPI.—Their Discoverers, Real and Pretended (by The Hon. J. H. Baker). *From the Minnesota Historical Society, U.S.A.*
- TIJDSCHRIFT van het Nederlandsch Aardrijkskundig Genootschap. Deel 4. No. 1, 1887. *From the Society.*
- TRANSACTIONS of the Geological Society of Australasia, Vol. I, Pt. 1. List of Members; also a Catalogue of Works in the Library of the Society. *From the Society.*
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PROCEEDINGS AND TRANSACTIONS
OF THE
Queensland Branch
OF THE
ROYAL GEOGRAPHICAL SOCIETY
OF
AUSTRALASIA.

3rd SESSION,
1887-8.

EDITED BY

J. P. THOMSON, M.A., C.E.,

Hon. Secretary and Treasurer;

Honorary Corresponding Member of the Société de Géographie Commerciale de Paris,
the Société de Géographie de Marseille, and the Royal Scottish
Geographical Society.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. III. PART 1.

Brisbane:

WATSON, FERGUSON & CO., PRINTERS, QUEEN STREET.

1888.

NOTICE.

All Donations presented to the Queensland Branch of the Society are acknowledged by letter and in the printed Proceedings of the Society.

N.B.—All communications to the Society should be addressed as follows:—

HON. SECRETARY AND TREASURER,
ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA,
BRISBANE, QUEENSLAND, AUSTRALIA.



DOWNING STREET,

18th October, 1886.

MY LORD,—

I duly received and laid before the Queen your Lordship's despatch, No. 115, of the 28th July, transmitting an application from the Geographical Society of Australasia, to be permitted to assume the title of "Royal," and I am commanded to inform you that Her Majesty has been graciously pleased to accede to the application.

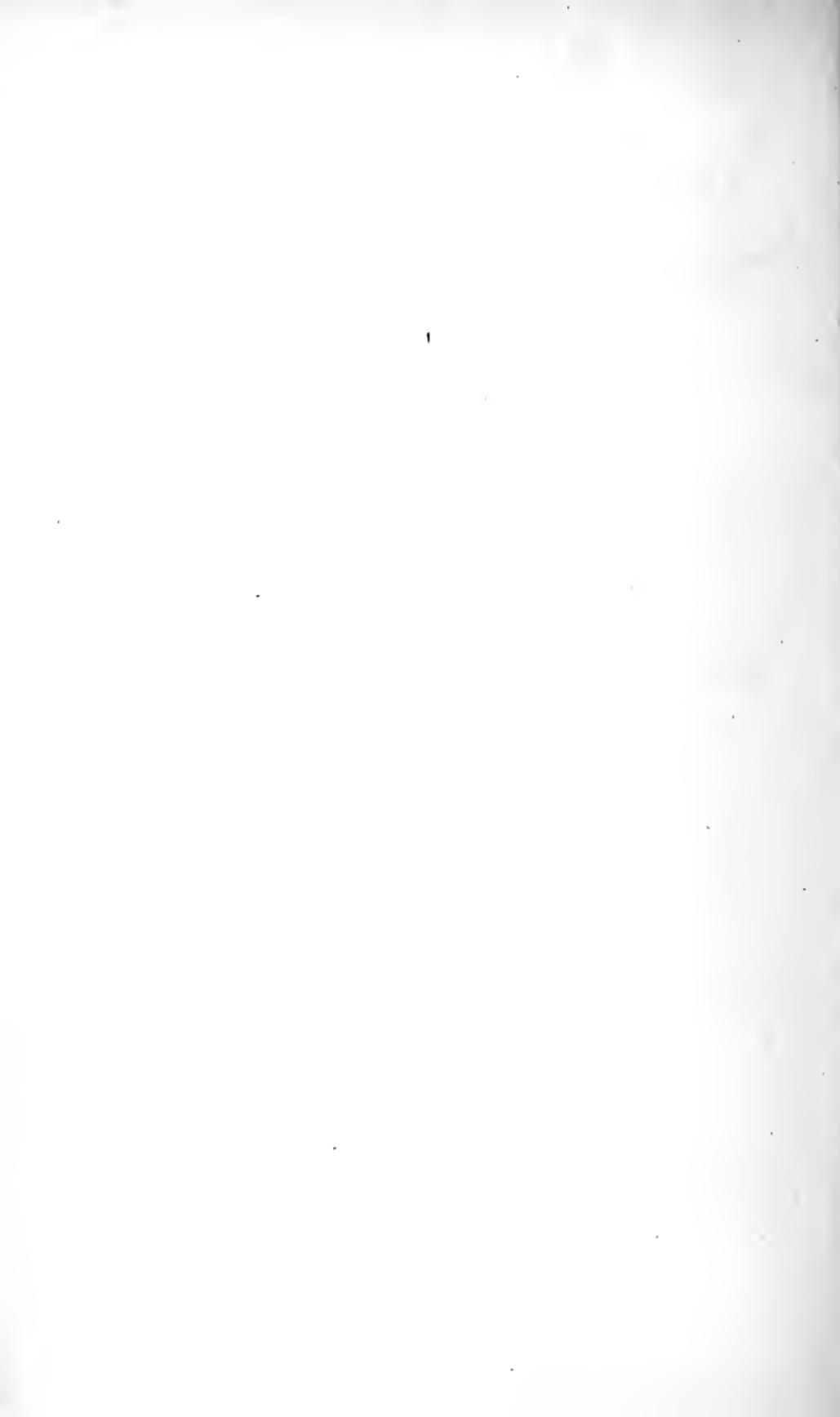
I have the honor to be,

(Signed) EDWARD STANHOPE.

GOVERNOR,

THE RIGHT HONORABLE

LORD CARRINGTON, K.C.M.G.



The Royal Geographical Society of Australasia.

QUEENSLAND BRANCH.

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HIS EXCELLENCY SIR ANTHONY MUSGRAVE, G.C.M.G., ETC.

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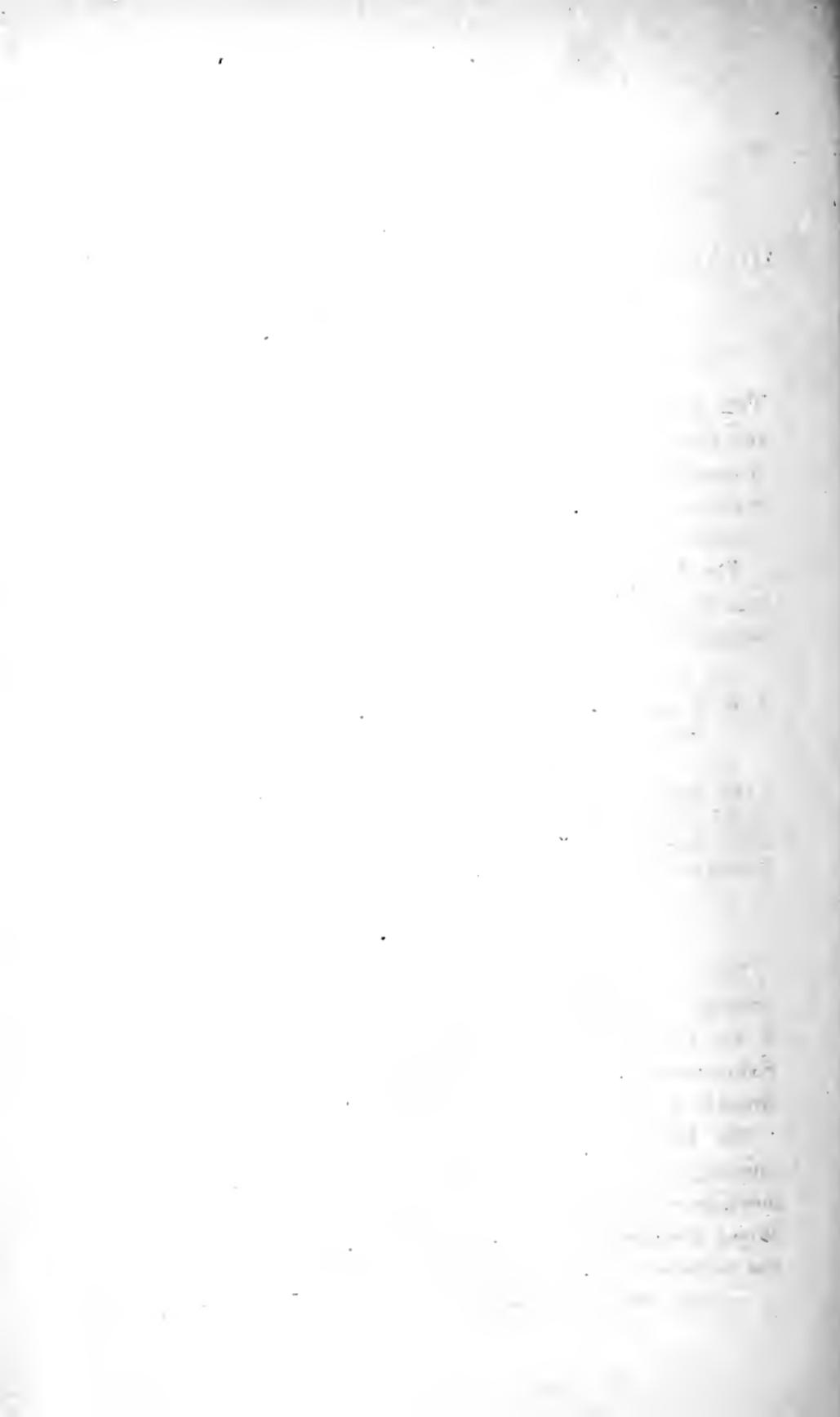
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Society's Meeting Room:

MUSEUM LIBRARY

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FIRST ORDINARY MEETING.

THIRD SESSION.

THE first ordinary monthly meeting of the third session of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of Friday, 26th August, 1887. Mr. W. H. Miskin occupied the chair.

THE HON. SECRETARY read the minutes of the previous meeting, which were confirmed, after which he also read the following telegram :—

Adelaide, 18/8/87.

J. P. THOMSON, Esq.,
Hon. Secretary, Queensland Branch
Royal Geographical Society of Australasia.

Our Society holding interesting Meeting and Geographical Conference on 5th and 6th September next. Government now issue return railway tickets to Adelaide at single fares. Members of your branch are cordially invited to attend.

A. T. MAGAREY, Joint Hon. Secretary,
Royal Geographical Society of Australasia, S.A. Branch.

THE CHAIRMAN thought that the time was rather short to arrange for a visit to Adelaide; but he suggested, however, that if any of the members intended visiting the South Australian Exhibition, they could at the same time represent the Queensland Branch of the Society at the proposed conference.

THE HON. SECRETARY, MR. J. P. THOMSON, gave notice of his intention to move the following resolution at the next monthly meeting of the Society :—“That the Queensland Branch of the Royal Geographical Society of Australasia views with disfavour the tendency exhibited by some recent explorers in New Guinea, in naming their discoveries, to disregard the native names of the

most prominent physical features of the country ; that it is expedient to discourage this growing tendency, and also, in so far as practicable, to preserve the native place-names ; and that all Geographical Societies be invited to co-operate by an expression of opinion." In introducing the notice of motion, Mr. Thomson produced a recent map of that portion of territory in the Papuan Gulf (British New Guinea) in which the River Aird is located, on which nearly all the place-names were of English origin ; the name of one of the rivers discovered in 1848 had been altogether obscured by the substitution of a new name. Actions of this nature on the part of explorers were, he considered, an infringement of, and a deliberate attempt to supersede, the rights and privileges of the original discoverers ; particularly the discoverer of the river—the Aird River, to wit. The same may also be said to apply to the River Wickham. Such a system, if encouraged, would result in great confusion, and most probably lead to tedious litigation. Explorers by ignoring the original place-names of the country violate the most sacred rights of the native lords of the soil, and show a spirit in no way consistent with humanity, true fellowship, and brotherly love. If new names are to be given to the physical features of the country by every exploring party, settlers in New Guinea, who must necessarily be dependent upon the natives for information necessary for the identification of localities, will meet with discouragement, and mutual intercourse with the natives would thus be prevented and the settlement of the country retarded.

Mr. J. MUIR endorsed the views of the Hon. Secretary. He thought the practice should be discouraged, as being in nowise conducive to the advancement of geographical science.

The CHAIRMAN agreed with the motion in so far as it referred to the substitution of English names for those places possessing native ones, which was a system which should be discouraged. He also, in union with the Hon. Secretary, strongly deprecated the action of explorers in re-naming previous discoveries.

The HON. SECRETARY then proceeded to read the following paper:—

Some Remarks upon the Cardwell District.

By E. A. LEONARD, C.E., F.R.G.S.A.

THE north-eastern coast of Queensland, between the dividing range and the sea, an average distance of about thirty miles in the above district, is remarkable for the varying character of its climate, both as to temperature and rainfall; the latitude, so far as the coast country is concerned, not being much of a guide as to climatic conditions, or the vegetation of any given locality. Certain patches will be found thoroughly tropical in climate and vegetation, while to the north and south of such places country may be seen on the same level which is only semi-tropical, or even temperate.

The portion of the coast intended to be generally described in this paper is situated between Townsville and Cooktown, and back to the range before-mentioned. The central part of this tract, about the Tully and Johnstone Rivers, in 17° to $18^{\circ} 20'$ south latitude, is as tropical in climate and vegetation as any part of Borneo or Brazil; while Townsville on the south and Cooktown on the north can only be said to be semi-tropical. The chief cause of this variation would appear to be due to rainfall, and in lesser degree to the conformation of the land and geologic conditions. When heavy rainfall occurs on rich alluvial flats, or rich highlands, there tropical vegetation will be found in profusion, together with the climate suitable to it; but a like rainfall on poor land is not attended with like results. This is notably the case at Cardwell, close to the great scrubs of the Tully River; though the rainfall must be the same, the land is poor, scrubs are wanting or only present in a narrow fringe along the rich banks of creeks, and the climate is decidedly modified; though the temperature remains the same, the quantity of moisture in the air is less, and therefore the heat is less felt. In some places the tropical scrubs ascend the ranges to a height of over 2,000 feet

into a temperature to which they do not properly belong, but in such cases they will be found only on rich volcanic soils, and within range of the heaviest rainfall.

The temperature of this district, from the sea to the foot of the ranges, varies between 80° and 90° Fah. in the shade, rarely exceeding the latter or descending below the former, except at night, when, occasionally, a cool wind (probably about 60°) descends from the mountains, passes gently over the land and a few miles out to sea, where it is lost. This temperature looks mild enough, but it is very oppressive to white men on account of the excessive moisture in the air. The temperature of the sea varies but little from 85° . The prevailing winds are south-east and north-east, the former holding sway for about nine months of the year, and the latter for about three months. Either wind brings in immense masses of vapour from the sea, which, coming in contact with the mountains along the coast and with the dividing range, are so much reduced in temperature as to deposit most of their moisture on the coast lands and a little way over the dividing range. After crossing the range the rainfall rapidly diminishes, and at a distance of a few miles inland it is not more than one-fifth the fall on the coast. A clear instance of the action of mountains upon rainfall may be seen at Cardwell. Opposite this village is the rugged and picturesque island of Hinchinbrook, with mountains rising to 3,600 feet, the whole island being an abrupt mountain range. The moisture of the sea winds may be seen collecting in cloud masses upon the highest portions and proceeding thence in showers across Rockingham Bay to the Tully, Hull, and Johnstone Rivers. The north-east winds bring the heaviest rainfall, and, as they strike the dividing range about square, most of their moisture is deposited upon the sea face of the mountains. It is also probable there is an upper current of cold air proceeding seawards at all times, acting an important part in cooling the inward current from the sea, and thus assisting the action of the highlands. The night land winds, before mentioned, may be this current deflected downward by an unknown cause.

There is every reason to believe that the rainfall on the Tully and Johnstone Rivers is about equal, and that it is heavier at the foot of the ranges than on the coast. In several cases last year I found that certain rains began sooner and ended later at the foot of the mountains than nearer to the coast, and were apparently heavier. No record is kept on the Tully, but there is at Geraldton, and from this it would appear that 140 inches is about the regular annual fall there, and likely greater during the past year. On several occasions four inches fell within an hour, on the Tully, last year, these downpours happening in calms. On the night of 14th December last, between sunset and sunrise, sixteen inches fell on the Hull, and this was the heaviest continuous fall experienced in two years—the mode of gauging being rude, but giving fair results. While working on the Tully I made several attempts to find the volume value of a given rainfall, but only in one instance with success, succeeding falls generally interfering with results. On Friday evening, 22nd October last, being camped on a sandbank in the river, about twenty miles in a direct line from the sea, the following observations were made:—The river had been steady for several days, neither rising nor falling, the weather being fine. At sunset—it was evident there was about to be rain—a guage was fixed and a cross section of the river taken. Soon after, a lightning storm with heavy rain commenced in the south-west, and passed slowly to the north-west, across the watershed of the Tully. The lightning lasted three hours, and the heavy rain about the same time, but it continued raining until near morning. The storm passed to the west of the camp, no rain falling at the camp. At sunrise the river had risen two feet, and at 9 a.m. to two feet four inches, above its normal level, this being the highest rise. At noon of the same day (Saturday) the water began to fall, and continued to fall steadily until Monday at 6 p.m., when it had returned to the same level as before the storm. As no rain fell in the interval, the rise of the river was solely due to the rain of Friday night. The total time of rise and fall was sixty hours, and the speed of the stream averaged four miles per hour, being

a little more on one side of the river and less on the other. The augmented cross section of waterway due to the highest rise was 702 square feet. From this data it will be seen that fourteen and a half millions (14,500,000) tons of water, entirely due to one night's rain, passed the camp. The country had been saturated, so that the whole fall would find its way into the river. In addition to this, the ordinary flow of the river was about twenty-five million tons in the same period, viz., sixty hours.

As the channel of this river (Tully) is entirely inadequate to carry off its flood waters, no estimate can be made of the same; such waters spread over the country on either side, finding outlets in various ways. The minimum water passing down this river is about 4,500,000 cubic feet per hour, according to the last three years' accounts. The average volume of the Tully River exceeds the average volume of the Herbert River, each taken above tidal influence; though the supposed watershed of the Herbert is much greater than the supposed watershed of the Tully. About twenty-five miles in a direct line from the sea, where the river enters the mountains, the volume of water is but little reduced, so that it must have a larger watershed than is at present assigned to it. There is said to be a great waterfall on this river within the mountains, but no white man has as yet seen it. At the highest point reached by me, three miles from the entrance to the mountains, a large waterfall was distinctly heard occasionally, and indications of it, in the shape of large clots of foam, were seen. But as there are so many waterfalls in this locality, it would be impossible to locate one from sound. Several fine falls may be seen at once, like silver ribbons on the face of the range, though none of these could have produced the sound before alluded to.

The lowlands of the Tully and Johnstone Rivers, and part of the highlands, within a thousand feet of sea-level, are mostly of a very rich description, and must sometime prove a source of great wealth to the country. Most of these lands are naturally drained by a porous substratum, and are ready for use as soon as the forest and scrub have been removed; but they are only fit for

tropical agriculture, though some semi-tropical plants, such as tobacco, may do well there—maize will not. They are specially suited to the sugar-cane, and most likely will ultimately be used chiefly for the growth of that plant and tropical fruits and rice. Nearly all the land from the range to the sea is subject to river floods, but such floods are not very injurious to cane crops, as they do not last long enough. The climate is very trying to white men, who must rapidly deteriorate in physique should they live there continuously. In my opinion, no encouragement should be held out to working white men to settle in such places, as their doing so must be a loss to the community. The bulk of the labour must be done by inferior races, or not done at all, and there should be no difficulty in confining such labour within its proper bounds, there being natural boundaries—the sea on one side and the dividing range on the other. These tropical lands form but a minute portion of Queensland, and on account of their isolation and distinctive character, may be the subject of special legislation to suit their wants, without conferring any privileges other than they are naturally entitled to. It would evidently be useless to attempt to force a condition of things suitable to a temperate country upon a country thoroughly tropical, as they would not work satisfactorily. There are several homestead settlers who have been living on these lands for some years, but they have made no progress, and practically no improvements; and probably only wait the termination of their compulsory residence to leave the district, impaired in health and not financially improved. If, in the beginning, they had no capital to lose, they will have lost their time and produced nothing but the ownership of a piece of scrub land which some day may repay them, or may not, according to the decision arrived at as to the special labour claims of their district.

The forests upon these scrub lands are distinct from Australian forests in composition and appearance—the eucalypts being absent. I am not able to describe them botanically, but the timber may generally be described as soft woods, though a few of them are hard enough. Some of the bush names are as follows :

Silky oak, maple, lancewood, nutmeg, sassafras, Leichhardt, bean tree, candle-nut tree, &c. The three first timbers are unquestionably valuable, having qualities that recommend them for distinctive uses. It is more necessary to secure these timbers when the sap is down than it is with hardwood, and they should at once be removed from the forest when felled, or the "borer" will commence operations on them. Unlike the eucalypts, the foliage is horizontal, and consequently affords a good shade. The whole forest is generally matted together by a dense mass of canes, vines, and creepers, so thick in places as to produce a gloom at midday; and upon the tops of this vegetable plateau birds and snakes have their feeding ground. On the main range there are magnificent pine forests, the trees attaining a great size.

The chief object of this paper is to draw attention to the possible facilities for irrigation presented by this district. The rainfall is the heaviest in Australia, and it is comparatively unvarying and reliable, so far as the sea face of the range is concerned. On the inland slope droughts are as much felt as in any part of the interior. During the late drought the inland watershed, opposite the heaviest rainfall on the sea side, was badly off for feed.

The problem is to transfer from the sea face of the range to the inland side a portion of the immense quantities of water now running to waste; then conducting the same either by means of the natural watercourses, or by artificial ones, or both, to the places where it may be required for irrigation. This, I maintain, can be done to a greater or less degree, the extent of which can only be determined by costly surveys. A like thing is now being done for the supply of the city of Melbourne, or rather for materially increasing that supply.

We have splendid land on the inland side wanting a definite supply of water only to produce great crops at will; and we have equally good land on the sea side from which the water wanted can be taken with advantage to both, provided the necessary natural conditions exist. In all mountain ranges it will be found that there are low parts, or gaps, much easier to cross than the

higher and more rugged portions. This conformation is what is wanted to make the transfer of streams from the wet sea side to the dry inland side possible. The mountain range in question varies in height from two thousand to three thousand five hundred feet—a comparatively small portion being much higher. For the sake of illustration, let two thousand feet be taken as the passage for water inland. From this point, if a grade line be marked along the sea face of the range in the direction of the higher parts, a strip of country will lie between this line and the crest varying in breadth from nothing at the starting point to, perhaps, several miles opposite the higher portions, though the broadest part may not necessarily be opposite the highest point. If an aqueduct be cut along this grade line, and the creeks intercepted by proper works, the water due to the intercepted area will flow inland through the low part of the range before mentioned; and the volume will depend upon the area and rainfall. In the present case the rainfall is the heaviest in Australia, so that for a given amount of work the results will be greater than anywhere else. If the catchment area be taken at one hundred square miles, and the available rainfall at one hundred inches (this is less than can be depended upon), after allowing one-fifth for waste in distribution after passing inland, eighty inches would practically represent the quantity for use. For ordinary purposes, as for grass or cereal crops, this quantity would be enough to thoroughly irrigate three hundred square miles; while, for fruit crops, it would meet the wants of at least four hundred square miles. I have but little doubt that a catchment area of many hundred square miles may be secured instead of the one hundred here instanced.

The ranges at the head of the Herbert, Tully, Johnstone, and Barron Rivers afford, so far as I know, the only prospect of inland irrigation existing in Queensland; and in the future its capabilities are certain to attract attention. Generally irrigation works are for the supply of plains at the foot of the ranges operated upon; but there are many instances where the water is transferred from one watershed to another.

The CHAIRMAN, Messrs. C. B. LETHAM, and J. P. THOMSON discussed at some length the practicability of transferring the rainfall from one watershed to the other. They thought that any scheme for its successful accomplishment would prove of great value to the colony.

The following paper was then read by the author:—

The Solomon Islands.

By W. R. WITHRINGTON, F.R.G.S.A.

THE Solomon or Salomon Group of Islands lies between 5° and 11° south latitude, and 154° and 163° east longitude, and consists of seven large islands and a great number of small ones, extending in a north-west and south-east direction, the whole forming a continuous chain some 600 miles long. They were discovered by Mandaña, the Spanish navigator, in 1567, and so named (it is said) from his idea of their great wealth.

Some of these islands are very mountainous, the highest peaks rising from 8,000 feet to over 10,000 feet high, many of which are active volcanoes. They also possess some fine natural harbours, which afford shelter to ships in almost any weather. The climate is the great drawback to settlement, and many Europeans who have endeavoured to remain on these islands have at last fallen victims to malarial fever, which is very prevalent on the lowlands; probably at higher altitudes the climate is more healthy.

Let us imagine that we are making a voyage from the Queensland coast to these islands:—After passing Indispensable Reef (on which the schooner "Stanley" was wrecked a few years ago), and sailing to the E.N.E., we sight the island of San Christoval. In the distance it looks like a cloud rising above the horizon, but, as we approach, it assumes a more substantial form, until, when within a few miles of the island, a bold and rugged coast line presents itself to our view. Off the south-east end of the island lies the small island of St. Anna,

once the residence of Mr. McDonald, who has spent a good many years at this place.

Sailing along the lee or south-west side of San Christoval, in a north-westerly direction, we come to Makira Bay. This would be one of the finest natural harbours to be met with, but for two disadvantages. The one is, the high cliffs at the entrance break the force of the wind, and render it a very difficult task for sailing vessels to beat through the narrow entrance, but when once inside, there is room for a whole fleet; the other disadvantage is the great depth of water, there being twenty fathoms of water within a cable's length of the beach, at the anchorage. Whilst at anchor here, we will take an opportunity of studying the appearance of the natives, and the features of the surrounding country. The natives of the Solomon Islands are very skilful in the construction of their canoes; they are made of planks fastened neatly together, the seams being covered by a gum obtained from a particular kind of tree, and are often beautifully ornamented; in the distance some of them very much resemble gondolas. They are also very skilful in the management of their canoes when on the water. I have seen them many miles from land, paddling against a strong south-east wind and a high sea.

The natives of Makira, as a rule, are of about the medium height, well proportioned and athletic, and their disposition is, on the whole, very fair. Makira Bay is about two miles wide, by about one mile long; the water is often as smooth as a mirror, which is a pleasant contrast to the rolling waves of the Pacific Ocean outside.

On the beach, some distance above the village, lies the remains of the schooner "Superior," which was brought in here in a leaky condition, stripped of her spars, and left to decay on the beach. The land is not thickly timbered, except in patches, where the foliage is luxuriant. The bay abounds in sharks.

After leaving Makira, a few miles along the coast bring us to Beor. This is not a very secure anchorage, as it is exposed to the weather from the north-west, and ships are obliged to lie a

considerable distance off; the only recommendation this place has, is the good supply of fresh water to be obtained. From information I could gather from the natives, this place has evidently been visited (many years ago) by a huge tidal wave, which must have travelled a great distance inland, and swept away whole villages that were built near the beach, and the receding waters deposited tons of fish and shells on the land.

Off the east coast of San Christoval is the island of Ugi, once the coaling station for Her Majesty's ships; there is a store on the island, kept by a white man. In October, 1880, the brigantine "Borealis" was attacked by the natives of Ugi, and five white men were killed.

Sailing on we come to Cape Recherche, from thence take our departure for Guadalcanar. The mountains of Guadalcanar are extremely high, some are as much as 8,000 feet above the sea level: Mount Lammas 8,000 feet, and Lion's Head 5,500 feet; while towards the north-east the country slopes gradually down to the water's edge, thus forming for miles a beautiful, undulating expanse of country, apparently suitable for growing cotton, maize, sugar-cane, and many other tropical products. The first place of importance is Marau Sound, between Malapa Island and the mainland. To the south of Marau Sound is the small island of Howla, the residence of Mr. Nelson, who has a store and copra station. Captain E. Withrington, who succumbed to the effects of malarial fever, is buried on this island.

Between Guadalcanar and Malayta is Indispensable Strait, about thirty miles across; this strait abounds in sandbanks and reefs, and is a very dangerous sheet of water to traverse. The track recommended is by way of Lunga Channel, near the coast of Guadalcanar.

A few miles to the north of Marau Sound the schooner "Pioneer" ran on to a low island and became a total wreck, and about twenty miles farther along the coast, a large barque, coal laden (the name of which I have forgotten), bound from Newcastle to China, struck on one of these rocks, and was also left to her fate.

The natives of Guadalcanar are very superstitious ; they assert that there are snakes of enormous size in the mountains, and that those of their friends who have ventured there have never returned, they having been devoured by these monsters.

The Florida Group forms part of the western boundary of Indispensable Strait ; it is situated to the north of Guadalcanar, distant about eighteen miles. The natives of Florida are responsible for the massacre of many white people. In October, 1880, Lieutenant-Commander Bower and four seamen of H.M. gunboat "Sandfly" were killed at Mandoliana by the natives, only one man of the whole boat's crew escaped, by swimming to a small island three or four miles distant. Also the schooner "Dancing Wave" was taken by them, and all hands killed.

It is on Florida that Bishop Selwyn resides and has his head mission station. He occasionally pays visits to the neighbouring islands. Although cut off from intercourse with people of his own colour for many months in the year, yet the Bishop has a good word and kindly greeting for all, whether high or low ; and often ventures amongst the most treacherous savages to carry on the work he is engaged in. On the beach of some of the bays may be seen large detached fragments of quartz ; although no gold has been found here (that I am aware of), yet the country has the appearance of being auriferous.

About fifteen miles to the west is the island of Savo, a very fertile island, and capable of producing many tropical plants. Melons, pines, bananas, cocoanuts, and other fruits grow in profusion. The anchorage is at the north-west side, where the ground is very steep, there being twenty-five fathoms of water close inshore, and is very much exposed. The natives of Savo are friendly to Europeans.

To the eastward, across Indispensable Strait, we come to the island of Malayta, the natives of which are notorious for their many deeds of bloodshed. They are a cunning and cruel race of savages. It was on this island that John Renton, together with seven or eight of his shipmates, was cast away about eighteen years ago. Some were killed, and others died, whilst Renton

survived eight years of semi-savage existence, when he was rescued by the late Captain Murray and brought up to Brisbane.

A range of mountains runs through the island, the highest peaks of which are from 2,000 to 5,000 feet high. There are many good anchorages. The principal are: Port Adam, under the lee of Elizabeth Island, on the east; Malloo Harbour, on the north; Coleridge and Alite Bays, on the west. Taking our departure from Cape Astrolabe, and sailing west, we come in sight of Mount Guillard, marked on the chart 2,050 feet. A few hours bring us to Cape Prieto, the southern extremity of Isabel Island. About ten miles to the west of Cape Prieto is Thousand-ship Bay, between the island of St. George and the mainland. This is an extensive bay, as the name indicates. It has an outlet (Ortega Channel) at the north-west, and there is good anchorage under Cockatoo Island. Small quantities of gold have been found on Isabel, in the neighbourhood of Thousand-ship Bay. Like most other islands of the Solomon Group, Isabel is mountainous. The highest peaks are Mount Marescot, 1,900 feet, and Laforge, 2,420. Off the east or weather side extensive reefs exist. The channel lies between these reefs and the mainland. About sixty miles to the north is Lord Howe's Group, consisting of very little more than a group of sandbanks and shoals. From their isolated position, they are not often visited by vessels. In January, 1875, the brig "James Birney" was taken by the natives of the Lord Howe Group. Captain Hawkins, eight white men, and two blacks were killed.

About forty miles to the west of Isabel is New Georgia, or Rubiana, with its numerous smaller islands, the principal of which are Rendova, Coolambangra, Vella Lavella, and Eddystone or Simbo Island. There are some good anchorages in this group, the two principal being Rendova Harbour, between Hammond Island and the Markham Group, the other, Guizo anchorage, between Guizo Island and a line of reefs.

The next island of importance is Choiseul (being seventy-five miles long by about twenty-five wide), the east coast of which is very rugged and dangerous to navigate, especially in light winds

and calms, as the ocean swell and strong current are liable to drive sailing vessels on to the rocks. Between Isabel and Choiseul is Manning Strait, studded with small islands of which comparatively little is known. The natives inhabiting the north end of Choiseul are a fine race of men, well made and muscular, and some of them are very trustworthy. Good anchorage from south-east winds can be obtained at Choiseul Bay, on the north-west coast. Rounding Cape Alexander we enter Bougainville Strait, between Bougainville and Choiseul. This is a most dangerous channel; a strong current runs through, causing tide rips which are liable to be mistaken for shoal water. There are also shoal patches at intervals through the channel.

Steering to the south-west, we pass Shortland Island and arrive at Treasury Island, which is situated about twenty-five miles south of Bougainville. There is a good anchorage at Blanche Harbour, in from eight to fourteen fathoms of water. This harbour is between Stirling and Treasury Islands, and can be entered from the eastward. Fresh water can be obtained here.

From Treasury Island let us proceed due north about twenty-five miles, which brings us to the large island of Bougainville—in fact it is the largest island in the Solomon Group. It is extremely mountainous. The most important ranges are the Emperor and the Crown Prince Ranges, running nearly the whole length of the island. Bougainville contains the highest peaks in the whole group: Mount Balbi, 10,171 feet; Mount Bowmartine, 8,202; and Guinot, 4,209. A few hours' sail along the coast brings us to Empress Augusta Bay, a large bay situated on the west side of the island. At the head of Empress Augusta Bay is Gazelle Harbour, named after the Imperial German ship "Gazelle" in 1875; anchorage from eight to twenty fathoms.

The view from here is beyond description. In the background to the left is Mount Balbi, towering up over 10,000 feet; whilst directly opposite is an active volcano. To the right, in continuation, the Crown Prince Range is lost in the distance. A few miles inland from the bay the country is very pretty; small green hills slope gradually down to the water's edge—the resort of

hundreds of fierce-looking savages, painted in the most hideous patterns, and altogether impressing one as not being very pleasant neighbours.

Still onward to the north-west, and to the north of Bougainville, lies Bouka, an island of about 150 square miles in extent. Though but little is known of this place, yet the people are, with the exception of the Maories of New Zealand, the finest race of men in the Western Pacific; many are over six feet high and very muscular. They are very skilful in making earthenware bowls, clay pipes, and a variety of other things. I have seen some very good specimens of pottery made here. They have a good knowledge of the cultivation and manufacture of tobacco; although too strong for Europeans to smoke, yet it has a good resemblance to our manufactured article. Their canoes are the largest and strongest I have seen; some are capable of carrying fifty or sixty men. It is a sight not soon forgotten to see a large war canoe filled with these powerful, armed warriors, chanting one of their wild war songs.

The northern extremity of Bouka is Cape North, also the most northern point of the Solomon Group, which brings us to the end of our voyage.

The CHAIRMAN and the HON. SECRETARY regretted that the paper was not longer, as its character was most interesting.

The HON. SECRETARY said, that in compliance with the request of several, and in accordance with his individual sentiments, he desired to bring before the meeting the question of future exploration in New Guinea. He then referred to the expedition sent out from Victoria, and the late and contemplated ones from New South Wales. He also referred to the one about to start from New South Wales under the leadership of Mr. Bevan, and the encouragement that gentleman had met with from the hands of the Government, and he thought an independent expedition ought to be sent from Queensland with the approval of, and enjoying similar privileges from, the Government which past and present expeditions had enjoyed. The people of Queensland were more fitted to explore New

Guinea than those of the other colonies, and he trusted the members of the Society and the public would consider the matter.

The CHAIRMAN thought that the other colonies took an interest in the exploration of New Guinea from a commercial point of view, and that an expedition from Queensland would be for the purpose of scientific investigation, as Queensland already possessed soil equal to that of New Guinea.

Mr. J. MUIR thought no harm would be done if the heads of business houses were asked to contribute to a fund to send out a small expedition, as the advantages might be great.

The HON. SECRETARY introduced to the meeting Mr. V. R. Bowden, manager for Messrs. Burns, Philp, & Company, at Thursday Island, who had entered the meeting-room during the proceedings. The Chairman welcomed Mr. Bowden, and expressed a hope that, in the event of an expedition being sent to New Guinea from Queensland, the firm represented by him would look favourably on it.

Mr. BOWDEN thanked the Chairman, and assured the meeting that he would be glad to do his best to assist an expedition to New Guinea from Queensland.

After the HON. SECRETARY had announced the papers to be read at next meeting, the proceedings terminated.

SECOND ORDINARY MEETING.

THIRD SESSION.

THE second ordinary monthly meeting of the third session of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of Friday, September 30, 1887, at 8 o'clock. Mr. W. H. Miskin occupied the chair.

After the minutes of the previous meeting had been read and confirmed, the following gentlemen were elected members of the Society, by ballot:—Messrs. Theodore F. Bevan, F.R.G.S., and A. C. Reid.

After announcing the receipt of several donations to the Society, consisting of publications from cognate institutions, a letter was read from Mr. T. F. Bevan, F.R.G.S., intimating his pleasure in presenting to the Society a map of his recent discoveries in New Guinea, and asking the Society to embody it in its proceedings. The Hon. Secretary also announced that the address to be presented to Her Majesty the Queen, on the occasion of the jubilee year of her reign, by the Royal Geographical Society of Australasia, which had arrived in Brisbane for the purpose of receiving the signature of the President, had been returned to Sydney, from whence it would be transmitted to Her Majesty by His Excellency Lord Carrington, the Governor of New South Wales.

The HON. SECRETARY, Mr. J. P. Thomson, then proceeded to move the following resolution, of which he had given notice at the previous meeting:—“That the Queensland Branch of the Royal Geographical Society of Australasia views with disfavour the tendency exhibited by some recent explorers in New Guinea, in naming their discoveries, to disregard the native names of the most prominent physical features of the country; that it is expedient to discourage this growing tendency, and also, in so far as practicable, to preserve the native place-names; and that

all Geographical Societies be invited to co-operate by an expression of opinion." Mr. Thomson stated that at the Intercolonial Geographical Conference held recently in Adelaide, South Australia, a similar motion with regard to the place-names of the Australian Continent was brought forward and carried.

The motion was seconded by Mr. C. BURDORFF, and carried unanimously.

It was further resolved that the resolution should be forwarded by the Hon. Secretary to all the Geographical Societies with which the Queensland Branch of the Society was in communication.

The HON. SECRETARY then proceeded to read the following paper:—

Description of the Exploration of the Aird River, New Guinea.

By FREDERIC A. BOORE, Master, S.S. "Victory." *

THE S.S. "Victory" is a small screw-steamer of 90 tons, and was kindly lent by Messrs. Burns, Philp, and Co., for the above purpose.

On Thursday, March 17th, 1887, at 5.30 a.m., we started on our voyage of discovery, and steamed out of the picturesque harbour of Thursday Island. The morning was beautiful and fine, and not a ripple on the water, except that caused by our own propeller.

On Saturday, March 19, at daylight, we sighted the land of New Guinea, about ten miles distant. The land here is so much alike at ten miles off that it was 7 a.m. before I could make out Cape Blackwood. When about a mile off Cape Blackwood, the course of the steamer was shaped for the eastern end of Entrance Island, which is situated in mid-channel of the western entrance to the Aird River, which was discovered by Captain Blackwood, of H.M.S. "Fly," in 1848. I thought it the most likely place

* The "Victory" Expedition to British New Guinea, March-April, 1887. Mr. Theodore F. Bevan, F.R.G.S., Leader. [ED.]

for a deep channel, and accordingly steered for it, and carried three and four fathoms of water till close up to the island, when it shallowed to two and a quarter fathoms, but deepened again after passing the island to five and eight fathoms; the river being from 120 yards to 150 yards wide. After steaming up this river for five miles, came to a broad stream running into Deception Bay in an E.S.E. direction. We had only eleven feet of water crossing this; it then deepened again to three and four fathoms. Four miles farther up we came to three streams, one coming from the north, one from the east, and the other from the west. Here the water suddenly shallowed, and before I could stop the ship we grounded, but came off in ten minutes. Got the boats out, and found a narrow channel, thirty feet wide, close to the east shore; returned to the ship, and steamed through this channel, carrying from three to four fathoms. The river had a very serpentine course. After coming to an anchor, we saw six canoes coming down the river towards us; the men in them were all armed with bows and arrows, and the canoes decorated with what I suppose they called their war paint. They were evidently on the war path, for on nearing the ship they saluted us with a volley of arrows, all of which fell short. A small canoe, with only three men in it, then came close to the ship. They seeming friendly, we tried to communicate with them; but this was only a ruse on their part to give the larger canoes time to surround us, which they did, and immediately sent us another shower of arrows. Seeing this, I ordered the steam whistle to be blown, which frightened them so much that they dropped their bows and arrows and stood gazing at us in speechless astonishment. We then fired a few shots over their heads. As soon as they heard the report every man was over the side of the canoes in an instant and swimming for the shore, taking their canoes with them. The way they got their canoes to the shore showed great tact. They kept the canoes between themselves and the ship, and by keeping one hand on the side of the canoe and paddling with the other reached the shore safely. These were the first natives we had

seen, although we passed several houses at the entrance of the river. The land here is low and thickly wooded, the soil being very rich.

On Sunday, March 20th, went away in the boat to explore the eastern branch before mentioned. After pulling about a mile, carrying from two to four fathoms of water, found it led into a fine broad river, flowing into Deception Bay. It was two and a half miles wide here. Returned to the ship at 8.30 a.m., and steamed through the branch into the main river, the water deepening as we got into the middle to five fathoms. Steered a course north 39° west, Aird Head being right ahead. (This hill is a splendid landmark from seaward, there being no other landmarks near it; in form it very much resembles a cock's comb, being a number of conical peaks). We carried from five to six fathoms up this river for twenty-five miles, and came up close to Aird Hill (the last five miles we had to alter the course to north 50° west). Here two streams met, the one coming from the east side of Aird Hill, and the other running along the south side in a north 70° west direction. Slowed the ship down, keeping about two-thirds over to the south shore of the branch; the water suddenly shoaled from five to two fathoms. The river here is about half a mile wide. Continued steaming up this branch, which has many windings, until it brought us to the northward of Aird Hill, the river being about 200 yards wide. Here two more streams met, the one running to the north, and the other in a westerly direction. There is no doubt this ran into the other river along the south of Aird Hill, thereby making Aird Hill an island. Saw no signs of natives. The day and night were beautiful and fine; average temperature during day, 79° ; night, 70° .

On Monday, the 21st, the photographers went on shore and took a photograph of the ship, with Aird Hill in the background. At 9 a.m. heard the sound of natives coming down the north stream, and soon saw the fire on six canoes coming round the point, keeping well on the east shore: when they got abreast of the ship they landed, and held up some green boughs as a

token of peace. We, in return, waved some green cloth, but failed to persuade them to come alongside. We then threw some Turkey-red overboard, sticking it in the top of empty bottles; when it had drifted about fifty yards astern they would paddle out and pick it up, and, getting it, would give a yell of delight. Seeing that they would not come alongside, Mr. Bevan and myself, with a boat's crew, pulled from the ship towards the shore, and after much trouble and perseverance got them to come alongside the boat, and exchanged a little trade for curios. We returned to the ship, and threw some more Turkey-red overboard as before. They would paddle ahead of the ship, and throw in the water whatever they had to give us in exchange, and we were able to pick it up as the current swept it past the ship. The photographers took several photographs of the natives in their canoes. Noon, again started and steamed up the north branch, but after a very serpentine course of ten miles the river narrowed to only forty yards. I then steamed back to the branch leading to the south of Aird Hill; on our way back we saw no natives, but distinctly heard them in the bushes. After reaching the junction, steamed over to the south shore; after going about half a mile, the water again shallowed abreast of a small creek. Came to an anchor, and sent the boat away, which found that the channel led right across to the other bank. Lifted the anchor and steamed through this channel; after reaching the other shore, found that the channel again verged to the south shore. The land here is the same as before mentioned, being low alluvial, intersected by numerous small creeks; Aird Hill being the only high land in the locality.

On Tuesday, March 22nd, at 6 a.m., started in the boats, and found the channel carried two fathoms; after going about a mile, found another large stream coming from the west of Aird Hill; after pulling along the shore about half a mile, came to another broad stream running north and south. I believe this to be the stream mentioned by Blackwood, and the one mentioned by me before, as the one trending north from place of attack. By going into mid-stream, found the water deepened

to four fathoms. Returned to the ship, and brought her through this channel, and after steaming about three miles the water again shallowed; steered for the east bank, and found the channel running close along it three fathoms deep. After going another mile the water shoaled to ten feet, it being low water we could see mudflats extending almost across the river, with a channel of apparently not more than fifty feet wide.

On Wednesday we pulled up the north shore, which appeared the deepest water. After pulling three miles, passed a small island in mid-stream. Quarter of a mile after passing this, passed a stream, about 200 yards wide, leading south. The river now trended in a westerly direction. Pulled along the north shore for another two miles, and came to a broad stream, about half a mile wide, leading north and south. A small island was in mid-channel, off the point. After passing point, pulled to the north, keeping on the east shore. After going one and a half miles, came to a long island in mid-stream, about four miles long. Here we saw hills, about 200 feet high, about four miles further on. Pulled up to the high land, where the river branched in two, one trending east, the other west. We started to pull back to the ship, which we reached at 4.20 p.m.

Thursday, the 24th, we steamed up channel as explored by boat yesterday, and anchored, east of an island, in seven fathoms.

Friday, the 25th. After steaming up river for three miles, it trended more to the northward. Saw here a native village on a rising ground. On the steamer coming in sight, a canoe, with eight men in it, put off from the shore and quickly pulled away, a conch shell being sounded from the village as a warning. The sound made by this shell is very much like that of a foghorn. Carried four to seven fathoms up this reach, it being about a quarter of a mile wide. One mile past village, came to a broad junction where two branches met; the water here suddenly shoaled. The natives now came up river to us in their canoes, but were very timid. We used the same tactics as before to get them to come alongside, but failed. Went in the boats and traded with them for a few curios. On leaving us they started

for their village, singing and keeping time by knocking their paddles against the canoes' sides.

Saturday, the 26th. Went away with Mr. Bevan in boat, and found the river full of rocks. After pulling a mile and a half, came to a rapid running over a bed of rocks. Found a narrow channel on east shore, with three to four feet of water in it; pulled boat through by the bushes, when we got twelve fathoms just above the rapids. Returned to ship. When the tide turned there was a great under current keeping the vessel ahead of her anchors, although the current on the surface was running over three miles an hour in the opposite direction, so we had to let go the second anchor. With a small steam launch I could have crossed the rapid, and probably explored this river another fifty miles.

Sunday, the 27th. Went away in boats, following up the before-mentioned branch for a distance of seven miles. Here the river was 180 yards wide; the land being 700 to 800 feet high. Returned to the ship. The natives again visited us, but would not come on board. They did not seem so timid this time; several of them came alongside, but would not come up. At 2 p.m. we got under weigh, and steamed twelve miles up the river. The scenery here was magnificent—the river was 150 yards wide, and the mountains on either side rising to 1,000 and 1,200 feet. We had from four to eight fathoms of water all the way; current running down at two and a half miles an hour. Tried to catch some fish by dynamite, but got none.

Monday, March 28th. Steamed up the river for eight miles, having from four to seven fathoms of water. The mountains rising to 1,500 or 1,600 feet, and thickly wooded with cedar and other large timber. Anchored at 4 p.m.

Tuesday, March 29th. Again proceeded up the river, going half speed. The river keeping the same depth, and about 150 feet wide; the mountains rising to about 2,000 feet. At 3 p.m. came to an anchor, as the river seemed getting very narrow ahead. Rain set in and lasted all night. The scenery here was the same as mentioned above, only the land getting higher. Saw no natives.

Wednesday, March 30th. We steamed up the river, encountering many rapids, and against a strong current running over six miles an hour, for a distance of over seven miles, at which point our steamer was debarred from proceeding farther upwards by a rapid. Rain now set in and continued all night.

On Thursday, the 31st, finding it impossible to proceed farther up the river with the ship, we decided to form a boat party, and proceed up the river as far as possible. The boat party, consisting of Messrs. Bevan, Beveridge, Gleeson, Festro, Bell, and myself, with five of the crew, started, taking provisions, &c., for ten days, and the ship's after-awning for a tent; crossed the rapid, and after pulling for five miles came to a small island on the east bank; determined to camp here for the night. At 7 p.m. the rain came down in torrents, drenching everybody, and lasted all night.

After pulling up the river for over two days against a strong current, our progress upwards was terminated by a very strong rapid. Some of the men started prospecting for gold, and found indications in every washing. Finding it impossible to proceed any farther up the river in the boat, we formed a land party, and managed to cut a track about five miles through the dense scrub, growing on the bank of the river. As we had no tents or proper equipment for camping out, and being thoroughly tired out, and much inconvenienced through heavy rainfalls during the nights, we returned to the ship after an absence of over three days. By land and boat we had gone over a distance of about fifteen miles. The land along the margin of the river was low, and the soil very rich.

On Wednesday, April 4th, steamed down the river, went half speed till we passed the rapids. Saw no signs of natives till we came to the junction. Here we heard a great number of them in the bush; about twelve of them came out, and seemed glad to see us back. Came to an anchor off their village at 12.30 p.m. Several of them came on board, and after they had got over the shyness (like all other natives), commenced to pilfer everything they could lay their hands on. Took several photographs

of them, and got a few curios from them. We had fine, beautiful weather all day and night. Temperature: day, 78° to 84° ; night, 70° to 72° .

We steamed up the river to the junction. Took observation, which placed us in latitude $7^{\circ} 11'$ south, and longitude 144° east, and fifty-seven miles, as the crow flies, from Cape Blackwood. The highest latitude reached by steamer, $6^{\circ} 51'$ south; longitude, $144^{\circ} 8'$ east; distance, seventy-eight miles and a half. By land party, $6^{\circ} 40'$ south, $144^{\circ} 8'$ east. The distance gone over by steamer being 130 miles. Went away in boat up the branch before mentioned, and about one-quarter mile up found a large underground cave extending in for 200 yards; pulled the boat into it for fifty yards. The cave was of limestone formation, with numerous stalactites hanging from the roof. Fine, and temperature same as yesterday.

Friday, April 6th. At 5.30 a.m. went away in boats, taking candles to explore the cave, and found we could penetrate with boat no further than yesterday. After taking some of the stone, returned to ship. 9 a.m. got under way and steamed down the river, passing out through the eastern mouth, which is about four miles in width, and an average depth of four fathoms. After clearing the eastern mouth of the Aird River, we shaped our course for Motu Motu.

After calling at Motu Motu, we returned to the westward, and called at the villages of Karama, Silo, Ballala, and Orokolo. The latter is the largest village along this part of the coast, and the natives the most treacherous looking.

Thursday, April 14. Again started to steam to the westward, intending to explore the mouths of five rivers marked on the chart, and situated between the mouth of the Aird River and Motu Motu, and reported by the natives to be separate mouths of one large river. Came to the easternmost mouth, but after steaming a little way up we only had twelve feet of water, and found there was an impassable bar for a vessel of the "Victory's" draft to cross; the sea was breaking right across it. I then attempted to find an entrance in the second mouth, but this had

a similar bar to the first. After half an hour's exploring, returned to the ship, and steamed to the third mouth, but at this the bar extended further off shore. We then tried the fourth and fifth mouths with the same result. Seeing it was impossible to penetrate into the country by any of these sources, I determined to try and find an entrance to the west of Bald Head, and found a large river, two and a half miles wide at mouth. Steaming in on a north-west course for west point of entrance, carried from three to four fathoms till one mile south 30° east of Bald Head, when the water shoaled to sixteen feet, it being now half ebb. There is a bank running west from Bald Head, with only four to seven feet of water on it, on which the sea is always breaking; and another, one mile and a half off, running in a south-east and north-west direction, two miles long, on which the sea also breaks. We came in to the east of this, but I believe there is another channel to the west, as most of the drift was coming from that direction. Saw several canoes coming towards us; returned to the ship and steamed in, and came to anchor in sixteen feet, Bald Head bearing south 11° west. After coming to anchor several canoes came off from the east shore, where there was a large village almost hidden by trees, and at 6 p.m. there were over twenty canoes, with about 200 natives in them, round the ship, but they seemed friendly disposed. Made them some presents of Turkey-red, &c., which made them still more friendly, and they invited us ashore to their village, but we declined. This village we found was called Kere Porin.

Friday, April 15th. At daylight the natives came off about 400 strong. They seemed very friendly, but, by appearances, were not to be trusted. At 8 a.m. got under way, and steamed across to west point, north 70° west, for half a mile, when the water deepened to five fathoms. Shaped a course due north, and after going ten miles came to an important junction of three branches, one coming from the west, the other two from east and north-east; the west branch being a mile wide, and the largest. Steamed up this branch for two miles when it trended to the west; going four miles farther, carrying three to six

fathoms, came to another junction, a branch 200 yards wide, coming in from the west; here the water suddenly shoaled. Saw two canoes coming down the west branch, and held communication with them by the same way as before.

Saturday, April 16th. Steamed up the north branch, which was 500 yards wide here; after going some distance in a serpentine manner, the river narrowed to 200 yards.

On Sunday, April 17th, after steaming five miles farther up, the river seemed to break up, it being here only seventy yards wide. Came to an anchor in three and a half fathoms at 10.30 a.m. Went away in boats, and after going for a mile two channels met, each being only twenty yards wide; pulled up the westernmost one for two miles. Picked up a canoe paddle; saw a canoe with two women and a child in it, who set up howling as soon as they saw us. We then heard the conch shell sounded on both sides of the river, showing us that we had unexpectedly got close to a large village. The river was only ten yards wide here, and as we were not properly armed, thought discretion was the better part of valour, and started back again. The natives could have killed every one of us without our being even able to see them, the scrub was so thick on each bank. After pulling half a mile, hauled alongside one of the banks, and waited to see if the natives would follow us, but seeing no signs of them, returned to the ship at 1 p.m. After dinner, Bevan and myself offered to lead an armed party to the village to see if we could make friends with them, but none of our party were willing. Seeing that it was impossible to take the steamer any higher (the total distance reached by steamer from sea being forty-six miles), we got under way and steamed back at half speed up the branch at first junction, carrying three fathoms. After going one and a half miles, came to a branch 100 yards wide, trending north, and 200 yards farther another, trending south; steamed up this for six miles, when the water shoaled to ten feet, the river narrowing to fifty yards.

At 1 p.m. on the following day started to return, and steamed

back to main junction, and took the branch trending easterly, and after following it for several miles we opened out a broad river half a mile wide. There is no doubt that this river belonged to the one we were in, as some of the reaches were nearly due north, and others nearly due south. We had three to seven fathoms of water; the rise and fall being hardly perceptible. Steamed into this broad river (the Wickham), and had sixteen to seventeen feet crossing its mouth; it then deepened to five and eight fathoms, the current running down about three miles an hour. At 5.30 came to an anchor off a plantation and deserted village. I have no doubt that this is the river reported by the natives having five mouths, east of Bald Hill, although we had proved there were seven to it.

Saturday, April 23rd. At 7 a.m. again started, going full speed. We passed several more deserted villages. At 11 a.m. we commenced to get to higher land, the hills being 300 to 400 feet high, and as we went along the land kept rising, and the river very much winding. At 4 p.m. came to a very rapid current, caused by a point coming out and a barrier of rocks on the other shore, narrowing the river from 300 to 100 yards. The current caught the vessel on the bow, and nearly turned her round; after getting her pointed again, went full speed ahead, and in a quarter of an hour got round the point. The river then widened again to 300 yards; the current must have been running down at seven to eight miles an hour. Here the water shoaled to eleven feet, with a rocky bottom. The only place we could find anchorage was twenty yards off east shore, abreast of a small stream that came in here; anchored in three fathoms. The mountains here are from 1,500 to 2,500 feet high, but different to the mountains on the first river we went into, not being like those, precipitous, but rising in a gradual slope, and all thickly wooded.

Sunday, April 24th. At 9 a.m. went away in boats, some shooting, others exploring. At 2 p.m. Bevan and myself with crew went away in small boat; after pulling two miles, landed on a small island close to east bank, where we could see up the

next reach for two miles, and there appeared another small island, and no doubt a rapid as well. Returned to ship, sounding all the time. The soundings were very irregular, and bottom rocky. There were constant whirlpools, caused by ghibbers, on some of which there was not more than four feet of water. Got to the ship at 5 p.m. There was a constant fresh running down, showing that the rise of river was far more inland than the first river, where we had constant flood and ebb, and, therefore, this was the most important one coming from the mountains. On the banks we saw driftwood twenty feet above the present level of stream.

As our limited time was drawing to a close (only being allowed six weeks from time of starting to return), and our coal getting short, we held a consultation in the evening, when it was determined to return. The highest temperature we had during the trip was 125° in the sun, and 86° in the shade.

After steaming clear of the river entrances, we shaped our course for Thursday Island, and arrived there on Tuesday, May 3rd, after a successful and prosperous exploring trip.

There is no doubt that if we had better appliances, and a steamer of less draft, we could have gone at least sixty to one hundred miles farther up the last river (the Wickham), which Mr. Bevan named the Jubilee, and, as there are two or three more rivers between the two, it is my opinion that one of them would be found a large river that drains the centre ranges, and that this part of the coast will be the best agricultural district of British New Guinea; and, by going inland to the main ranges, find splendid mineral and auriferous country.

The CHAIRMAN referred in favourable terms to the paper, after which the proceedings terminated.

THIRD ORDINARY MEETING.

THIRD SESSION.

THE third ordinary monthly meeting of the third session of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of Friday, September 28, 1887. Mr. W. H. MISKIN occupied the chair.

After the minutes of the previous meeting had been read and confirmed, and the receipt of donations announced, the HON. SECRETARY proceeded to read a paper entitled—

The Discovery of the Pioneer River, and Early Settlement of Mackay, Queensland.

By the Discoverer, Captain JOHN MACKAY.

On the 16th January, 1860, the party, consisting of Messrs. John Macrossan, H. Robinson, A. Murray, D. Cameron, J. Muldoon, J. Barber, the writer, and an aboriginal named Duke, started from Armidale, New South Wales, with twenty-eight horses and the usual outfit of pack saddles, firearms, &c. They travelled *viâ* Tenterfield, Warwick, Dalby, and across the Darling Downs to Gayndah, thence to Gladstone, *viâ* the Kolan and Boyne Rivers, arriving at Rockhampton on the 2nd March. On the 16th March they left, and proceeded towards Yaamba, camping on the Fitzroy River, about fifteen miles from Yaamba. The following day they crossed the Fitzroy, and camped within six miles of Princhester. On the 18th, in consequence of the horses having strayed, they did not pass Princhester until 3 p.m., and proceeded with a company of Victorians going in search of country to the westward (Peak Downs), and camped together at a muddy waterhole. They travelled together until 8 p.m., when they arrived at Marlborough, meeting Mr. Henning, who was

forming a station there. They did not leave Marlborough until the 22nd, when they bade farewell to civilisation, proceeding westward towards the range dividing the waters of Broadsound and the Isaacs River. Here they camped for the night, and after proceeding in various directions until the 6th April, they observed the letter D and broad arrow cut deep in trees, and a place where a tent had been pitched, which they concluded must have been marked by Dalrymple's party. They met with similar signs until the 10th, when, observing that Dalrymple and party had taken up all the country on the route, they decided after a brief consultation to retrace their steps, and strike more to the eastward. They travelled in the easterly direction, meeting with various obstacles, until the 17th May, when they came to a stony creek, where they camped. The next day they journeyed along the creek, until they came to where it joined another large creek from the southward, whence it flowed in a northerly direction, a bold deep river, with well-defined banks. On the suggestion of Macrossan, this river was named the Mackay. They travelled along the river until the 21st, when they came to a plain extending from the river to a range of low grassy hills to the southward. The next day they proceeded to the westward, and on the 23rd Robinson and Duke complained of headaches, and on the 24th, the men being no better, they did not proceed; but Mackay, Barber, and Macrossan, after great difficulty, reached the coast, and made observations to determine the position of the mouth of the river. On the 25th they again made a journey to the mouth of the river, and on the way back to camp Mackay cut the letter M on several trees along the river, this portion having fallen to his lot when drawing for the respective blocks to be taken up. On the 26th Murray complained of sickness. The sick men showing no signs of improvement, the party started back along the river to the westward, Macrossan and Mackay marking trees on both sides. The party arrived at Rockhampton on the 8th July, with one man short through the death of Duke, and after tendering, in accordance with the Crown Lands regulations, for the respective runs taken up, they sailed for Brisbane on the 19th

in the "Tamar," s., Captain Cottier. Their tenders were accepted on condition that they put on stock, and Captain Mackay entered into partnership with Mr. J. Starr, of Milne Creek, on the conditions that if the latter furnished so many cattle the former would find the country, each one contributing to the incidental expenses. In pursuance of such agreement, Captain Mackay left Armidale on the 26th July, 1861, with 1,200 head of cattle, fifty head of horses, two teams of bullocks, with drays, and a party, consisting of four stockmen, two drivers, cook, carpenter, and two black boys. The writer described the journey in detail to the spot reached by the former party, where he arrived on the 11th January, 1862, and marked a spot as a site for a station, which he named Green Mount. Eventually things were got into working order, and in March the stockyard was completed. Their stores by this time had sensibly decreased, but, having arranged with an agent in Rockhampton to send a small vessel in April with supplies, no serious fears were entertained in this respect. However, through various causes, the vessel did not arrive until the 25th June. During this time Captain Mackay had made various trips in the hope of getting news of the stores, and had made the acquaintance of Mr. G. E. Dalrymple, then Crown Lands Commissioner for the Kennedy District, and Mr. Richard Spencer, better known as "Honest Dick Spencer." Mr. Dalrymple, during his stay at Captain Mackay's camp, named the two peculiar hills on the north side Mount Blackwood and Mount Jukes, in honour of Captain Blackwood, of H.M.S. "Rattlesnake," and a naturalist who accompanied him. He fell in with Mr. Spencer on his journey to Port Cooper in search of stores, Spencer being camped near the head of Denison Creek, where he had taken up a station. It so happened that Spencer was expecting stores by the same boat as Captain Mackay, and after waiting some considerable time, during which Spencer visited Captain Mackay's place, they undertook a journey to Brousdound, where, should they fail to see anything of the boat, they could send word to Rockhampton. It was while on this journey they fell in with the cutter "Presto," on which were the long-looked-

for stores. The black boys were ordered to return home with the horses, and Captain Mackay and his companion joined the vessel and accompanied her to her destination, arriving there on the 25th June, the cutter being moored alongside the south bank, about two miles west of where the town now stands. The stores were landed the next day, and the charterer entered into an engagement with Captain Mackay at £8 per week to remain and enable him to make a rough survey of the river, take soundings, &c. He commenced his survey on the 28th, and continued his observations until the 6th July, when the "Presto" returned to Rockhampton, by which he sent to the Crown Lands Office, Brisbane, a sketch of the river, with latitude, soundings, &c., which plan was published in Buxton's Map of Queensland, on which the Mackay River was declared a port of entry. Shortly afterwards Captain Mackay visited Port Cooper, where, receiving news unfavourable to his interests, he discharged all unnecessary hands on the station, and returned to Rockhampton, leaving Messrs. Cornish, Cridland, and Vince in charge. He arrived at Rockhampton about the 1st October, and proceeding to Sydney found that his partner had succumbed to the pressure of the times, and that he (Captain Mackay) was involved to a certain extent. Through the kindness of some friends he was enabled to save a little from the general wreck, and returned to Queensland early in 1863. During his absence Commodore Barnett visited the northern ports of Queensland, in H.M. gunboat "Pioneer," and suggested that, in consequence of another stream flowing into Rockingham Bay being named the Mackay, it would be necessary Captain Mackay's discovery should be named the Pioneer, in honour of that ship's visit. The Government, however, intimated to Captain Mackay that the town then being surveyed on its banks would be named Mackay. It was again suggested that the name of Mackay should be changed for that of Alexandra, but the original name was adhered to. With reference to the disputed question, "Who were the first white men to settle at Mackay," Captain Mackay states:—"Messrs. Henderson and Cridland were at Green Mount (the name of Captain Mackay's

station) when I left, awaiting the arrival of stores and building material wherewith to commence business. James Ready and family followed shortly, so that I have no hesitation in pronouncing these gentlemen the fathers of the hamlet, Mrs. Ready being the first white woman at Mackay." This ended Captain Mackay's connection with Mackay, until, on his way to Cooktown to fill his present appointment, he called at the place, and found himself a stranger there.

After the paper had been read the proceedings terminated.

FOURTH ORDINARY MEETING.

THIRD SESSION.

THE fourth ordinary monthly meeting of the third session of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of Friday, November 25, 1887, at 8 o'clock. Mr. W. H. MISKIN occupied the chair.

After the minutes of the previous meeting had been read and confirmed, and the receipt of various donations to the Society, consisting chiefly of exchange publications from cognate institutions, announced, the HON. SECRETARY proceeded to read the following paper, which he had prepared:—

The Importance of the Teaching of Geography in the School.

By J. P. THOMSON, M.A., C.E., ETC.

“Breves haustus in philosophiâ ad Atheismum ducunt, largiores
autem reducunt ad Deum.”

Prelude.—The chief object of this paper is, if possible, to produce a fresh stimulus and revive the interest, now through enervating influences become morbid, in matters geographical amongst our adult colonists, and more particularly to bring the vital importance of this momentous integral of modern educational doctrine before the view, and for the most serious and favourable consideration, of the principals of educational institutions in our colony; so that they, as the primary medium in the diurnal execution of their official functions, may provide facilities for, and afford encouragement to, our colonial boys in the study of geography. By this noble means the youths who, by nature, are adapted for the study of geographical science, as, also, all those whom it is desirable to instruct, will be provided with the means

wherewith to become proficient. We shall then have students in this important, "nutritious," and most interesting branch of science as we have students at law, and in all other affiliated learned professions. For this reason it is imperative to frame sound method, and inculcate its principles; for be it understood that in the erection of all our mundane structures of what kind soever, whether large or small, plain or ornamental, their stability will entirely be governed by the character of their foundations; likewise the degree of proficiency attained by the student, apart from his aptness, will depend upon the rudimentary elements of his instruction. This is the end of the preamble; I shall now proceed to consider the *principal*—or the prime subject.

The earliest records of history furnish us with geographical information, which, although not based upon strictly accurate premises, is nevertheless full of interest, and minute in detail. In the days of Moses, the leader and legislator of the Hebrews, about 1725–1605 B.C., the physical geography of the world was taught upon the assumption that the earth was motionless and the surface of the globe a flat disc, which theory is also referred to by the celebrated Psalmist, King David. Homer, the "Father of Song," was also a disciple of the same theory; likewise Herodotus, the "Father of History," to whose unwearied geographical research on the shores of the Hellespont, Scythia, Euxine Sea, Syria, Palestine, Colehis, the northern parts of Africa, Ecbatana, and Babylon, we are indebted for the earliest method of geography. Greece furnishes the earliest conclusive scientific principles as instructed by Thales of Miletus, the originator of Greek philosophy, and father of the Ionic School, about 640 years B.C., who advocated the spherical form of the earth, and was so well acquainted with the Cyclic Period, comprehending the order of eclipses, as to predict the eclipse of the sun which appeared during the battle between the Medes and the Lydians. He also advocated the tenet that the "World has a soul, is full of dæmons." Anaximander, an Ionian philosopher, and the reputed inventor of maps, likewise propounded the doctrines of his predecessor, Thales; and Pythagoras, the illustrious mathematician, his follower, taught the

definite science of the earth revolving on its own axis, also its revolution round the sun. The first practical test in astronomical geography was made by Eratosthenes, the celebrated astronomer of Alexandria, in the third century B.C., who first conceived the plan of measuring the earth. The means he employed were the measurement of the sun's meridian altitude when at the solstitial point, by the shadow of a style at Alexandria, and the horizontal distance between Alexandria and Syene (Assouan), at which place the sun is vertical at solstice. He then calculated the arc of the terrestrial meridian connecting the two places. The result of his investigations made a degree to be about eighty English miles, which, considering the means employed, was surprisingly near the truth. Hipparchus, the founder of astronomical science, 160–125 B.C., next discovered the precession of the equinoxes—a first generalisation to a knowledge of the motions of the fixed stars. He invented plain and spherical trigonometry, and discovered the means of determining positions on the earth's surface by means of latitude and longitude. He also may be regarded as the originator of physical science. Ptolemy Claudius, the most distinguished scientist of antiquity and mathematical geographer of the second century A.D., founded the planetary theory as represented by the scheme of Epicycles. His works on astronomy and geography were used as text-books for 1,400 years, during which period very little progress in the science of astronomy was made, until 814–833 A.D., when it again received an impetus from the representatives of the Arabian Empire, Haroun-Al-Raschid ("Aaron the Just"), the renowned Caliph of Bagdad—celebrated for his generosity and wisdom—and his son Abdallah, who, upon the plains of Mesopotamia, executed the measurement of an arc of one degree of the meridian. During the ninth and succeeding six centuries physical and astronomical geography continued to progress, but no remarkable discoveries were made until between the fifteenth and seventeenth centuries, during which period Copernicus restored the true system of the Universe, as first proposed by Pythagoras,

and proved the annual motion of the earth. Galileo propagated and demonstrated the Copernican system; and Kepler, also a disciple of Copernicus, after seventeen years of incessant pursuit, discovered his celebrated law; that the squares of the periodic times of the planets are as the cubes of their distances. It is a strange phase in history, that while, among the ancients and even up to the eighteenth century, the kings and princes of foreign nations honoured and encouraged their philosophers. England, singularly enough, produces a long list of her most distinguished characters whom she has starved and dishonoured. It is, however, to representatives of our modern school, such as Professor Cora, and other distinguished writers, that we are indebted for defining the position of geography as a *science*. Literally interpreted, the physical character of geography would, from its etymological aspect, embrace a description of the earth, the conformation of its islands and continents, the water surrounding them and traversing their surface, and the motions of all the parts of the earth subject to the control of natural phenomena, such as the currents of seas and rivers, earthquakes, glaciers, &c., also a description of atmospheric and climatic conditions. The broader scope of physical geography would also embrace geology. A mere description, although entertaining, would, however, be an insufficient analysis of our subject; therefore, while fully admitting the importance of the entertaining phases, it becomes necessary, in order to render it instructive, that we should also *explain*—namely, to clear our subject of all doubts, to illustrate the effects, to expand the cause thereof, and the symphonious relations of the entire system. And, when thus explaining the various parts of a *whole*, how am I to adequately do justice to my subject if I omit to explain the components of each individual part in itself? That is to say, how am I to intelligibly describe the conformation of continents and islands, without explaining the causes by which they are produced? And, while I am thus engaged with the explanation of this part, surely I shall be found wanting if I omit to describe the soil; to do so instructively, I shall not only have to describe

the quantity and conditions of its strata and substrata, but I shall also have to explain the chemical combination of its constituent parts, and likewise its natural and artificial capabilities.

While thus treating with the external crustations of soil, surely it is required that I should also describe, in creative order, all living animals produced, sustained by, and moving on its surface. When I have so far attained this progressive stage, my whole mind is so filled and engrossed with wonder and admiration at the simplicity and perfections of all the complex functions of living organisms exhibited in the animal and vegetable kingdom, that I am impelled, as it were, by natural instincts, to proceed still a step farther, and describe the essential characteristics of that pre-eminent order of all animals, the human race. Thus I am imperceptibly, as it were, brought into contact with, and proceed to treat upon, the science of man. While proceeding inductively with the principal parts of my subject, how am I, in speaking of man, to clearly elucidate the various parts of a *whole* without taking into account the four great divisions of race, as classified under the following designations:—Mongolian, Semitic, Tartar, and Aryan? In describing these vast sections, I also have to refer to the component parts of each individual *whole* as furnished by the manifold species, numbers of which afford rare and interesting scope for observation, especially the Hellenic, the Teutonic, the Slavonic, and the Italic,—all of which are contained within the great Aryan division. Thus, in proceeding with my investigations of those great divisions and subdivisions, I perceive myself face to face with the principle of history.

Next I proceed to describe earthquakes, volcanoes, and glaciers, and, in doing so, am I to omit an explanation of their cause? Surely not. Also their geographical distribution. Likewise in my description of rivers, lakes, and seas, must I not also include their currents, and explain the causes by which they are produced? Thus I proceed with my colossal structure in numerical sequence—if I may so speak—step by step, from the base to the apex; that is to say, beginning with the world, which is imperative, as the nucleus and the embryonic stages of all

animate and inanimate organisations, of all things whatsoever specifically related to geographical science. When I have intelligibly analysed the anatomy, as it were, of the earth in whole and in part, I next proceed to consider the rotatory and revolutionary motions of the vast structure; but, before fully doing so, I assign to it its proper position with regard to the great central primary in our grand and vast Universe. Here, in the midst of cosmical magnitude, I describe each individual planet in the system, the harmonious relations co-existing in them, and the law of gravitation by which they are governed,—thus I introduce astronomical geography. Next I explain the inequality of day and night, and the law by which the seasons are governed. I next proceed to describe climate as being subject to variation and modification by virtue of the earth's position in the ecliptic to that of the central primary, also the condition of climate as governed by atmospheric changes, and the constituents of the atmosphere itself. While doing so, I comprehend all living creatures and things subject to its action, and explain how, physically, they are influenced by conditions of climate. All the foregoing parts are so harmoniously connected with one another, that an omission of any one part subjects the whole organisation to disintegration, and the instructive phases become chaotic.

Among the various subjects of instruction inculcated into the minds of students in our seminaries, let the teacher direct his attention first to the prime ones—all others are “a mere filling in of details”—of which physical geography ranks first—excepting literature. Apart from the theoretical aspect, it will discipline, cultivate, enlarge, and enrich the mind, both morally and intellectually; it feeds the most tender and noble sentiments, and is the foster-mother of that humanitarian sympathy so necessary to act against all inborn prejudicial tendencies; it invigorates and qualifies the mind to cope with all its conflicts; it also subdues and modifies inordinate desire; it unfolds to us the simplicity and clearness of our legal and moral relations to one another, so that it becomes unconfused by bigotry and unprevented by theory, neither can passion pollute nor perturb it.

Among the best works of the ancient Greek and Latin authors, from the earliest records of history, we find many earnest exhortations to use our best efforts to cultivate the mind by the inculcation of sound stimulating principles. We also observe numerous examples in every-day life, and have the unanimous assurances of the most celebrated teachers the world ever produced, how morally, intellectually, and physically we are most powerfully influenced by the principles we imbibe. "And let it be no slight care to cultivate the mind with the liberal arts." Ovidius, Art. Am. ii. 121. "To be thoroughly imbued with the liberal arts refines the manners, and makes men to be mild and gentle in their conduct." Ovidius, Ep. ex Pont. ii. 9. 47. "Let a man be ever so envious, passionate, indolent, drunken, amorous, yet there is no one such a slave to passion that he may not be improved, if he would only lend a docile ear to the lessons of wisdom." Horatius Ep. i. 1. 38. Similar sentiments are also expressed in Brunck (P. Gnom., p. 320). Professor Laurie—an eminent Professor of Education, of over thirty-three years' experience in school work—whom I consider the highest authority in Great Britain, and whom I shall have occasion to refer to in the course of this lecture—in his able and most instructive lecture upon the "*Method Applied to the Teaching of Geography in the School*," delivered before the Royal Scottish Geographical Society, Edinburgh, in 1886,* says:—"Geography is the most interesting, and, with the single exception of literature, the most nutritious, the most feeding, and the most cultivating of all school subjects. It is all-embracing, it is rich and abundant beyond conception, and has claims on the teacher of a paramount kind. It is because of its intellectual and moral effects, chiefly, that it claims a foremost place in the education of the youth. There is probably no one subject so prolific of material for thought and judgment on the affairs of life, and the destiny and duty of man. It broadens the narrowness of the young, and the selfishness and exclusiveness of the adult. It is a sworn foe to the prig. It widens intelligence, and enriches the soul, furnishing not only material for reasonings,

* Scottish Geographical Magazine, 1886, Vol. ii, pp. 451-2.

but nutrition to the ethical sentiments, and a stimulus to the imagination. As an economic instrument, no less than as a moral instrument, geography is unsurpassed by any other subject of the school curriculum, excepting always literature. Geography, then, is surely a big thing in all education where geography and the ends of education are properly understood."

Mr. W. Jolly, H.M. Inspector of Schools, in one of his lectures, delivered under the auspices of the R.S.G.S.* says:—"Rightly taught, there is no more valuable, informing, or fascinating study than geography; nor any one more pleasantly and highly intellectual." Strabo, the celebrated Greek geographer of the first century of the Christian era, in advocating the importance of teaching geography, refers to the shameful retreat of the fleet of Agamemnon when ravaging Mysia, as an illustration of the disastrous effects of the result of ignorance in great undertakings, and he says:—"Even if we descend to such trivial matters as hunting, the case is still the same; for he will be the most successful in the chase who is acquainted with the size and nature of the wood, and one familiar with the locality will be the most competent to superintend an encampment, an ambush, or a march." He also invites attention to "the importance of geography in a political view. For the sea and the earth on which we dwell furnish theatres for action; limited for limited action, vast for grander deeds; but that which contains them all, and is the scene of the greatest undertakings, constitutes what we term the habitable earth; and they are the greatest generals who, subduing nations and kingdoms under one sceptre and one political administration, have acquired dominion over land and sea. It is clear, then, that geography is essential to all the transactions of the statesman, as it informs us of the positions of the continents, seas, and oceans of the habitable earth."

Colonel Sir Charles Warren, R.E., G.C.M.G., F.R.S., &c., President of the Geographical Section of the British Association, in his opening address, at the meetings of the Association held in Manchester in September last,† "dealt with the importance of

* Scottish Geographical Magazine, 1887, Vol. iii, p. 127.

† Proc. Royal Geographical Society, 1887, Vol. ix, No. 10, p. 635.

studying geography in its wider aspects, and with the best method of presenting its facts to children." He says:—"Indeed, it is difficult to say in what capacity of life geographical knowledge is most required. No man can do practical work without it, and to the theorist it is absolutely essential." But, "of all persons who require a knowledge of geography, stand first those who are most concerned in the government of our Empire, and yet, as has been mentioned, these have, for the most part, been brought up at schools where the mental training for geography is most defective. Our statesmen, as a rule, have neither theoretical teaching nor practical experience, and it is perhaps not too much to say that, putting on one side those who are merchants and sailors, there are no more ignorant persons with regard to geography than our lawgivers. This ignorance endangers the safety of the country, for the people are continually perceiving, with regard to matters of every-day life and practical experience, that their lawgivers are more ignorant than themselves, and are consequently constantly interfering and giving advice in the details of the administration of the Empire." The same writer, among numerous other instances, says:—"It is possible that a more full geographical knowledge of Egypt and the Suez Canal might have materially modified our present occupation of Egypt. The canal could not be held without a fresh-water supply, and the possession of Cairo and the Nile is the key to the fresh-water canal supplying Ismailia and Suez. Had it been known that a plentiful supply of water could be obtained close to the marine canal, independent of the Nile water, it is questionable how far any occupation of Egypt would have been necessary."

The teaching of geography has become of such recognised paramount importance that, through the advocacy of the Royal Geographical Society and the Royal Scottish Geographical Society, geography will be taught in the Universities of Oxford and Cambridge, as lecturers have been appointed. Since 1869 the Royal Geographical Society have made annual awards of royal premiums and other testimonials to students in the principal universities, colleges, and schools in England for proficiency in geography.

Last year the Royal Scottish Geographical Society, with prophetic energy and zeal, emulated the example of the parent society—but in a more practical manner—by the inauguration of an exhibition of appliances used in geographical education, held in the Industrial Museum, Edinburgh. In the hall of the museum, educational lectures were delivered by Messrs. J. Scott Keltie, Librarian R.G.S., and W. Jolly, H.M. Inspector of Schools, also by Professors Laurie and Meiklejohn, who in the ablest manner advocated the importance of geographical education. The efforts of the society were warmly supported by the public; the attendances at the exhibition and at the lectures given in connection therewith were very good, and teachers largely availed themselves of the opportunities which the society placed at their command. Indeed, the importance of geographical instruction is becoming so universally recognised as to attract royal patronage: this will be seen from the fact that His Majesty the King of the Belgians has, this year, offered a prize for the best essay on “The Promotion of the Study of Geography.” The prize was gained by A. Stauber. In the continental seminaries, the realistic and dramatic methods in teaching geography are strictly adhered to: in this respect alone England is far behind her continental neighbours. This is more especially the case in “Prussia, where every university has its professor of geography; at other German universities there are lecturers.” Altogether there are at the present time seventy-five professorships of geography at European universities. In France, also, the teaching of geography receives considerable attention. It is probably owing to this proficiency in geographical science that the Germans excel as colonists; by virtue of their instruction, they portray and study the physical conditions of foreign countries, and delineate their history, products, industries, and commerce, by which means their capitalists, merchants, graziers, and agriculturists are more successful than the majority of our colonists are—a fact which does not redound to our credit, nor to the credit of our schools; while at home and abroad the Germans and French exhibit superior intelligence in matters relating to

geographical science than the average Englishman. Is this the fault of our modern educational system, or does it rest with the teachers? Whichever the responsible source may be, one thing is certain, it is deplorable, and casts a stain upon an English-speaking race, and subjects us to ridicule by those over whom we profess to exercise pre-eminence. Not only does the continent excel in geographical education, but also in geographical institutions. In Prussia, Russia, France, and Spain, every important centre of population supports its geographical institution as one of its chief national monuments, for the collation and dissemination of knowledge regarding universal geography. This is not by any means solely owing to the maturity of their establishment, but the importance of geography is inculcated in their youthful minds; they inhale the germs from early training, and, like all sound teaching, it grows with them. The question of geographical education is a subject of vital importance to all people of every nationality, but more particularly to the youthful race of Australasia, for reasons which in themselves are self-evident:—

- 1st, Unlike fortune's favourites, the future prosperity, from a worldly aspect as also the political and social conditions, of Australia's sons will in a large degree depend upon their natural and cultivated abilities.
- 2nd, All our acquired wealth, of what kind soever, must emanate from the soil and the bowels of mother earth.
- 3rd, The geographical position of our continent and the islands adjacent thereto peculiarly subjects us to the assaults and envy of aliens.
- 4th, Our security in time of war will in a large measure be governed by the effectiveness of our defences.
- 5th, The future development of our commercial enterprises will render reciprocal relations with foreign countries necessary.
- 6th, Our social and political status as a race with respect to other nations will be proportional to our culture in science, literature, and art. Therefore, as the fulfilment, or attainment, of the foregoing conditions, with others of equal importance added thereto, render proficiency in geography imperative, it must become apparent to all intelligent colonists that geography, always excepting literature, claims first place in our

school curriculum. The foregoing arguments may be considered a brief indication of the preliminary *principal*.

I shall now briefly refer to *method* (although this paper does not profess to deal with more than the *preliminaries* of method). "It is a universally admitted principle in education that children are educated best through the sensible, the formal or abstract does not either discipline or cultivate as the real and sensible does. It is through things, and events as *things* and thoughts as things, that children, and men, and women live and grow. In the department of the real of sense, the *thing* is *geography*. Climate has brought your pupils into immediate contact with the elements of physics, while the men who inhabit a country have brought your pupils face to face with history in its origin. The real is to be taught through the real—things of sense through the senses. All knowledge must grow out of what is already known, that the growth may be organic, and not mechanical merely. In all subjects of instruction, when there is a mass of particulars, acquire at first the leading particulars only, and ignore all else until these are firmly rooted in the mind. The teacher should guard against overburdening the children's brains with names and dates. The names of countries, towns, and rivers, merely, as is the usual way of teaching geography, is not geography at all, but only a very small part of it, to be rightly called topography—just as dates and successions of monarchs and battles is not history at all, but merely a subordinate part of it, called chronology. The teacher is to begin with the parish at his school door; he is to take advantage of the window to look out on the portion of the earth within his immediate range; to draw upon the experience of the little children as they walk to and from school, and extract from them that experience. Thus they are introduced to plains, to hills, to streams, to cultivated land and uncultivated land, to rocks, stones, herbs, flowers, trees, animals, products, men and their various industries, to sizes, distances, relations in place, buildings, names of places, &c.; thus you gradually extend the teaching from the parish to the county, thence to the native country. You are

then to introduce a large globe not less than three feet in diameter, with the native country painted red thereon, then the whole round world will burst upon their view. The teaching should consist of the constantly repeated contemplation of the globe, and making acquaintance with the great divisions, and half a dozen great mountain chains, oceans, and rivers. The names on the globe should not exceed a couple of dozen. Climatic zones to be clearly indicated.* After the native country has been thoroughly studied, the geography of the native continent, and later on that of the other continents is taught. The connection between natural history and geography must be emphasised, and characteristic objects ought always to be shown. The reading of travels is recommended as a means of making the study more attractive, and of preventing its becoming a mere memorising.”—(*A. Stauber*).

The CHAIRMAN highly complimented the author upon the character of his paper, and warmly supported the sentiments it expressed; he said the paper was ably written, and the arguments contained therein were powerful in support of the subject dealt with, and Mr. Thomson had undoubtedly, with great cogency, proved himself an able advocate of geographical education. Dr. Waugh and Mr. R. Gailey also spoke of the paper in terms of praise; and, in accord with the Chairman, vigorously supported the author's views. After which the meeting closed.

* Professor Laurie, on “*Method Applied to the Teaching of Geography in the School.*”

DONATIONS

TO THE

ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA

(QUEENSLAND BRANCH).

[The names of the Donors are in *Italics*.]

- ABDRUCK aus Dr. Petermann's Mittheilungen, 1887. Heft 8.
From the Institution.
- ABSTRACT of Proceedings of the Linnean Society of New South Wales.—
August to October, 1887. *From the Society.*
- BOLETIN de la Sociedad Geografica de Madrid. Tomo XXII, Nos. 1, 2, 3,
4, 5, 6, 1887. *From the Society.*
- BULLETIN de la Société de Géographie Commerciale de Paris. Tome IX,
Nos. 6, 7, 1886-7. *From the Society.*
- BULLETIN de la Société de Géographie Commerciale de Bordeaux. Nos.
13, 14, 15, 16, 17, 18, 1887. *From the Society.*
- BULLETIN de la Société de Géographie de Paris. Tome VIII, 1887.
From the Society.
- BULLETIN de la Société de Géographie de Marseille. Tome XI, Nos. 3, 4,
1887. *From the Society.*
- "IMPERIAL FEDERATION" (The Journal of the Imperial Federation League).
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PROCEEDINGS AND TRANSACTIONS
OF THE
Queensland Branch
OF THE
ROYAL GEOGRAPHICAL SOCIETY
OF
AUSTRALASIA.

3rd SESSION.
1887-8.

EDITED UNDER THE AUTHORITY OF THE COUNCIL OF THE SOCIETY
BY

J. P. THOMSON, F.R.S.G.S., ETC., ETC.,

Hon. Secretary and Treasurer:

Honorary Corresponding Member of the Société de Géographie Commerciale de Paris,
the Société de Géographie de Marseille, and the Royal Scottish
Geographical Society.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. III. PART 2.

Brisbane :

WATSON, FERGUSON & CO., PRINTERS, QUEEN STREET.

1889.

NOTICE.

All Donations presented to the Queensland Branch of the Society are acknowledged by letter and in the printed Proceedings of the Society.

N.B.—All communications to the Society should be addressed as follows:—

HON SECRETARY AND TREASURER,
ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA,
BRISBANE, QUEENSLAND, AUSTRALIA.

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FIFTH ORDINARY MEETING.

THIRD SESSION.

THE fifth ordinary monthly meeting of the third session of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of Friday, January 27, 1888, at 8 o'clock. Mr. H. C. Luck occupied the chair.

After the minutes of the previous meeting had been read and confirmed, the following gentlemen were elected, by ballot, members of the Society, viz.:—Messrs. M. O'Donohue, and E. J. Hamilton.

After announcing the receipt of various donations, the HON. SECRETARY proceeded to read a paper entitled:—

A Trip through the Hot Lake District, New Zealand.

By PERCY W. SPRINGALL, SURVEYOR.

AFTER the Hot Springs have been brought so prominently before the public during the recent eruption, I feel that a few lines written from my own experience, during my stay in that district, will not be heard altogether without interest.

Though much has been said and written, we have heard, comparatively speaking, very little from any authentic source, and all has been so exaggerated that anyone visiting those parts will be more or less disappointed. The few scientific men who have gone there have always made their visits so brief as to go away, in a great many instances, with very erroneous ideas, and to misrepresent, if not all, a great many of its wonders; and in writing this paper I think that, after three years' living in that district, I may have made some observations which have failed to attract the eyes of others.

Having received instructions to proceed to Rotorua (one of the lakes in the thermal springs district). I at once proceeded to Ohenemutu, the only township in the lake district, arriving there in the evening, after a hard day's coaching through very broken country; although the scenery along our way was most picturesque, one soon tires of the monotony of the dense jungle of the New Zealand forest.

Ohenemutu is a little village of about twenty or thirty Europeans and, possibly, 1,000 natives, and is situated on the southern shore of Lake Rotorua. The Europeans have built their little village on the slope of a small hill called Pukeroa, about two hundred yards from the lake, which consists of three hotels and half-a-dozen stores; the natives have built their huts all along the shore of the lake, extending from the Puerenga stream to Kawaha Point—in fact in any place where the hot springs are found the natives build their huts.

The principal part of the native village is situated just below the part the Europeans occupy, Tamati Kapena (the meeting-house) being the largest and the principal building in the village. The boiling holes are along the shore of the lake and through the native village; in some cases the natives have built their huts right over a hot spring. The water in most of the holes is boiling, at least having a temperature up to 210° Fah., and the roaring could be distinctly heard hundreds of yards away, making a noise that can only be compared to the roaring of hundreds of steam engines.

After inspecting the baths and the native meeting-house, I entered into conversation with one of the natives, and after the usual inquiries as to whether I had any tobacco to give away, he took me to look at a part of the settlement which, through an eruption, had disappeared into the lake, wounding a number of natives. I inquired the date, but the natives are so contradictory in their statements that it is very hard to judge, but probably seventy years ago. The old pieces and broken remains of the huts are still to be seen. After trying the temperature of the water, which I found to be from 100° to 190° about this part, I

proceeded round the shore towards the Koutu, passing a great number of springs on the way; one place I noticed two large holes quite close together, about 3 feet apart; one registered 46° , the other 197° . I also noticed the natives doing their cooking in the hot water; whatever they have to cook is put into a kit and fastened on to a string or stick, then lowered into the water.

The Koutu is a small village, or rather part of the village of Ohenemutu. The hot springs here are not very numerous, nor the water so hot as at Ohenemutu, but are renowned by the natives for their curing properties for skin diseases, and natives come for miles round to the baths. This, again, seems to be the outside of the belt of hot springs, as none have been discovered to the west of this point; about 200 yards along towards Kawaka there seems to have been another eruption of very recent date, and that part of the lake or a portion of it has sunk from 20 to 30 feet, from the fact that the heads of trees are to be seen above the surface of the water, their roots as far below the water, and some of them are 100 yards from the present shore. After leaving here I proceeded to Sulphur Point—called Sulphur Point, I believe, from the fact that the whole flat that has been surveyed for a township has patches of sulphur, where hot springs have become extinct, dotted all over it. I noticed in some of the patches of sulphur numerous small steam jets with the sulphur formed around them, which have the appearance of miniature chimneys. The baths here are not so numerous as they are at Ohenemutu, but the variety is great; one called the Blue Bath is most wonderful, the water having a very beautiful dark cobalt blue colour: then the famous bath called Madam Rachael's; and last but not least the Priest's Bath. All these springs are within the space of 300 yards, and all having mineral properties so vastly different from one another, but, having lost my analyses of all the springs, I am sorry to say I cannot explain the difference.

After passing Sulphur Point, I passed through a country with thousands of springs along the shore till I got to the Puerenga, a small stream running into the lake—this again forming the belt of

thermal springs, as no springs have been found to the other side of this, that is to say, the east side round the shore. Following up the stream I came to Whakarewarewa, another native village; here the springs are very numerous, and the roar of boiling mud and water makes the earth tremble under foot. In some places I got the water 212° Fah., the highest degree of temperature to be obtained, I believe, in this district. The principal part of interest here is the geyser, the hole from which the water issues being about 1 foot 6 inches in diameter, and the water spurting from 20 to 30 feet, and continuing to do so for half a minute or so, after which the water disappears into the hole and all action seems to cease for three or four minutes; then it is seen to rise till it begins to overflow, and then the water spurts out. It is not always that the geyser acts; I have known numbers of people who have come to see it, only to be disappointed. The weather seems to influence all the springs; the natives say the wind blowing from the east, or wet quarter, has the effect of making all the springs work with increased vigour. The water here in some of the springs is so heavily charged with silica that any object lying in the water twenty-four hours will become coated with it—the natives do a great trade with the Europeans travelling through, for small pieces of rock, fern leaves, and other curios coated with silica. After leaving Whakarewarewa I began to return by another route, and crossing a pumice flat came to Utuhina, another stream running into the lake, and following its eastern bank I found numerous springs, but none of any great importance, and, strange to say, they did not extend to the other bank, none having been found across the stream, though on the eastern bank they are to be seen down to the water's edge. After leaving the stream I called at another bath, known as the Lobster Bath; this is also very famous for its medicinal properties. I then returned to my hotel to prepare for my trip to Rotorua, my destination. After engaging canoes and crews to paddle them I commenced my voyage across the lake, intending to call at all the places of interest on the way. After 3 miles paddling we came to Mokoia, an island in the middle of Lake

Rotorua, being about 500 acres in extent, and rising to a height of 600 feet above the lake: it is here the famous Hinimod swam across to her lover, a distance of 4 miles—at least so tradition says—but I will not enter into the details of the history, as hundreds of abler pens than mine have done so before; I may mention that the late Mr. Dommet, in one of his poems, got his subject from the above. The bath known as Hunnioas, is certainly not what one would imagine it to be, and everybody is very much disappointed when they see it: and still more disagreeable to bathe in, from the fact that at one end the cold water washes in from the lake, and at the other end the water boils, so, in bathing one has to strike the happy medium, and get about half way between them; however, I decided to have a night in the island, so had my camp pitched, and took a walk to examine more closely the coast, the graveyard, and the hot springs. The graveyard was very interesting, the native bodies in some cases being lodged in trees, and I saw one that the wood had grown round, making it a fixture. I also saw the grave of the stone god Aroha, who, according to tradition, had been buried ever since they came to New Zealand, until a publican got one of the native chiefs to make it over to him for a frog scare, but the other chiefs, thinking they also had a share in their god, had a warrant taken out for the seizure of the god, and it was taken to the police station, and locked up; there it now remains, no one seems to have the power to bail it out. The stone itself is a common sandstone, of which there are quantities all over New Zealand, so would give no clue from whence it came.

The hot springs on Mokoia are not very numerous, and are of very little interest. After leaving Mokoia we proceeded to the Ohan, the stream connecting Rotorua with Rotoiti, the water rushing down to Rotoiti at the rate of 5 or 6 knots per hour, and having force enough to carry us down without the aid of paddles; we passed another village at the mouth of the Ohan, called at Mourea, and then we journeyed on till we got to Te Tehake, a settlement on the shore of Rotoiti, just at

the head of the Kaituna River, where the water of both lakes flows into the sea. Leaving our canoes, I went to have a look at the Oupu, an alum spring, with a temperature of from 100° to 110° ; this spring is used by the natives for venereal diseases, and they tell me the cures are simply wonderful; I should say the water contains 50 per cent. of alum. On returning to the canoes we proceeded to Manu Piro, another spring on the shore of Rotoiti, and one of the most comfortable to bathe in I know of, the water running out of a hole within a chain of the lake and filling a natural basin, the temperature being about 100° to 107° , and containing a great deal of sulphur.

Next day I went to Tikitere, about 2 miles from Manu Piro, and there I beheld one of the most awful sights I have met with; the springs here are all boiling mud, about half an acre, and roar something like the sound of distant thunder; in some of the boiling holes I noticed an oily substance floating on the surface of the mud. Baths have been erected here, and people can have a mud bath for their trouble in coming to see them, but I did not try one, having always looked on bathing as a mode of cleansing one's skin. Leaving here I proceeded to Rotokawa, a small lake, about half a mile square, with perpendicular cliffs round its shores, and forest growing down to its brink. After making a sketch of the lake I returned to the canoes, taking a different route by following a small hot-water stream. It is here the hot waterfall which is spoken so much about is; the waterfall is a little drop of muddy water running over a bank about 10 feet high. After walking up the stream and passing numerous springs, we came to the Ruatimi, two large springs or steam-holes, with the steam ascending in a dense column, and the noise of boiling water might be heard 100 yards away. Passing these I returned to the canoes, and we continued our journey up the lake to Tapuai, a settlement at the north-easterly corner of the lake, and decided to camp here that I might have an opportunity of ascending the mountain of Matauhaura, a mountain which seems to overhang the lake, and from its perpendicular cliffs and bare, rocky summit one can get

a view of the whole lake. On ascending it I came to numerous caves in the rock filled with human bones—I may mention it is the custom of the natives to scrape the bones of their dead after being buried for twelve months or so, and to put them into caves. Next day I proceeded overland to Lake Rotoitui, another lake about a mile and a-half from Rotoiti; here I had to engage a fresh crew and fresh canoes. Rotoitui is a lake about 2 miles by 3 miles, with a very irregular coast, and numerous little bays running inland for half a mile or so. The water was a very muddy colour, with fowl, such as duck—two or three kinds—and numerous other birds, and ahama by hundreds. There is nothing very pretty or picturesque about the lake, but it reminds one of a gigantic duck pond. After crossing the lake in the canoes we came to Waitangi, or the soda springs, most of which are on the bed of a small stream, but I noticed two or three on the banks. The water is in a continual bubble, or in an effervescing state, as it issues from the small springs; the water I am sure contains 50 per cent. of soda, and looked suggestive of brandy and soda, but, not having any of the former, I decided to take the soda water externally; the temperature I found to be from 100° to 120° , and if one continually bathes in the water the skin becomes quite sore. About two chains from the lake I found a large steam-hole, the steam being very dense, but no water to be seen or heard. The steam has a suffocating effect if inhaled. The natives told me of a young fellow who, gazing into the hole and being overpowered by the steam, fell in, and although pulled out almost immediately he was quite dead from suffocation. After camping here all night, we next day had to drag our canoes over to Rotorua, a distance of three-quarters of a mile, not an easy task truly, but after three hours we arrived at our destination.

Rotorua is, to my idea, the most beautiful of all the lakes. In most parts the dense forest grows down to the water's edge, the water is as clear as crystal, but there is not a native or living soul for miles. Why abandon such a paradise? Stop! not so fast: I must not soliloquise; I am writing, or trying to write, from a scien-

tific point of view. The natives told me of an eruption that took place some fifty years ago, with even more disastrous results than the one that took place last year. The scene of the eruption was an island in the middle of Lake Rotorua, and, from the description the natives gave me, was 200 acres in extent. An eruption took place and the island sank below the surface of the water, and hundreds of natives lost their lives. As a proof of their statement, the old (hangis) fireplaces, and pieces of wood, trees, &c., are to be seen now from a canoe. After the above eruption the natives deserted the lake altogether. I then searched for hot springs, but only found a small one on the shore of one of the arms called Whangaroa. The spring itself is nothing to look at, being only a small hole in the sand, and the water about 70° ; the water was of the same class as that at Waitangi. One of the most peculiar features of Rotorua is the fact that though Rotorua drains about 30,000 acres there is no visible outlet, showing that the water must be carried off by one or numerous subterranean passages; and, bearing out my idea, on searching at the head of a small stream across the watershed, between Rotorua and the Tarawera River, I found a crevice in the rock about 6 feet by 2 feet, with the water spurting out a distance of 6 or 8 feet without touching the ground; and, as another proof, the natives tell of whirlpools that are to be seen in the lake occasionally; one once carried a canoe away and was never seen again. After finishing my survey I decided to go through to Tarawera, by crossing the Harbhara Range, a range 2,500 feet in height. I ascended Harbhara by the Taharo really that I might see the sulphur springs, but found nearly all the springs had become extinct; the old sulphur patches, which the natives had described to me as boiling holes, were quite dead; not so much as a steam jet remained. We found two or three that the natives had not seen before, but they were only steam holes, and not boiling very furiously; the natives say that this place was like Tikitere some years ago, but is fast becoming extinct. After a rough climb we gained the summit of Harbhara, and camped by a miniature lake called Kaiwhetu; next day descended to the Tarawera River, and called at

Te Onepu, some small springs on the bank of the river, but of very little consequence. Leaving here we ascended Wahanga, the seat of the recent eruptions, and following the range came to Ruawahia; from there we descended to Rotomahana. A great deal has been said and written about this wonderful hot lake, but I must say my impression was very much adverse to others that have written of this lake. The water was of a muddy colour and covered with a scum; it also had a very offensive smell. Of course the terraces are the centre of attraction here, but I will not attempt to describe what abler pens than mine have failed to do before. After leaving here we passed through some rough country, till we got to a small stream of hot water running out of the Pairoa Range. Here again we camped, and I had a good look at the springs, which are very numerous on either side of the range; the most remarkable was an alum spring, the water being of a milky colour. Leaving here we went to Orekorako, a native village on the bank of the Waikato River: the hot springs here again are very numerous, but after seeing Whakarewarewa and Tikitere these are looked upon with very little interest. The only interesting place in Orekorako is the alum caves, which, though not very long, are very beautiful. On entering the principal one I had to descend by some natural steps. The interior was a small basin of the clearest water with a bluish tinge, stalactites of alum hanging all round the walls and top of the cave. From here I followed the Waikato River, passing Wairaki, another field of hot springs, but nothing of particular interest called my attention till I came to Te Harapiti, the largest boiling hole I had seen: this was of boiling mud, distinctly to be heard half a mile away. After following the Waikato for 8 or 10 miles we came to the township of Tapuaiharura, passing hot springs all along the way. Taupo is the largest lake in New Zealand, and is about 30 miles by 24 miles, and situated in about the middle of the North Island, having its outlet through the Waikato River. The township is situated on the north-eastern shore, at the point where the Waikato River flows out, and presents a grand view of the mountain of Tongariro; the cone-shaped top of Ngaruhoi can be distinctly

seen, with volumes of steam and smoke issuing from the immense crater at its summit, and supported on the left by the snow-capped heights of Ruapitu, towering up to the height of 9,000 feet. To the west can be seen the solitary mountain of Titirapenga, which overlooks the whole country to the coast; while on the east the Kaimanawa Range extends from Ruapitu round for 20 miles towards the township, forming quite a wall, and shutting out the fertile country of Patea from any communication with the lake. After staying to recruit my health, I again started towards Tokana, passing numerous settlements on the way, arriving at Tokana in the evening. Tokana is a small native village on the bank of a stream quite close to the lake, and, I should say, from about 800 to 1,000 natives occupy it. The springs here are very numerous, and seemed to be of many different classes, the banks in some of them being encrusted with salt. One bath here is very dangerous to bathe in from the fact that one day the water may be rather too cold to be comfortable, and the next day 180° ; many people have been scalded through jumping in before trying the temperature. Next day I went to see Rotoaira, a small lake about 2 miles from the settlement, at the foot of the mountain of Tongariro: hot springs are to be found, I believe, on the shore next to the mountain. Returning, I followed the coast to Ponkawa, an old mission station, where the Rev. Grace built his house some fifty years ago, but on the Maori war breaking out had to leave and go into the more settled districts. The ruins of the house are to be seen now. After looking for hot springs all along the shore, but not being successful, I returned to Tapuaharura, and from there to Auckland, after a very enjoyable trip.

FISH.

The fish of these lakes are not very numerous, and consist of Coura (a small crayfish), Kokopu (trout), Emuga (white hart), and a small fish called Toe Toe by the natives; the Coura are very plentiful in most of the lakes, though in Rotorua and Tanpe they are very scarce; the others are not very plentiful in any of the lakes. Besides these, the English carp and salmon

have been introduced: though I never saw any of the salmon, the carp are very plentiful, and, very strange to say, eels have never been caught in any of the lakes. (*Mr. Froude, in his "Oceana," mentions eels as being as thick as his thigh*).

I will just briefly mention the other springs in New Zealand. There is one at Tarawera, a place about 50 miles from Napier, but only a little muddy hole of no consequence. Another at White Island, in the Bay of Plenty—the island is composed principally of sulphur. Another at Ohiawai, close to the Bay of Islands, but is only a small spring of muddy water; then the Waiwera, about 30 miles from Auckland, the water springing out of the sand; then the springs of Te Aroha, which I never had the opportunity to visit; and then again at the Great Barrier Island, an island about 50 miles from Auckland. The springs here are well worth examining, they extend over about a mile of country, and are of two classes—one sulphur, and the other salt; the salt springs are by far the most wonderful, the water tasting like brine, and the temperature up to 145°. I think I have mentioned all the springs in New Zealand, and have tried to explain their positions and natures as well as limited space will allow.

Mr. R. ALTON desired to know if the Society had received detailed information from the Hydraulic Engineer concerning the newly discovered artesian well at Barcaldine?

The HON. SEC. regretted that no information had, as yet, been received from the Hydraulic Engineer. The proceedings then terminated.

SIXTH ORDINARY MEETING.

THIRD SESSION.

THE sixth ordinary monthly meeting of the third session of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of Friday, February 24, 1888, at 8 o'clock. Mr. W. H. Miskin occupied the chair.

After the minutes of the previous meeting had been read and confirmed, Mr. F. C. Bolton was elected, by ballot, a member of the Society.

After announcing the receipt of donation and reading a letter from the Société de Géographie de Marseille, acknowledging the receipt of copy of resolution passed at the meeting of this Society held in September last *re* the preservation of the native place-names in New Guinea, the HON. SECRETARY proceeded to read a paper entitled:—

Report of a Trip to the Western Part of the South Coast of British New Guinea.

By Capt. J. M. HENNESSY, F.R.G.S.A.

HAVING just returned from a trip to the western part of the south coast of British New Guinea, in the Papuan Gulf, I send you a short report of the same as an original contribution of geographical information for our most important Society, of which I have the honour to be a member.

Our first destination after leaving Yule Island was Vailala, or rather Mucilatshio Point, in the Gulf of Papua, and after a favourable run we anchored about 2 miles outside the mouth of the River Vailala (or Annis, Rev. J. Chalmers), in latitude $7^{\circ} 57'$ south, and longitude $145^{\circ} 26'$ east, and, with a view to taking the vessel into the river, sent in our boat to sound the bar. The boat returned with favourable reports, and also brought two of

the principal men from Peran, the village on the right bank of the river. They were most anxious that we should go in, of course with an eye to future benefits to themselves, and we therefore headed our vessel for the mouth. The passage was made successfully, the smallest water found being one and a-half fathoms (three-quarter ebb), until we were safely round the outer point, when the vessel grounded on a bank with 7 feet on it; there we remained till the water rose, when we hauled off to an anchorage in two and a-half fathoms (high water). The villagers crowded off in numbers to see the first vessel of that size (40 tons) which ever entered their river, and we found them to be a peaceful and jolly lot of fellows. Our next move was to go up this river and look about us, so having arranged with the great sorcerer, Anea, to aid the mate in looking after the vessel—such a proceeding being in all cases advisable, as then it becomes a matter of honour with them to see that the vessel is not injured—we employed guides for the trip. Next morning we left in the ship's boat, with our own interpreters and three guides, and proceeded up the river: our journey lasted till about 2 p.m., and extended over about 15 miles. The river is broad and deep, with only one shallow, and that at a sharp bend, with ample room at its side for navigation. The water averages 3 fathoms all the way up the creek, up which we turned to go to the village of Opa, where we were to camp that night. Arrived at the landing-place we disembarked, and then commenced such a journey that one such is ample for the most greedy globe-trotter. Mud, mud, mud; nothing but soft, slimy mud covered mostly all the way, with about 6 inches of water; this lasted for about $2\frac{1}{2}$ miles, when we arrived at Opa, and the rather miserable shelter offered us seemed welcome enough after our rough tramp. The people had never before seen a white man, and they looked very scared, and had their bows and arrows ready stacked at easy distances from the house; they however soon returned our advances, and we became very friendly. Most curious were they to see under our clothes, and when we did bare our chests for them, many were the exclamations of surprise, and many came and felt us, evidently

thinking that our white skin was not tangible. They are a well-built lot of men, their chest measurements averaging $34\frac{1}{2}$ inches; they however are not tall—average 5 feet 4 inches.

We inquired if there was any hill in the neighbourhood, as we wanted to see the surrounding country; they told us there was. This we set out for, and after about an hour's walk we came to a slight ascent, and when we reached the top (90 feet) they told us this was the hill. Of course we could see nothing from this height, and we had our walk for nothing. Having no time nor much desire to remain longer in this sloppy country, we again set out, and descended the river to the ship. Our next journey was to be to the west of the large river delta district, so the following day we set out along the beach, and that night camped at Orokolo, which is the name of a large district containing many villages. We were received into an elamo, or bachelors' quarters, a sort of club-house, where only men are allowed, and where each two or three have their own fireplaces, shelves, &c., and where they almost entirely live. Those of them who are married have their own houses besides for their wives, but I think the latter are not much troubled with their lords' company. The wives even bring their husbands' food to these elamos to them. This tribe we found to be very numerous, and it was here I saw the first woman dressed in our common mother's costume, viz. :—palm leaves, or, rather, a palm leaf.

Next morning we set out for the first river, the Arere, and, arrived there, we camped for a short while, waiting for a canoe which we had previously sent on for to take us the remainder of our journey. In a short time our party raised a shout, and soon a large canoe—just a tree hollowed out—manned by fourteen cannibals, approached us. Having satisfied their curiosity by staring at and feeling us, they took us on board, and away we went. Our destination was Maipua, the cannibal village, and this was to be reached only by traversing two rivers and innumerable large creeks. We crossed the Arere, which is at its mouth a grand river, and showing soundings of 3 fathoms a mile in from the entrance. Leaving this river by a large creek, we paddled

through a district completely interwoven with innumerable creeks, large and small, and, at length, into another large river, the Aivai; this river, like the Arere, carries 3 fathoms of water, and is broad (about three-quarters of a mile) at its mouth. Leaving this river by another large creek, we proceeded through country similar to that previously traversed until we at length turned into the Maipua Creek, and in a short time we landed at the village of Maipua. This village, which is very large, is built on both sides of this large creek, and over this are two well-constructed bridges for communication. The elamos here are immense as well as numerous; the one where we stopped we estimated to be 75 feet high at its entrance. This elamo (the chief Epai's) was a very good average specimen of all the rest, and the interior was very striking. It is divided into eight partitions, with a path down the middle to the dwelling of the gods, which is at the extreme lower end. Between each partition are hung the dancing masks, or kaiva kukus, which are grotesque imitations of the features of men and animals, and which are worn over the head. Some of them are themselves 8 feet high, so that when a 6-foot man puts on one of these he looks quite a sight. On rows, on each partition, are arranged in lines the skulls of the victims whom they have eaten, the most of the skulls being beautifully carved. There were in this elamo alone over 250 skulls, and in every other elamo there were similar numbers in proportion to their size; below these human skulls were ranged in profusion skulls of alligators, pigs, dogs, &c., all of which animals these people eat. On our being pointed out our temporary resting division in the elamo, it was immediately surrounded by over 200 of these cannibals, and by their vociferations and gesticulations it was easy to imagine that they were remarking as to which of us was the best to eat, and as to our condition, but of course that was but surmise. There seemed to be some difficulty between our Peran carriers and these Maipuans, and they fell to arguing in no measured tones, as it is their custom in ordinary conversation to shout as though their hearer were half-a-

mile away. These Maipuan's have a very bad name for miles round on account of their man-eating propensities, and our carriers were rather frightened at the enormous display of skulls of all sorts. However, after our tiding over the trouble, and soothing our friends by promises of all being right, things righted themselves, and we were favoured with several kaiva kuku's performances, who seemed to think that these grotesque fabrications would scare us: they certainly amused us at first, and on our giving the first two or three some tobacco, their number increased so much as to become stale, and a nuisance. Leaving the elamo we strolled through the village, if walking along on rough, round logs may be styled strolling. The village is built in a simple swamp, and it becomes a necessity for them to have something solid to walk on, so they have laid down several miles of public street, six or eight logs wide, to serve as a dry footpath. The houses are built mostly close to this street, and the space between it and the house is filled in with the bark of the sago, which tree grows here in abundance, it being a swamp-dweller. In close proximity to each house is to be seen the usual refuse of a sago village, viz.: the residue of the raw pith of the tree after being worked, and this stuff is allowed to remain and increase in size from day to day, and, as might be expected, becomes fermented and throws off the most offensive sour odour. Between the effluvia from the swamps and from the sago refuse we inhaled, I suspect, enough fever germs to last us a long time, yet the people themselves are a strong, healthy race, notwithstanding their fetid surroundings. As to the women of the tribe, they have my pity; they look anything but feminine; they are simply beasts of burden, and may be seen hard at work from early daylight till after dark, making sago, &c.; their dress, consisting of a few fibres of grass worn in front, is certainly not oppressive by reason of its weight. As at Orokolo, they do not associate with the men, and live almost entirely apart. The men have mostly two or three wives, so called, as they live in one house, with a separate partition for each wife. On our return to the elamo, we found that it would

not be convenient or comfortable having our food in the midst of such a crowd of noisy beings, so we left the elamo for the chief Epai's private house. He obliged us by excluding the crowd, thus leaving us room to move our elbows. As is customary with all their race, a pig was killed and presented to us, but killed in such a way as to exclude the possibility of our eating any of it. It was actually drowned before our faces by four burly savages, and a good deal of trouble they had to effect their purpose. From observation afterwards we concluded that the reason of this method being resorted to was to save the blood of the animal, which they did by opening the throat carefully, and spooning out the blood with their cocoanut spoons; these cannibals, I suppose, have a peculiar thirst for blood of any sort. Just after our retiring to rest, and just as we were wooing the sleepy god, we were aroused by the most unearthly yells and drumming. We soon discovered whence the noise came. It was the people of our elamo performing a dance; the yells were most unearthly, and just as we would get composed for sleep after one we would be startled by another in a different key: then would follow loud chanting, gradually leading up in tone and volume to the grand climax, a yell, "a tutti," and grand flourish of that monotonous plague, the drum. This lasted all night till the first streaks of dawn, when, like every other demoniacal function, it was put an end to by the light of day. The rest we obtained was negative. We were anxious to push on to other places farther afield, but circumstances did not allow any more progress than a visit to the river Panaroa, which, with the Avei, and Arere, is one of the mouths of a very large river, the Wickham. There are two other mouths farther west, but we had no time to visit them. The Panaroa, which we reached by means of the Maipua Creek, distance $2\frac{1}{2}$ miles, is another grand-looking, broad stream, carrying 6, 5, or 4 fathoms, 2 or 3 miles in from its entrance; its mouth forms a large and secure harbour, which we named Blomfield Harbour, and is available as a port of refuge or trade (if any). From its centre may be seen the Aird, Charleton, Gile, and Alexander

Hills, which hills are found on the German chart, by Frederick-sin, under that name, but which appear in Bevan's paper as Stanhope Range. The German chart was published in 1885. Also is seen the Sir Arthur Gordon Range, and Chester Hill, which name also suffered a change of nomenclature at Bevan's hands; the range is called by him Mounts Brassey, Wynne, Barkly, McArthur, Ferguson, Paul, &c. Taking a plan by compass bearings of the harbour and surroundings, we left again for Maipua; there we began to pack up for the return journey to the Arere River, and after some little difficulty about providing a canoe for our carriers, we said good-bye to our cannibal friends, with many promises to return. They had asked us persistently to fire off our arms, so on leaving we complied with their request, and on the reports they all fell flat on the ground with fright. Going down the river our canoe crews wanted us to fire off our shot gun, so seeing a bird on a mud bank one of our party fired at it; the bird, only wounded, reached the water, and all our men jumped into the water, giving chase. The bird was secured, and they returned to where it was shot; and, finding large holes in the mud made by the shot, some of them cut sticks and poles and set them up in the mud to mark the place.

By routes similar to those traversed on coming up, we went down by creeks and rivers to the Arere, where we disembarked, paid off our watermen, and set out for Orokolo, where we slept that night. We had intended camping with a certain chief, Aponi, but darkness overtaking us en route we put up at the village before his, and we were scarcely made comfortable when he sent in to us to say he was very angry because we had not camped with him. We had promised to camp with him on going through before, and thus were we civilised people reproved for not keeping our word at whatever cost, and the savage was angry because the white man did not accept of his hospitality. Having started next morning we called at the angry chief's house, but he was not to be found; they told us he was angry and had gone out walking so that the devil of anger should not take complete

possession of him. That day we arrived back at the vessel, where we found all well and peaceful. Having completed the survey of this harbour, Anderson, from which a splendid view of the Searle Hills is obtained, we sailed out of the river—14 fathoms being our smallest water. On our return journey we visited Kerema, Karama, Motu Motu, Yule Island, and Boera. At Karama we met with the Port Moresby people of the Mobe tribe, who are there with their trading lakatois. They carry on an extensive annual trade with the western people with pottery, armlets, &c., for their great desiderata, sago and cocoanuts. It is also in the west that the huge trees which go to make their canoes, or “asis,” grow, so that while the sago is being made, &c., the Motuans are felling these trees and making new ships for themselves. This year they speak hopefully of a plentiful stock of sago, which piece of news, carried back by us, was received most eagerly and joyfully by their stay-at-home friends and relatives. These Motuans are the traders of the coast, and their voyages have brought about the spreading of a universal trading language, mostly Motuan, which is a great boon, as it is usual in New Guinea to find a new language in each new village. They are occasionally attacked by other tribes on the coast whilst voyaging, but the resenting of these affronts, perhaps not at the time, has been so sure and so effective that they may be said to be in these parts the “rulers of the sea.” Having visited their lakatois and received their reports, we continued our journey to Port Moresby. On our next visit to the west we hope to be able to devote more time to the finding of other mouths of this huge water supply, and it is in the range of possibility that their delta is only a part of that at the mouth of the Aird. Persons casually visiting this part might easily be led into the belief that they were finding many new rivers, as nearly the whole coast is indented with mouths large enough to be the only outlet of a large stream.

The CHAIRMAN, Mr. R. GAILEY, and the HON. SECRETARY referred to Captain Hennessy's paper in terms of praise, after which the proceedings terminated.

SEVENTH ORDINARY MEETING.

THIRD SESSION.

THE seventh ordinary monthly meeting of the third session of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of Wednesday, March 28, 1888, at 8 o'clock. Mr. R. Gailey occupied the chair.

After the minutes of the previous meeting had been read and confirmed, and the receipt of various donations announced, the HON. SECRETARY proceeded to read the following communication, which he had prepared for the Society:—

THE COMET.

Mr. President and Gentlemen,

It may interest you to know that the comet, which was last month discovered at the Cape of Good Hope, and reported by Kiel, now visible in our morning sky in an easterly direction, is past its perihelion and consequently it is now rapidly receding from the sun and the earth. From the apparent positions of the comet in my possession I have computed its orbit elements, and find that it reached its perihelion on the 19th of this month, at a distance of about 63,100,000 miles from the sun, and 88,500,000 miles from the earth. It crossed the plane of our orbit at an inclination of 44 deg. thereto, on the 17th of this month, moving along a curve in advance of, and in a direction similar to, that of the earth. Its post-perihelion rate of speed was about $2\frac{3}{4}$ millions of miles per day, and when first seen, on 22nd February, by our South African astronomers, it was distant from our earth about 93,000,000 miles. It is now moving northerly, and for the next few months it will be available for observation in the Northern Hemisphere.

J. P. THOMSON.

MARCH 22, 1888.

OCCULTATION OF THE PLANET VENUS BY THE MOON, MARCH 9, 1888.

Mr. President and Gentlemen,

It may also interest our members to know the particulars regarding the recent occultation of the planet Venus. The old proverb that "the early bird catches the worm" was clearly enough exemplified on the morning of the 10th instant, when a short time before sunrise the planet and the crescent moon were in close proximity to one another; the former close to and under the convex limb of the latter, which conditions presented

a phenomenon unique and beautiful beyond description. The disappearance of the planet took place about 17 hours 41 min., and the phenomenon then, and at its reappearance, was alike highly interesting to the astronomer and ordinary observer. At its reappearance, the intense brilliancy of the planet formed a remarkable contrast to the faint, dull illumination of the moon's crescent in full sunlight. The actual observation of an occultation of Venus at any other station on the earth's surface is a very rare occurrence, and my friend, Mr. John Tebbutt, F.R.A.S., of the private observatory, Windsor, New South Wales, in a recent private letter referring to the occurrence, says it is the only occultation of Venus which he has been privileged to witness during his experience of more than thirty years.

J. P. THOMSON.

MARCH 23, 1888.

The CHAIRMAN warmly thanked Mr. Thomson for placing upon record matters of so much interest to members, and importance to science.

The HON. SECRETARY read the following paper, entitled:—

New Ireland.

By DOUGLAS RANNIE, Esq.

MUCH attention has of late been directed to the acquisition of land and territory in what is known as the Western Pacific by different European Powers.

And now while I write, on this 28th day of July, 1887, and I see the highlands of New Ireland resolving themselves into the clouds and fading away in the far distance. I think that, if ever I return again to the civilised world, the few notes I intend making while cruising in the German Protectorate may not be altogether uninteresting to others. We arrived here on the 15th of May of this year, making this my third visit to this part of the Pacific. My first visit was in the year 1884, some time before the annexation of those islands by Germany. Again I cruised all round New Ireland in the s.s. "Corea," landing at different places on the coast, and afterwards steamed down through the Solomon Group. On this occasion my stay here has been rather prolonged, on account of calms and contrary currents. But on

the whole the prolonged stay has been of much interest as well as pleasure, not only to myself but to the others who accompany me. We have had the better opportunities of viewing the country, and studying the habits and customs of the natives.

German New Guinea I have not as yet had the pleasure of visiting. Then comes, as you sail to the eastward, New Britain. The only part of this great island that I have visited is that part whose shores are washed by the waves of St. George Channel. But I will come later on to the description of this part of New Britain.

Sailing from the south, the first glimpse you would get of New Ireland would be Cape St. George, a bold headland rising and towering over the sea what I calculate to be from 4,000 to 5,000 feet, but I had no means of ascertaining the exact height. The coast here runs due north to Cape Santa Maria, and then takes a north-westerly direction to North Point, in latitude $2^{\circ} 46'$ south, and longitude $150^{\circ} 33'$ east. Cape St. George, I should mention, is in latitude $4^{\circ} 51'$ south, longitude $135^{\circ} 48'$ east. Between Cape St. George and Cape Santa Maria is a place named Leeke Leek, where the unfortunate expedition under Marquis de Ray landed and tried to found a colony, but so miserably failed. No one would fancy that any man, with the slightest pretence to the possession of a small morsel of common sense, would ever have chosen such a spot for the establishment of a colony which had to support itself from the produce of the land. There is a sandy beach where boats may land, and a few acres—but very few—of level ground beyond the beach. Behind that, steep mountains rise almost perpendicular to thousands of feet in height, and are densely overgrown by a thick and impenetrable scrub. All now that remains of this ill-fated colony are the ruins which suggest a bygone civilisation, and the mounds which mark the graves of unfortunates not a few. I saw a few relics of the expedition when I was in New Britain, which at once brought into my mind as I gazed upon them the old Latin quotation "*Sic transit gloria mundi.*" In front of a trader's house were two cannon, intended at one time

for the defence of the new colony, but now so eaten away with rust that they who would be bold enough to fire them would be in more danger than those fired at. Another remnant of bygone pomp and grandeur was the flag and standard of the poor colony, all fringed with gold. There it was, all moth and worm-eaten, left to rot among the luxuriant evergreens and creepers that cling and clamber about a South Sea trader's house. Then last, but oh! not the least important of the relics I saw, was a beautiful altar, consecrated, blessed, and presented to the young colony by an archbishop on the continent. But who would imagine the use to which this blessed altar is put? Why, it is turned into a sideboard, and is stocked with whisky, rum, gin, and wines! And on the morning of the 5th of July I saw the good lady of the house stand by this holy altar, and with cunning hand she mixed a subtle drink from sundry bottles, with which she said she would reanimate the hearts of those who so heartily vociferated "Hail Columbia," "The Star-spangled Banner," and "Yankee Doodle," the day previous. But the history of this most unfortunate expedition is now a tale of the past, and so we will let it rest.

Leaving Leeke Leek behind, we proceed along a bold coast. The mountains spring from the water's edge, and are clothed to the very summit with most luxuriant vegetation, which seems to be of the nature of a thick scrub, but here and there you can see above the ordinary scrub the foliage of some large forest tree. Along this part of the coast and close to the water's edge at intervals of a few miles you will find native villages: each village consisting of from 200 to 500 souls. The natives inhabiting the villages on the coast are, on the whole, friendly. They willingly come down to boats going ashore from any vessel, and always bring what fruit and vegetables they, at the season, have for sale; they also bring down pigs and fowls, but not in any numbers. I may mention here that I have always found that pigs and fowls are to be bought in larger numbers on the smaller islands. On the large islands live stock will generally take to the bush, as the natives have no proper places to keep stock of that kind.

But on the smaller islands, where pigs and fowls cannot roam very far, they, as a rule, become comparatively tame, and are easily caught again. The New Irelanders, or New Irishmen and women, on the east side brought us for trade yams, pumpkins, cucumbers, pineapples, cocoanuts, and three other nuts, one resembling the chestnut, another the almond, and one very like the walnut. Two varieties of mangoes are very common, besides several very pleasant fruits, which, I believe, are peculiar to these islands. A few miles to the north of Cape Santa Maria the natives brought down coal for sale (this was when I was here in the s.s. "Corea," in January of this year); they said it could be had in large quantities. Since then I have spoken to several of the settlers in New Ireland and New Britain about it, but none of them seem to think that coal is indigenous to the country, and they affirm that no mineral is to be found in the country; but I am inclined to doubt them, as I have seen traces of iron myself, and in one part the natives brought me a great many specimens of prismatic quartz. I believe that in New Ireland and New Britain there is a very large field for geological research. But, returning to the natives about Capes St. George and Santa Maria—although the natives all along the coast, or "salt-water men" as they call themselves, appear to be friendly when you trade with them, yet they are treacherous, and are ready to break out into open hostilities at a moment's notice; they are also great thieves, and are very cunning. Between the villages all along the coast are what are generally termed the "bushmen's passages." Away up in the mountains and back in the interior there is a large population; they are all called "bushmen" by the natives along the coast. These bushmen come down to their passages periodically to trade with the coast or salt-water men, and also to get sea-water, which they use medicinally, and also for culinary purposes. The bushmen bring down weapons of war, trinkets, and charms, which they barter with the salt-water men for fish (both fresh and dried), also native money (small pieces of shell cut and bored, and strung on sinnet like beads). The bushmen are very warlike among

themselves, and, as they are more numerous than the salt-water tribes, the latter stand in great dread of them. Attacks made on white men are always blamed on the bushmen, although very few, if any, of these outrages are committed by them; but the poor bushman is the scapegoat who is made to carry the sins of his more guilty neighbour, the salt-water man. I have found this to be the case, not only here, but also in the New Hebrides and the Solomon Groups. In their intercourse with one another, the salt-water men give the bushmen a most frightful account of the white man; the white man is portrayed to the mind of the poor untutored bushman as a supernatural being, as a great white devil who goes about eating and living on the bodies of the black man. Thus the bushman is afraid to hold any intercourse with white men, while the wily salt-water man trades with the white man with impunity for tomahawks, knives, beads, pipes, and tobacco, which he afterwards retails at an enormous per centage of profit to the bushman, who lives on in blissful ignorance and full belief in the lies and fabrications of his neighbour from the coast. In the New Hebrides, and in some parts of the Solomons, this idea is wearing away, but not so, as yet, in the south end of New Ireland. Bushmen have gone to Queensland from many islands in the other groups, and returned, and have then enlightened the others. But few bushmen have gone to Queensland from New Ireland, there always having been a plentiful supply of salt-water men ready to go when a labour vessel arrived. But I remember, at the beginning of this year, I had two bushmen (return labourers) to land near Cape Santa Maria; we arrived with our boats at their passage, which was a narrow, little sandy bay, formed by a beautiful, clear stream of fresh water, which came running down through a gorge in the mountains. We could see no one there, and we all sat in the boats enraptured by the beautiful scene around us. The mountains towered above us, clothed in all their tropical grandeur; palm trees and graceful bamboos waved here and there; the little stream came dashing down rocks and rippling over stones, to glide over a coral sand and join forever the

waters of the sea; the air was dense with the perfume of the blossoms on many a flowering tree; no sound was heard, save the quiet wash of the waves on the beach, the ripple of the stream, and occasionally the startled cry of a passing parrot, as it fled and hid its brilliant plumage in the just as brilliant foliage of the trees. I say we sat in silence and admired this scene of quiet grandeur and beauty, as, who would not? Suddenly a head appeared through the leaves: then a native walked out with spear and club, took a look at us for a few seconds, and was about to spring back again into the scrub, when the two natives in our boats called him by name. He came nearer, had a better view, and shouted a few words; then such a demoniac yell resounded on the air which a minute ago had been so still, that one would imagine that they had been transported in a second of time to that region beyond the River Styx, where the screams of the tortured lost is as music to the demon gods. Each man seized his rifle, for we were surrounded by yelling savages in hundreds, all brandishing spears and clubs. But we had nothing to fear; for these poor bushmen were only shouting for joy, and to welcome back their comrades, whom they thought had long ere now been cooked, eaten, and digested by the ravenous white man. Their astonishment was great; their former notions of the white man were entirely upset; and when they saw the wealth of tomahawks, knives, beads, paint, and other things that their long-lost comrades brought back from the whiteman's country, they could have fallen down and worshipped us. Many wished, there and then to come away with us, but that, of course, I would not sanction. After making a few presents we left them, with kindly feelings on both sides. But what would have been our fate had we not had those two natives in the boat? I believe we would have fallen to a man, speared by an invisible foe.

The only weapons used by the natives of New Ireland are the spear, which is the most common; the sling, also common; the tomahawk; and the club. The iron blade of the tomahawk is of European manufacture, into which the natives fix a handle or shaft about $3\frac{1}{2}$ feet long. There are several

different styles of club: some heavy and blunt, some with edges made to cut like a sword, others with a round ball at the top from which protrudes sharp spikes, a wound on the head from one of which would penetrate the brain. The sling can be used with great effect, and the natives throw at a mark 400 or 500 yards off with great precision; the stones going with great force. I have been fired at on more than one occasion by the natives with slings, and although a considerable distance away, I have heard the stones whistling past me like rifle bullets; one stone struck the boat I was in once, and took the piece right out of the boat. Talking about slings reminds me that when I was down in the Kaan Group, three years ago, a native was brought to me to be doctored: he had been shot in the forehead with the stone from a sling. The native "medicine man" extracted the stone, and in doing so cut a piece right out the fore part of the skull, leaving a hole as large as would admit a tennis ball, and quite exposing the brain. The "medicine man" then took part of the wing of a flying fox, and tied that tightly across the hole in the man's forehead, excluding the air. After such an operation, I naturally thought the man would die in a few days: but what was my astonishment, when in the Kaan Group again last May, about three years after the event, to see this identical man with the hole in his forehead. He still wore the flying-fox skin in lieu of his own, and he was quite pleased to raise his borrowed skin and show me the workings of his brain. There is no doubt that some of the native doctors possess a considerable amount of skill in surgery. I remember in the New Hebrides, a native had his skull fractured by a blow from the butt-end of a rifle; the top of the skull was driven right in on the brain. The "medicine man" set to work; he first laid the scalp right back; then with a piece of bottle-glass he scraped the fractured part of the skull so thin, that the pressure of the brain upward forced the fractured bone back to its former place; he then replaced the scalp, and the man recovered.

But to return to New Ireland again: I have described the weapons in use. In describing a country, its people, and their

customs, one of the principal features brought under our notice is the costumes of its people. Well, as far as I can state, I never saw any costume on a man at all, unless he was being landed from a Queensland or Fiji vessel. A New Irishman in full dress wears nothing more than nature has adorned him with; unless it be a few daubs of paint or lime administered here and there about his face and body by some local artist. The most fashionable style in vogue among them is for the artist to wet the palm of his hand, then dip it in lime and slap the gentleman to be operated upon all over his body, leaving the imprint of the artist's hand and five fingers, which gives the local swell quite a fascinating and handsome appearance. Add to this a mixture of lime, betel-nut spittings, and cocoanut oil, rubbed into the hair, which gives it a fine brick red colour, and is trained in thin corkscrew-like curls to fall over the forehead and down their cheeks and neck. Then their teeth are as black as ebony, from the practice of chewing betel-nut. Picture to yourself a figure thus made up, and you will have in your mind's eye a fair representation of the dandy of New Ireland; and instead of the tender "little sprig of shillelagh" which the "Ould" Irishman uses to emphasise the point of his argument with his younger brother in New Ireland prefers the longer one with an axe blade at the end of it. The New Irishman fancies it carries more conviction with it. It is certainly more decisive. The women have more pretence to decency than the men; and yet their wardrobe is very scant. No doubt they have an unlimited supply, but they do not care about putting on too much at a time. The forest and the bush are their robe room, and their garments hang from every tree. They dress just as did our mother Eve before that wicked old serpent came whispering in her ear. Fathers and husbands here are not cajoled by daughters and wives to buy them new dresses and headgear, for they can supply themselves every morning with new costumes, and decorate their hair at the nearest flowering tree. Some of the young women are very good looking, and some are pretty; but, like all these races, they soon mature, and as they grow old they become revoltingly ugly. I

have been told by the natives themselves that there is no marrying nor giving in marriage. The woman just follows her own sweet will, and lives with one man after another. But while she does live with one man, she is that man's slave in every way as long as she continues to stay with him. She cooks his food and looks after his yam patch, going and weeding it daily. But then, when she likes she walks away and leaves him, and claims another lord and master elsewhere. In New Britain the case is quite different. There a man may have one or more wives. Their marriage laws are very stringent, and immediate death would be the result of any infringement. But in New Ireland the women have pretty much their own way. On the whole they are treated kindly by the men. I might here state a little incident that happened two weeks ago at Rahaloo, New Ireland, when I was ashore buying some supplies from the natives. We had two boats ashore, and I was superintending the trading with the natives. They were round our boats in large numbers, and everyone appeared in very good humour. When one of our boats pulled out from the shore, two women, thinking that we were recruiting, made a rush for the boat, sprang into the water, and swam after it. The boat-steerer beckoned them to go back, but they would not do so till a number of men jumped into the water after them and dragged them back. They were no sooner landed than the scene of peace was changed to one of war. Some of the men wished to kill the two women there and then, but one party of the men stood up for the women, and a fight ensued. Tomahawks and spears were brought into play, and the utmost excitement prevailed for some time. Every moment I expected to see both women killed by the tomahawks of their intending murderers. In my boat I had three Tanna men; their hands were on their rifles, and they felt tempted to jump out of the boat and take the part of the women. But we cannot interfere with native disputes, so I kept my men in check. A third party took part in the fray, and acted as peacemakers, and as they were the more numerous they managed to drag the contending parties away. Some were wounded, but none killed. The two poor

women were badly punished, both having to be assisted away by sympathising friends. Instances of this description, I believe, are the exception and not the rule in New Ireland; but, in other parts of the Pacific, the most barbarous customs prevail among the natives with regard to the women. I have more than once seen a woman killed for some paltry offence. In New Ireland the women are more quarrelsome than the men. Stand-up fights with fists and no gloves are very common among the dusky fair sex. It is a more harmless manner of settling disputes than that employed by their lords and masters. Both men and women are inveterate betel-nut chewers, and the children begin the filthy habit at a very tender age. The betel-nut, when dried, bears a strong resemblance to the nutmeg. With the betel-nut the natives chew the seed or fruit of a vine; of course, at the same time consuming a large quantity of lime. Tasting the betel-nut by itself it resembles alum, and draws the lips and tongue. The flavour of the vine is not unlike peppermint, but it is much hotter. When chewed all together the flavour is very peculiar. At first the mouth is very hot, but after it has been chewed for some time all sense and feeling in the mouth is deadened. The sense of taste, I believe, entirely goes. Natives returning from Queensland, and who, of course, have been deprived of their favourite luxury for over three years, when they begin the use of betel-nut again appear to be intoxicated or dazed. They get very dull, stupid, and sleepy, but this effect wears off in a few days. What effect the enormous quantities of lime they swallow has on the human system I leave doctors to explain. I can detect no deterioration in the physique of the betel-nut chewing tribes. It certainly gives a horrible effect to the expression of the face. It forms an enamel over the teeth black as ebony, and layer after layer is formed as the native grows in years. I believe that in countries further to the westward, where this practice is in vogue, that, after having chewed betel-nut, the chewer washes his teeth as after a meal. The effect of the betel-nut on the teeth is to prevent decay, and if the teeth are washed immediately after chewing the nut it renders them beautifully

white. It is remarkable that the practice of betel-nut chewing prevails all through the East Indies, and travelling eastward you find all the natives of these islands indulging in the habit, across New Guinea, New Britain, New Ireland, down through the Solomon Islands, and so on to the Santa Cruz Group, where it appears to have a sudden check. In the Torres Group, Banks and New Hebrides Groups, the practice is entirely unknown. Those groups lie a little to the south of Santa Cruz, and to the south-east of the Solomons. But, then, the natives of the south-easterly groups make up for their ignorance of betel-nut by indulging in a vice quite as strange to the natives of the westward as the betel-nut is to them, that is, the well-known intoxicating liquor of the South Seas called "khava," which, although it does not affect the brain, renders the limbs of the body quite powerless. As "khava" is unknown in this part of the Pacific, I will postpone any account of it for a future occasion. I might here mention that of late betel-nut has been introduced into Fiji by labour vessels for the use of Solomon Islanders working there. It has been found to grow well there, and now the habit of betel-nut chewing is growing rapidly among the Fijians as well as other islanders.

The dwelling-houses in New Ireland are of a very primitive kind, and I may say they are a sample of the houses all over the Islands. They are built with reeds and thatched with the leaves of a palm tree. They are only about five or six feet in height, and a man must stoop very low to enter. The only inlet for air and light, and outlet for smoke, is the door. So you will see there is much room for improvement. Their canoes, I must say, are works of art. They exhibit great care and patience in the building of their canoes, for they do build them—they are not dug out of the log of a tree. I have seen them with very rude tools, split a cocoanut tree into rough planks, and then, with a great amount of labour, they dress the planks and smooth them fine with an adze. They then lay it out flat to season, covering the plank with stones to keep it straight. After the planks have been properly seasoned they smooth them down with sandstone

or fine sand and a cocoanut husk. They then trim the plank to the proper shape and start building; the planks are fitted one into the other, holes bored in them, and then they are lashed together with sinnet made from cocoanut fibre and saturated in resin. When the canoe is fixed together, the natives set to work caulking it with fibre and pouring over that a hot pitch made from resin extracted from different trees and mixed with lime. When the canoe is finished it is a really beautiful model. I do not know and never could find out from the natives if they were in the habit of baptising their canoes with blood when they launch them. This custom I am aware is not uncommon among Solomon Islanders. I remember when at Simbo Island I saw a canoe just launched, splattered with blood, and with the ghastly, bleeding head of a woman fixed on the prow. Great shouting and rejoicing was kept up till they re-landed and feasted on the body of the poor murdered wretch.

The New Ireland canoe is made to hold from ten to thirty men. There are many smaller canoes, some of them dug out of trees, made to hold one, two, and five men; they all have outriggers to balance them in the water. A peculiar fact and very remarkable is that on nearly all the New Ireland canoes is a piece of carved work which, without imagination, closely resembles the emblematical harp of Ireland. In describing New Ireland one must embrace the neighbouring islands which lie from 20 to 30 miles off the coast of the mainland. The natives there all belong to New Ireland, and have crossed over from time to time. They keep up regular intercourse with one another, and those on the islands generally speak the same language as their neighbours opposite on the mainland. There are three groups of islands off the coast; I can only give a hasty description of them, although I am very intimate with them, having visited them in all three times, and on one occasion spent some time among them. The first is the Kaan Group consisting of four islands; two of these being thickly populated. The natives are said to be very treacherous, and I believe they are. They all go about heavily armed, and they fight a good deal among themselves. I remem-

ber on one occasion when I was ashore there the natives came down in a large crowd, and one old chief laid a basket he was carrying on the stern sheets of my boat. Noticing blood in a thin, tiny stream trickling along the stern sheets from the basket, I looked into it, when, to my disgust, I saw the heads of three men this old savage had chopped off. I had that basket removed in double-quick time. The hoary-headed old heathen was quite amused at my expressions of disgust.

The Gerrit Denys Group embraces four islands with a population I would estimate at 20,000. On the largest island of the group (named Nalam by the natives) is a most abundant supply of fresh water. All round the island you will find fresh water streams and springs. This island is so picturesque that the scenery is far beyond description. On the whole, I believe the natives are peacefully inclined. I have gone about a good deal with them in the bush shooting, and I have always been well received whenever I chanced to meet any of them. But a trader in New Ireland, however, told me that he went there with the intention of opening up a trading station; he had four men with him. On the first night one man was missed and the others went in search of him. They found the remains of him lying beside a fire still smouldering, where he had been cooked and partly eaten. They then started in pursuit; but one man, eager for revenge, got a long way ahead of his friends, and his remains were shortly afterwards found cooked and served up in the same manner as the first one. The trader then returned to New Ireland with his two remaining men, and no one has since attempted to settle down in the Gerrit Denys Group.

Cannibalism is a universal practice all over these islands, as well as in the Solomon and New Hebrides Groups. All the natives will deny the fact on behalf of their own island, but will tell you that the natives of the neighbouring island, whichever it may be, are cannibals. But it is a well-known fact that they are all more or less cannibals; I have myself seen human bodies roasting on the fires in the New Hebrides. The traders on the north end of New Ireland tell me that feasts on human flesh are of daily occurrence there, and the natives make no secret of it.

The largest island in the Gerrit Denys Group, as I mentioned, is Nalam. There is no particularly good anchorage in the whole group. I took soundings all round Nalam, and the best anchorage we found was in a bay on the south-west side, where we got bottom at 23 fathoms at about 100 yards from the shore. In the north-west corner of this bay a fine stream of fresh water runs into the sea, and ships desiring to water here can send their boats right into the fresh water and bale it over the side into the boat. Large quantities of mullet can always be caught about the mouth of this stream. The sea beach here is composed of large smooth round stones of blue metal. The other three islands of this group are small, and are named on the charts San Antonio, San Joseph, and San Francisco.

The last islands to be mentioned on this side of New Ireland are Fisher and Gardner Islands, both situated close together, and about 30 miles to the N.W. of the Gerrit Denys Group. On my first visit to Fisher Island I found the natives very wild and unfriendly. They would not allow our boats to approach their coasts, and when we did get within range of them they saluted us with stones thrown from slings and with spears. After much difficulty we effected a landing. We bought a few little things from the natives, and on our departure we got a few more stones slung at us. My next visit to Fisher Island was at the beginning of this year when I was landing a number of return islanders from Queensland. My reception then was very different from the one I received three years ago. We were welcomed with every demonstration of delight. One of the men whom we landed was a man of some distinction among them, as he ordered them about immediately he got on shore. He made them bring a quantity of yam, taro, bananas, and cocoanuts, with which they filled my boat, and he also presented me with a pig and two fowls. But he would not allow the natives to take payment for the vegetables they put in the boat; yet he did not object himself to a present of tobacco and a few clay pipes. They are superior in their habits to their neighbours in the Gerrit Denys Group, or those on the mainland, as one can distinguish at once in the

build of their houses, which are much larger than any others in these parts. The ground about their houses is always tastefully laid out as a flower garden; they take great care and are deservedly proud of their gardens, where you will see many variegated plants, besides crotons of several varieties, and flowers of many hues and perfumes. They are also very expert carvers in wood. The pillars in their taboo houses are all wonderfully carved, and in these taboo houses are masks and carvings done with great skill and neatness, representing men, animals, and birds, both real and imaginary. Some of these carvings represent the spirits they call "devil-devils," whom they fear and appease with gifts, but do not worship with reverence. I got two of these demon-gods from them. One represents the spirit which presides over their agricultural affairs, as they, in their broken English, explained was the "devil-devil belong yam and taro." The other was the evil spirit who haunts the sea; his influence extends over the wind and the waves, besides the fish in the sea. The natives told me he was the "devil-devil belong salt water." He is not unlike the figure of Old Neptune our sailors sometimes make to scare greenhorns when "crossing the line."

What I say of Fisher Island may well be said of Gardner Island also. The people and their habits and customs are just the same. Both islands are densely wooded, and rise to a height of from 1,000 to 1,500 feet. Those, then, are the islands on the east coast of New Ireland. I have not mentioned St. John Island, but it lies south of Kaan Group and away to the south-east of New Ireland. It is very similar to Kaan Island with regard to the natives; they are supposed to be wild and treacherous. I only visited the island once, but did not notice anything remarkable about the natives. The island is about 1,000 feet high, very thickly wooded, and has more than one good watering place. The island is divided by a narrow channel, which was supposed to exist by some, but denied by others; but I can vouch to the verity of the channel being there, because I have passed through it and taken soundings. The channel is narrow, and a very swift current or tide runs through it, but yet there is

water enough for any vessel to pass through. Returning again to the mainland, I had got the length of Cape Santa Maria, and the district lying for a few miles to the north of that, named Rabaloo. The mountain peaks above Cape Santa Maria are the highest in New Ireland, rising to a height of 7,000 or 8,000 feet. From Cape Santa Maria the mountain range gradually slopes away in a north-westerly direction for many miles: then comes a district named Coblaman. This is flat country, with fine black soil. The whole of the coast-line here is lined with cocoanut groves, and extends to the Staffen Straits and down the other side of the island. From Coblaman to Noosa, in the Staffen Straits, is a stretch of 40 or 50 miles, perhaps more. There are several white men and Malays stationed along here, engaged in the copra trade. The only drawback here is want of running water. The country might be adaptable for tropical agriculture. This is the most likely place in New Ireland for the settlement of a small colony, and had the Marquis de Ray expedition chosen this place instead of Leeke Leek, they might have shared a different fate. The natives here have murdered several white men, but the present settlers say that the fault lay with the white men themselves. In one instance, for the theft of an axe from a trading station, the trader burned down the taboo house of the tribe, that is, the house which they hold sacred, and in which they keep charms and relics, and perform many of their strange superstitious rites. The natural result was that the excited natives burned the trader's house in retaliation, and, while trying to make his escape from the burning house, the trader fell a victim to the spears of the natives.

I am told by the principal trader here that once a year the natives assemble from many parts of the island in thousands and engage in a battle which lasts for several days. A few are killed, and the others return to their homes, and look forward to the fight of next year, while they recount to one another the deeds of valour they individually have performed. It again strikes me there must be some vein of sympathy 'twixt the Ould Irishman and the New Irishman; witness this annual meeting,

and remember far-famed Donnybrook. A strange fact I have particularly noticed in that part of New Britain I have visited, and in all New Ireland and neighbouring islands, the bow and arrow is unknown. The bow and arrow is not met with till you get to Sir Charles Hardie and Green Islands, 53 miles south-east of St. John's Island, and then you will find them varying in size and shape in all the islands as you travel eastward.

At Noosa, in the Staffen Straits, there have just been established two large trading stations. One is a branch of the German New Guinea Co.; the other belongs to a private firm. Staffen Strait is studded by a number of little islands, but the passage through is quite clear, and no danger should be anticipated by any vessel wishing to use it. Having cleared the Straits we proceed down the west coast of New Ireland towards St. George Channel. The natives along this coast appear to have had less communication with the white men than those on the other side. I went ashore in several places and tried to communicate with them, but they appeared to be very wild and refused to come near. As we got further down the coast and approached St. George Channel, we began to see signs of civilisation. Numbers of canoes came out to the ship, the natives in them wearing a little piece of calico round their waist, and asking us to barter calico for the produce they had for sale. The cause of this approach to decency is the settlement of several Fiji missionaries along the coast, who have really done a considerable amount of good. Another thing worthy of notice, and due to the Fiji missionaries, is the absence of weapons of war among the natives. From the natives here I got several little figures, representing men and women, carved out of stone resembling sandstone. They are said to be made by the bushmen, but for what purpose I could never make out, as the statements made to me by the natives were very conflicting. Some said they were play-things for children, others that they were devil-devils, and others said they were made for dancing in front of.

Time at present will not allow me to enter so particularly as I would like into all the interesting details of a visit to this part of

the Pacific. What a world of interest to a naturalist! The mammalia is represented by mice, rats, pigs, and, I believe, dingoes, from native accounts. Of birds there is not such a variety as one would expect, but of fishes, reptiles, and insects there are great varieties. Shells from both salt and fresh water, and land shells, are found in abundance. Across the channel, in New Britain, the cassowary and wallaby are to be found, but in New Ireland they are unknown. Particular note should be taken by mariners of the currents, which run with great power on this side of New Ireland and up and down St. George Channel. The currents are very erratic, according to statements made by settlers, and no reliance can be put on the current running in a particular direction at any particular season of the year.

I cannot here enter fully into my visit to New Britain, but I may just state that on the 30th of last month we anchored in Blanche Bay, New Britain. Here I visited an island just lately thrown up by volcanic action, with hot springs, both fresh and salt. On the 4th of July I had the pleasure of attending the first reception held by the American Consul in the German Protectorate. At Matupi, Blanche Bay, there is a large trading station belonging to Messrs. HERNSHEIM & Co. They have started grazing cattle here and appear to be doing very well. At Raalune, where the American Consul resides, Messrs. FARRELL & Co. have a cotton plantation, which is said to be a great success.

Opposite Raalune, between New Britain and New Ireland, is Duke of York Island, where is situated the headquarters in this part of the German New Guinea Trading Co., and also the residence of the Lieutenant-Governor. Having thanked the many friends we made ashore—German, American, and British—for their warm-hearted hospitality, we with some difficulty beat out of St. George Channel.

And now, as the sun goes down beyond the far-off purple hills, we wave our farewell to New Erin, and with a leading wind we sail away to meet new adventures and fresh scenes in the Solomon Islands.

The CHAIRMAN, MR. R. ABBOTT, and the HON. SECRETARY spoke in favour of the paper, after which the proceedings terminated.

EIGHTH ORDINARY MEETING.

THIRD SESSION.

THE eighth ordinary monthly meeting of the third session of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of Friday, April 27, 1888, at 8 o'clock. Mr. R. Gailey occupied the chair.

After the minutes of the previous meeting had been read and confirmed, Captain H. C. Everill, F.R.G.S., was elected, by ballot, corresponding member of the Society.

Captain Everill was introduced to the meeting, and returned thanks for his election.

The HON. SECRETARY then proceeded to read the following paper, entitled:—

Notes on New Guinea.

By E. G. EDELFELT, F.R.G.S.A., H.F.A.G.S. of Sweden, &c.

ON the 11th of last August, accompanied by the Rev. Fathers Couppè and Verjus, of the Mission of the Sacred Heart, Yule Island, we set out to explore the Mekeo district in the Mount Yule locality, the rev. gentlemen, if possible, to find suitable places for the extension of their mission work, and I for geographical discoveries.

We crossed Hall Sound in a canoe, and then proceeded some miles up the Oraï Creek, a branch of the Ethel River of no importance, traversing through a swampy mangrove scrub and Nipa palms, and when the tide recedes it leaves nothing but impure stagnant water, with an odour anything but pleasant to inhale.

From this creek we proceeded on foot through a good deal of swampy country, in places very fertile and well grassed,

to Inawabui village, about 8 miles from the coast. Midway between this village and Oraï Creek, we passed a market place, where the coast natives meet the country people and exchange goods. The coast inhabitants generally bring tobacco and cutlery, and such ornaments as the anomalous sea furnishes them with from time to time; for these they receive from the country natives fruit, vegetables, pigs, and feather ornaments. These interchanges take place once a week, always on the best of friendly terms.

Inawabui consists of seventy-eight houses, as usual built on piles, and some of them very substantial buildings, with a population of about 400 people, that is taking about five occupants to each house; this I have found to be about the average, so far as I have seen, of New Guinea. The people are very kind; they possess a keen commercial ability, and are, to my idea, rather Israelitish in their dealings with Europeans; but, be this as it may, they appear to be very industrious, and grow more bananas and vegetables than I have seen in any other part of New Guinea. When I asked the reason for this they informed me they did so in order to be able to trade with the coast natives, on whom they solely depend for European manufactured articles, principally cutlery, and, I am sorry to say, tobacco.

From Inawabui we proceeded to Eboa, a village about 7 miles north-west from the first-mentioned place; this village has ninety-six houses, rather dilapidated by age, and a population of about 500 people, and are friendly-disposed towards foreigners; that is, to judge from their willingness in supplying us with food in abundance, without in any way being asked for it. This village I visited in 1884, but came to it by a different route. We slept in the chief's house for one night. H.R.H. was in mourning for one of his wives, and it appears a custom prevails that for a certain time the mourners must not appear too much in public; consequently we had only the pleasure of conversing with him at a distance—that is, he had one end of the house and we the other. However this dusky sovereign took his nocturnal wanderings over the house while we slept, and inspected such of our luggage

as came within his reach without disturbing us, and appropriated a good deal of Father Couppé's tobacco; but still I admired his frankness, for in the morning he admitted the theft, and gave a self-satisfied laugh for his luck in getting tobacco on the cheap. We could not very well afford to be on unfriendly terms with him, as we wanted some of his people to take us to the next village, so we passed the matter over quietly.

On our way to this village we passed through beautiful alluvial country, with splendid fertile soil, admirably suited for agricultural or pastoral purposes; with numerous native plantations in a flourishing condition.

From Eboa we travelled north a few degrees east to Bebeo, in latitude $8^{\circ} 24'$ south, and longitude $145^{\circ} 38' 30''$ east, a village I should think of about twelve years standing, that is, to judge from the age of the cocoanut palms, which were planted, the natives informed me, at the time the village was established. As we were the first Europeans that had ever visited this village, the people appeared a little shy at first, but when the Inawabui and Eboa chiefs, who accompanied us, informed them that we came on friendly business, they soon gathered round us and received a few presents, which placed us at once on a friendly footing with them, and food was brought in abundance for our party. The village has forty fast-decaying houses with about 200 inhabitants, who seem to be of a quiet, peaceful disposition. We informed them what had brought us into their district, viz.: to ascend Mount Yule, or Kobia, as they call it; of course this they could not understand our reason for, but they told us the mountain was not far from their village. Leaving this village we travelled about 2 miles north-by-west, and struck a branch of the St. Joseph River, called by the natives Hamahama, in latitude $8^{\circ} 21' 30''$ south, and longitude $146^{\circ} 38'$ east. Where we crossed was about 3 feet of water and the current very strong, and the bed consisting of slate and large pebbles. At this particular place the banks are low and the river wide; in fact here are several small branches which, I suppose, as they traverse towards the sea, condense into one main stream, viz.:

the St. Joseph River.* To the right, about 5 miles off, we could see Mount Yule, its summit crowned with heavy clouds, which made it appear more mysterious to our sight, and within us created a stronger desire to investigate the valuable treasure of flora and fauna which undoubtedly must be nursed on this beautiful mountain, not to mention the great interest the people would be who inhabit the slopes of the mountain.

We now steered in a south-westerly direction, and several times crossed the river, and in places through a tremendously strong current which took us a long way out of our course, not to mention the danger to life and baggage; and to make matters worse it was raining very hard. However, at 4 p.m., on the 15th of August, we safely reached Rarai Village. On entering there was a general exclamation of surprise amongst the village people, the women and children, and many of the men, hiding themselves in the houses, peeping through cracks and crevices. Our party took us to the chief's so-called reception house. Even this old warrior savage was afraid to come to us for a long time, until the chiefs who accompanied us assured him that we came to his village only as peaceable people, and wished to establish friendly relations with him. He then approached us like a frightened child, trembling as in a fit of ague. However, after he had embraced and rubbed noses with us three Europeans his fears were set at rest. He then made an oration to the people that we were his friends, and that we should stay with him a few days.

After this ordeal was gone through, men, women, and children came out from their hiding-places and had a good look at us. As we were changing our wet clothes for *other wet garments*, it gave them an opportunity to examine our white skin, which they did very closely. This soon brought us on friendly terms with them all, and the women soon got busy preparing food for us—always a good indication that they have confidence in their visitors.

* At the time this was written there was an intermediate part of a few miles of the river not visited by me, but has since been traversed, in canoe, by the Rev. Father Verjus and Mr. Cameron; and Father Verjus has kindly supplied me with that portion, from which it can be seen that there are really no branches.

Fathers Couppè and Verjus went to sleep in their wet clothes. This, however, I did not venture to do, but sat up during the early part of the night, alongside the fire, to dry mine. The old cannibal chief seemed much troubled over my not going to rest, and several times asked me to retire. At last he came to the conclusion that I must be afraid, and he most earnestly assured me that they should not kill us nor steal our clothes, which were placed around the fire; and said that he would sleep with us that no harm should come to us. When I reassured him of our confidence in him and his people he appeared pleased. He then told the people to leave the house; and he fixed his hammock near the fire and went to sleep, leaving me to follow when I should so desire.

Rarai is situated on the western bank of the St. Joseph River, in latitude $8^{\circ} 22'$ south, and longitude $146^{\circ} 33'$ east, and consists of three villages, about a half-a-mile apart. They contain in all 250 houses, as usual, built on piles, but rather poor structures; and this is the only district I have seen in New Guinea where grass is allowed to grow uninterfered with in the streets. The population is about 1,250 people; each village having its own chief, but Baura, our entertainer, is the most influential. The old chief—nearly sixty years old, I should think—seemed to have a great influence over his people; every little order given by him was promptly executed. Baura is certainly the most comical personage I have met in New Guinea. A few weeks previous to my visit to his village circumstances compelled me to take part in an expedition, despatched by the Hon. John Douglas, to punish some natives who had killed a London Missionary Society teacher and his child, and also dangerously wounded his wife, stationed at Motu Motu. The work of this expedition had spread into the Mount Yule district, and old Baura looked upon me with a kind of suspicion. I had occasion to discharge my revolver, and aimed at an old cocoanut tree. Baura was looking on—in fact I could not move without him being at my heels—and, when I had finished, he inspected the tree, and solemnly informed me that it would most surely die. I could not persuade him to anything

contrary, so I paid for the tree, and made an agreement that it should henceforth belong to Britannia's people, and when any came they should have the cocoanuts.

The people throughout the Mekeo district, so far as I have seen, are nearly of a chocolate colour, and many even of an olive hue, many with straight hair, and, with few exceptions, flat noses, prominent cheek bones, big mouths, small chins rather inclined to recede; the septum of the nose is in some instances perforated, but not as a general rule, as amongst some Papuan tribes; the lobes of the ears are pierced but only with small holes, the eyes are mostly small, in some cases vicious, with fairly long eyelashes; the forehead is high and in some instances receding. The average stature is 5 feet 5 inches, thin, although there is every indication that plentiful food is cultivated throughout the district. Tattooing is very little practised by either sex, nor is there much ornamenting of other kinds except that a few village dandies are embellished with feathers and variegated plants, the women mostly wear short black dyed petticoats. One custom pleased me very much, that is the men and women seem to lead a more sociable life than elsewhere as they sleep together in one house. The women seemed to be somewhat of an equal standing with the men, and altogether the family life seemed to be nearer the European mode. Still, among these people, as other savages, they frequently ill-treat their women. During our stay at Rarai, one woman died from wounds received at the hands of her so-called lord and master; but, alas! wife beating and brutality to women are of daily occurrence even in civilised communities where we should expect all to live in peace and harmony with each other, and especially husband and wife. Otherwise the people are very uninteresting. So far as my time permitted me to investigate, I found no traces of any interesting ceremonies, images, or carvings of any kind. Their war implements are spears, stone clubs, and a clumsy shield with wickerwork, and nets for pig and kangaroo hunting.

We stayed in Rarai for two days and received some interesting information from the old chief about the district, such as the

names of twenty-three villages, and that there is one village on the top of Mount Yule. He pointed out the spot, and so far as I could judge it would be about 7,000 feet above sea level. Rarai is only 100 feet above sea level. Whether this is true or not, it certainly increased our desire to see the mountain wonders, but, unfortunately, when the day arrived for our departure we found that our Yule Island and Inawabui carriers had conspired with the Rarai people not to take us to Mount Yule, nor show us the track. This conspiracy we found working in all the villages where we sought for assistance, for the mere selfish purpose that the carriers wanted to get home to be present at some feasting and dancing.

We then decided to return to Bebeo, and to prevent our carriers doing any more mischief despatched them to their homes, intending if possible to work our way with the Bebeo people into some village in the hills, and from thence to the summit of the mountain.

On arriving at Bebeo we intimated to our baggage-bearers that they could set out for their homes, but, after some consultation amongst themselves, they informed us that they would remain until we returned with them, but that they would not go with us into the hills; thus we again found their conspiring spirit working evil designs, and we could get no assistance. But we were determined not to be defeated if possible, and we agreed that Father Couppé should remain in the village to guard our baggage, and Father Verjus and myself should retrace our steps to the St. Joseph River, and make for some village if practicable. Accordingly we set out, without a single native accompanying us, and reached the river, crossed it, and followed it up for some distance to a point where it appeared to branch off in two different directions. It was raining hard, and the river current was very strong, so we did not venture to cross it, but here we were at the very foot of Mount Yule, and only had the poor pleasure of ascending a hill 200 feet high. On the opposite river bank we saw some women getting water, but on seeing us they quickly disappeared into the bush, evidently making for their village, which I believe must be close by.

Thus, owing to the incessant raining every day (in fact we were barely dry from the time we left Yule Island to our return) and the refusal of the natives to assist us, my second attempt to ascend Mount Yule was a failure. My failure I lament very much; indeed, I would willingly give five years of my allotted existence were it my lot first to ascend Mount Yule. In my opinion the mountain can easily be ascended without a great expensive outfit, but it must be done independently of any assistance from the natives, except where interpreters and guides may be required. In botanical and zoological treasures the mountain beyond doubt must be rich, and a naturalist should be able to reap a rich harvest within a short time, that is, if the party went in the dry season. The usual dry season this year has been exceptionally wet, which prevented me making any collections of any kind; but I live in hopes, by some means or other, of paying a third visit to Mount Yule, and, I trust, also to succeed in accomplishing my object in ascending it.

But, on the whole, my Mount Yule trip was not altogether unsuccessful, for I claim to have discovered much agricultural and pastoral country, which in the near future will be of great value to the Government of British New Guinea. From Inawabui to the very foot of Mount Yule, and extending east and west for miles, is one extensive alluvial valley with plenty of grass and water, studded with a scanty and stunted eucalypti forest, with magnificent belts of scrub land easily cleared or useful as shelter for stock.

The fertility of the soil is unmistakable: the natives only cut down the trees and plant without in the least breaking up the ground. We also passed through one or two sago swamps, but these will not in any way interfere with agricultural or pastoral pursuits. Beyond doubt this district is the most fertile yet discovered in British New Guinea; true, it is also the most numerously populated. I dare not venture to say how much, but there are thousands upon thousands of acres of land unoccupied, and which should, I think, be utilised by the Government.

Through Father Verjus and some of our carriers, I tried to

explain to the inhabitants that probably before long many Britannia people would come and settle amongst them, but that they would have nothing to fear from foreign settlers, on the contrary would be protected against their native enemies. Whether the natives would take a friendly view of the matter, in the event of European settlement in this district, is indeed difficult to predict, but sooner or later—and the sooner the better—the natives must learn that the time has arrived for them to give up their cruel primitive customs and be ruled by civilised laws, and that the land must be utilised. It is indeed a pity to see so much beautiful land uncultivated, when it would make many happy homes for Europeans, that is after many battles with the climate, and many difficulties with the natives.

But the most interesting of all—that is to the commercial community—is my discovery of traces of gold in the St. Joseph River; and on the strength of my report on this subject, furnished to the Hon. John Douglas, Special High Commissioner for British New Guinea, a Mr. Cameron, a surveyor from New South Wales, visited the same locality last November, and found specks of gold a mile higher up from the spot where I discovered traces of the precious metal. Thus my preliminary explorations may ultimately lead to the discovery of a payable goldfield in the Mekeo district; and to hasten on the progress of New Guinea something of this kind is wanted. Without it New Guinea will, I am afraid, have no attraction for the capitalist or commercial man.

THE ST. JOSEPH RIVER.

At our Society's meeting in August, 1886, I had the honour to read a paper which dealt with the Hilda River, traversed by me in journeying from Maiva into the Mount Yule district. But on further examination I find that the Hilda River is a mere insignificant stream; and the river dealt with in my paper in 1886, was a new river now named the St. Joseph by the Catholic Fathers.

I crossed it about 5 miles from the coast, and by referring

to the map anyone can see how easy it was to mistake it for the Hilda River. How the St. Joseph River has escaped former coast explorers I cannot understand, as it is easily detected when following the mangrove coast in Hall Sound, where the river empties itself. This river was pointed out by the Catholic Fathers to Captain Pullen who surveyed Hall Sound in 1886. So I believe it is now placed on the recently published Marine Chart. It is in latitude $8^{\circ} 46'$ south, and $146^{\circ} 35'$ east. It has seven entrances, and for more than 20 miles up it has a depth of over 18 feet of water, and a velocity of about 3 miles an hour.

In my paper I stated the probability of its being the means of a highway into the interior, and that the river emanated from Mount Yule. This, I am happy to inform our Society, on my recent visit to Mount Yule, I ascertained to be a fact: and the natives also informed us that from Mount Yule spring two other rivers, one leading into Redscar Bay, and the other into the neighbourhood of Tokea, and I presume it is the Combes, about 4 miles north of the last-named place. I know that the natives from Motu Motu and Lese used to proceed up this river when fighting the hill tribes in the Mount Yule ranges, so, in my opinion, there can be no doubt that Combes River must be one of the three emanating from Mount Yule.

In conclusion, I may state that where I have given the latitude and longitude of places, I do not claim anything but approximate positions. I may also mention that the map accompanying this paper is partly traced from a sketch map prepared by the Rev. Fathers Couppé and Verjus, of Yule Island, and to judge from the energy already displayed by these two gentlemen as explorers, in their civilising work as missionaries, valuable results may be expected, both geographically and in various other scientific branches, and the willingness to extend their knowledge of New Guinea to strangers who seek it is indeed to be appreciated.

Also, as this will probably be the last opportunity I shall have while the Hon. John Douglas is Administrator of British New Guinea, I must tender that gentleman my sincere thanks for his assistance in various ways that enabled me to carry out my work

more fully than I otherwise would have been able to do. I also owe much to the Rev. W. G. Lawes, of Port Moresby, for his kindness in allowing me to use several of his instruments during my Mount Yule trip, which, I trust, will be of some value geographically.

Captain EVERILL, who, with the CHAIRMAN, DR. WAUGH, and other members of the Society, had joined in a general conversation regarding the paper read, referred to his experience on the Fly River expedition.

The HON. SECRETARY thought Mr. Edelfelt worthy of high praise in conducting his explorations in New Guinea without the aid of the Government or of any Geographical Societies; doubtless if Mr. Edelfelt had received equal encouragement and support as other explorers had enjoyed, his success would have been far greater.

The CHAIRMAN concurred with the Hon. Secretary, after which the proceedings terminated.

THIRD ANNUAL MEETING.

THE third annual meeting of the Queensland Branch of the Royal Geographical Society of Australasia was held in the Museum Library, Brisbane, on the evening of Tuesday, July 31, 1888, at 8 o'clock. Mr. W. H. Miskin, F.E.S., occupied the chair.

The CHAIRMAN regretted the absence of the President, who, through the force of circumstances, was unable to be present, and who had also been unable to prepare the usual anniversary address.

After the minutes of the previous monthly meeting had been read and confirmed, the following gentlemen were elected, by ballot, members of the Society, viz.:—Life member, Mr. W. Weedon, Brisbane. Members, The Hon. J. Donaldson, M.L.A., The Hon. W. Pettigrew, M.L.C., Mr. J. Petrie, J.P., Mr. T. S. Sword, Mr. P. M'Lean, J. Hill, M.D., Mr. J. Irving, M.R.C.V.S.L., Mr. J. S. Thomas, and Mr. J. F. Sloan, Brisbane; Mr. W. Hammam, C.E., Cooktown; H. W. Brownrigg, M.D., B.A., Goondiwindi; Mr. W. S. Walsh, P.M., Geraldton; Mr. W. J. Connolly, Bowen; Mr. W. R. Wardlaw, Dungeness; and Mr. P. W. Springall, Croydon. The following gentlemen were also elected, by ballot, officers of the Society and members of the Council for the session 1888-9:—President, J. N. Waugh, M.D.; Hon. Secretary and Treasurer, Mr. J. P. Thomson, F.R.S.G.S., Etc. Council, Messrs. W. H. Miskin, F.E.S., R. Gailey, H. C. Luck, F.R.G.S., E. J. Stevens, M.L.A., R. L. Armour, and T. S. Sword. Mr. H. H. A. Russell was, on the motion of the HON. SECRETARY, seconded by Mr. R. GAILEY, elected Hon. Auditor.

The SECRETARY read a letter of apology from Dr. Waugh, who was unavoidably absent from the meeting.

The HON. SECRETARY in proposing a vote of thanks to the retiring officers of the Society, made special reference to the President, the Hon. A. C. Gregory, C.M.G., in a highly eulogistic

speech. The proposition was seconded by Mr. H. TROWER, and carried unanimously.

Mr. J. P. THOMSON then moved the following resolution:—

That in the opinion of this meeting it is expedient for the Royal Geographical Society of Australasia to grant diplomas of fellowship. That the New South Wales, Victorian, and South Australian branches of the Society be asked to take joint action with the Queensland Branch in making special provision in the general constitution of the Society for the granting of diplomas of fellowship. The meeting suggests that the provision most likely to meet the case will be the passing of, and incorporating with existing rules of the Society, the following, subject to acceptance by the other branches, namely:—

DIPLOMAS OF FELLOWSHIP.

The Council may confer the Diploma of Fellowship on such eminent persons as have rendered valuable services in the cause of geographical science, and on persons of distinguished scientific attainments who have promoted the objects of the Society, on honorary and honorary corresponding members of the Society without the payment of diploma fees, and on ordinary members on payment of a diploma fee of one guinea, subject to the following conditions, namely:—

- (A) Upon written application. Those who have compounded for life membership and are deemed worthy of the distinction by the Council.
- (B) Upon written application. Those who are not in arrears with their annual subscriptions, and are, upon the recommendation of the Council, approved of by the Society at an ordinary monthly meeting.

Each Diploma shall be signed by the presidents and by the hon. secretary of the Society, and a record thereof duly entered in the minute-book, and a notification published in the "Proceedings and Transactions of the Society."

Recipients of the Diploma shall be privileged to designate themselves "Fellows" of the Society, and may use the initials F.R.G.S.A. after their names as long as they continue to be members of the Society.

Mr. THOMSON stated that he had brought forward the resolution with a view to benefit the Society, and with the belief that if passed it would, besides affording encouragement to those who were in a position to contribute largely to the Society's objects and already its members, also offer inducements to others of a similar class to join and work in its behalf, thereby furthering the interests of the Society and contributing largely to the science of geography.

In answer to the Chairman, Mr. THOMSON stated that the

resolution had been framed with the view of eliciting an expression of opinion from the other branches of the Society.

Mr. GAILEY said that for many of the ordinary members of the Society, who were merely novitiates, to assume the title of F.R.G.S.A., would be somewhat invidious, but it would only be just and proper that the title should be conferred upon those members who, early associated with the Society, had worked faithfully in its interests, and made it what it had now become. He believed that the passing of such resolution would have the effect of causing greater exertion by members on behalf of geographical research.

The CHAIRMAN stated that it might perhaps appear too great an assumption for so young a branch of the Society to take upon itself, but the idea was a good one; and when the other branches of the Society had given their views upon the question, it would be dealt with conjointly, and much benefit would accrue therefrom.

Mr. E. J. STEVENS, M.L.A., said he thought it was a very good idea, and the fact of the Queensland Branch of the Society being young as compared with the mother branch should not deter it from making any new proposition for the benefit of the Society generally and the good of the colonies. If the other branches of the Society had omitted this important step, there was no reason why this branch should do so; he thought Mr. Thomson should be complimented on the action he had taken in bringing this important question before the meeting. He had much pleasure in supporting the resolution.

The resolution was then put to the meeting, and carried unanimously.

The HON. SECRETARY said the Society was to be congratulated on its new Council members; he hoped they would render as much assistance to the Society and himself as the old councillors had done, especially Mr. W. H. Miskin, who, by his readiness at all times to labour in its interests, had rendered it most valuable services.

The CHAIRMAN said the present was a fit and proper time to

place on record the great obligations the Society was under to its Hon. Secretary and Treasurer, Mr. J. P. Thomson; in the first place, had it not been for him the Society would not have been in existence, and, lastly, it was entirely owing to his exertions that it had attained its present position. The meeting unanimously agreed with the Chairman.

After returning thanks for the compliment, the Hon. Secretary read the Council's Annual Report and Statement of Accounts for the past session.

Report of Council, Session 1887--8.

The Council has the honour to submit the following annual report:—

MEMBERSHIP.

The Society completed its third session on June 30th, 1888, on which date the number of its members was 122, made up as follows:—Five honorary, three honorary corresponding, and 114 ordinary members. Several of the latter have, from time to time during the session, supplied the society with valuable literary contributions, relating to the geography of Australasia, which have been read at the monthly meetings; some of those are already published in Vol. III., Part 1, of the "Proceedings and Transactions" of the Society, embracing the first half of the session now ended; the others will, in due course after the annual meeting, also be published in the second part of the Society's volume of proceedings. The Council views with much pleasure and thanks the efforts of contributing members to thus promote the objects of the Society, and it will endeavour to afford every possible encouragement to all who may desire to come forward to help in promoting this worthy object in which the Society is so deeply concerned, and which are its chief functions.

FINANCE.

The Council begs to submit the following financial statement:—

ANNUAL BALANCE SHEET
OF THE
QUEENSLAND BRANCH OF THE ROYAL GEOGRAPHICAL
SOCIETY OF AUSTRALASIA.

Dr. FROM JULY 1ST, 1887, TO JUNE 30TH, 1888. Cr.

	<i>£</i>	<i>s.</i>	<i>d.</i>		<i>£</i>	<i>s.</i>	<i>d.</i>
To Balance in Q. N. Bank, June 30th, 1887	24	17	1	By Printing, Stationery, and Postage	83	9	11
„ Entrance Fees and Subscriptions from July 1st, 1887, to June 30th, 1888	92	8	6	„ Caretaker of Museum for attendance at Meetings	2	5	0
				„ Brisbane Newspaper Co. for Advertising	2	11	3
				„ Balance in Q. N. Bank	28	19	5
	£117	5	7		£117	5	7

J. P. THOMSON, HON. TREASURER.

The accumulated funds of the Society during the past session were £117 5s. 7d., and the expenditure during the same period was £88 6s. 2d., which leaves a credit balance in the Q. N. Bank of £28 19s. 5d. The expenses of printing the literature of the Society, combined with other necessities required in carrying out its objects, are a somewhat heavy drain on the Society's purse, consequently, at the present stage of its life, the annual credit balance must, in common with kindred institutions in youth, necessarily be small. However the members must bear in mind that, while its vital existence can only be maintained by their support, the Society is not a geographical banking institution, and that the usefulness of a scientific society lies in the energy and unity of its servants, and not in the weight of its purse.

MEETINGS OF THE SOCIETY.

The Society has held eight ordinary monthly meetings during the session. The original papers read at these meetings were ten in number—exclusive of various communications from the Hon. Secretary, Mr. J. P. Thomson, upon the science of astronomy, descriptive of local phenomena—contributed by the following gentlemen, whom the Council desires to thank, viz.:—The Hon. A. C. Gregory, C.M.G., President, who delivered the anniversary

address; Messrs. J. P. Thomson, E. A. Leonard, Percy N. Springall, Douglas Rennie, E. G. Edelfelt, W. R. Withrington, Captains J. M. Hennessy, F. A. Boore, and John Mackay. While thus referring to the number of papers read at the various meetings of the Society during the past session, the Council deems it expedient, in the interests of geographical science, in justice to the Society, and also on behalf of contributors, to point out to the public the advantages which are gained by the colony generally through the establishment of a geographical society, for, as its title implies, the collation and dissemination of knowledge of astronomical, scientific, physical, commercial, and political geography amongst all classes. This the Council has endeavoured to do by means of the papers read at the regular monthly meetings of the Society upon the various subjects now referred to, and which can be shown in the following manner, viz.:—Out of the ten papers read during the session now ended, eight were the results of original research, some of these dealt with exploration and new discovery in British possessions, and others contained valuable authentic information upon the natural and artificial products, physical features, fauna, flora, and geological formation of various sections of Australasia, embracing a wide range of geographical magnitude extending from New Zealand in the south, to New Guinea, the Solomon Islands, and New Ireland in the north. These papers, being free from dry abstract detail, are interesting to the reader, and valuable as a source of reference, and have been published and circulated amongst the members of the various branches of the Society in the sister colonies, also amongst the members in Queensland, and to kindred institutions throughout the world. Copies have also been deposited in the principal libraries in Europe and elsewhere. In consideration of the useful work performed since its establishment, the Society may very reasonably claim the moral and material support of all who take an interest in the scientific, commercial, and educational progress of Australasia, and the Council feels certain that, while the whole objects with which the Society is associated cannot fail to

commend themselves to the scientific and commercial classes of the community, and to many persons engaged in advancing mining and pastoral pursuits into distant parts of our continent, of which comparatively so little is known, the great educational advantages to be derived from the establishment of this branch of the Society will be no less apparent to all intelligent colonists. The Council also desires to draw attention to the privileges the Society offers to its members, which are more liberal than those offered by any other scientific institution in the southern hemisphere. Members have the right to be present at, and to introduce two friends to, all meetings, library, &c., of the Society, also of the Sydney, Melbourne, and Adelaide Branches of the Society, also to receive a copy of the Society's official publications, as issued by the *various branches*. These privileges the Council considers most liberal, and their enjoyment or otherwise rests exclusively with individual members in availing themselves of the advantages they offer.

COUNCIL MEETINGS.

The Council has held eleven meetings during the session, during which time many important matters referring to the government of the Society, also to geographical science, have been discussed and dealt with. The Council has unanimously decided that the Hon. Secretary, Mr. J. P. Thomson, who was appointed delegate to represent the Society at the intercolonial convention held in Sydney on the 10th November, 1886, for the purpose of forming an Australasian Association for the Advancement of Science, shall still continue to represent the Society as delegate to the Association. The inaugural meeting of the Association will be held in Sydney during the last week of the month of August next.

PUBLICATIONS.

The Society has continued, during the session under review, to publish its proceedings and transactions: in so doing the Council has endeavoured, at a heavy cost, to procure the best workmanship and material in the execution of the Society's journal, and it has much pleasure in testifying to the satisfactory

manner in which the volume of proceedings has been printed and finished.

LIBRARY.

During the session many valuable additions have been made to the Society's library. These consist of books, maps, and periodicals chiefly acquired in exchange for the Society's publications from kindred institutions in other parts of the world, whom the Council desires to thank. The council also desires to acknowledge with thanks its indebtedness to the Trustees of the Queensland Museum for the privileges the Society has enjoyed in holding its meetings in the library room of the Museum.

NEW GUINEA PLACE NAMES.

At a monthly meeting of the Society held in the early part of the session, the Council directed the attention of explorers and geographers to the importance of, in so far as practicable, preserving the native place names in New Guinea. The Society expressed its views in a form or resolution which also solicited the co-operation, by an expression of opinion, of kindred societies in other parts of the world; the Society's action has been warmly supported, and the Council, in gratefully acknowledging the support of the responding societies, desires to specially thank the Royal Scottish Geographical Society for republishing, in its monthly magazine, the resolution referred to, and otherwise directing special attention to it.

EDUCATION.

The Council, by means of a paper read at one of the monthly meetings of the Society upon "The Importance of the Teaching of Geography in the School," has endeavoured to direct the special attention of the Hon. the Minister for Education, and others in our colony concerned in the education of the youth, to the importance of geographical education; it has also directed the free distribution to educational institutions of copies of the paper referred to. In accordance with the active and highly successful measures formulated and adopted by the geographical societies in Great Britain during the past three years, to stimu-

late the study of geography, and reform the old school ineffectual method of its teaching, the Council, actuated by a keen desire to raise the standard of education, is endeavouring to introduce corresponding measures in this colony with the view to the ultimate attainment of similar satisfactory and successful results to that obtained in Great Britain, and the Council is glad to learn, by the recent publications of kindred institutions, that its efforts in this direction have been very favourably noticed in Europe, also in the sister colonies. The Council did hope, however, that the Press of our city would have perhaps shown less apathy in a matter so deeply affecting the education of our youths.

EXPLORATION.

It is a matter for congratulation for the Society, and creditable to Australasia, that the first expedition to successfully ascend the highlands of British New Guinea was that organised and despatched by the Victorian branch of the Society, under the leadership of Mr. W. Cuthbertson, who, by his perseverance and professional skill, successfully ascended Mount Obree, which had previously baffled the attempts of explorers. After the return of its New Guinea expedition, the Victorian and South Australian branches of our Society conjointly organised and despatched an expedition to explore and report upon the country in Central Australia, in the vicinity of Lake Amadens. This expedition has not yet returned, and the Society looks forward with much interest to its results, which it has reason to believe will be great. The Council regrets that the Antarctic exploration scheme of the Society must, for the present, remain in abeyance. In September of last year an interesting geographical conference, composed of delegates from the other branches of the Society, was held in Adelaide, at which important questions referring to the working of the Society and to the science of geography were discussed. The Council has reason to believe that the Society's scheme for holding conferences alternately in the various colonies will be productive of much good.

For the Council,

J. P. THOMSON.

On the motion of Mr. E. J. STEVENS, M.L.A., seconded by Mr. H. H. A. RUSSELL, and supported by the CHAIRMAN, who, together with the mover, commented in favourable terms on it, the report and balance sheet were unanimously adopted.

The CHAIRMAN regretted the absence of the President's Address, but thought the Council's Report would prove a good substitute.

After a cordial vote of thanks had been accorded the Chairman, the proceedings terminated.

The Royal Geographical Society of Australasia.

QUEENSLAND BRANCH.

President:

J. N. WAUGH, Esq., M.D.

Hon. Secretary and Treasurer:

J. P. THOMSON, F.R.S.G.S., ETC.

Council for 1888-9:

J. N. WAUGH, Esq., M.D.

J. P. THOMSON, F.R.S.G.S., ETC.

W. H. MISKIN, Esq., F.E.S.

RICHARD GAILEY, Esq.

H. C. LUCK, Esq., F.R.G.S.

E. J. STEVENS, M.L.A.

T. S. SWORD, Esq.

R. L. ARMOUR, Esq.

Hon. Auditor:

H. H. A. RUSSELL, Esq.

Society's Meeting Room:

MUSEUM LIBRARY

(By kind permission of the Trustees).

LIST OF FOUNDERS AND MEMBERS.

(P) Members who have contributed papers which are published in the Society's Proceedings. The numerals indicate the number of such contributions.

A dagger (†) prefixed to a name indicates a member of the Council.

Life Members are distinguished thus (*).

Should any error or omission be found in this list it is requested that notice thereof be given to the Hon. Secretary.

Founders.

- P1 Allardyce, W. L., Navua River, Fiji
† Armour, R. L., J.P., Eagle Street, Brisbane
Atkinson, J. R., L.S., Ipswich
Bailey, T. S., Survey Department, Brisbane
Bartley, N., Wickham Terrace, Brisbane
Bell, W., Supreme Court, Brisbane
- P1 Bennett, E. J., Survey Department, Brisbane
Brydon, J. M., J.P., Eagle Street, Brisbane
Daniell, E. N., Survey Department, Brisbane
Drury, E. R., C.M.G., Q.N. Bank, Brisbane
Ferguson, J., Queen Street, Brisbane
† Gailey, R., Queen Street, Brisbane
Gregory, Hon. A. C., C.M.G., M.L.C., F.R.G.S., &c., Mary Street, Brisbane
Heath, G. P., J.P., Com. R.N., Port Office, Brisbane
- P2 Hennessy, J. M., Capt., Port Moresby, British New Guinea
Hoggan, R., Survey Department, Brisbane
- P1 Leonard, E. A., L.S., Yorick Club, Collins Street, Melbourne
Lilley, Hon. Sir C., K.C.M.G., Supreme Court, Brisbane
Lloyd, W. M., J.P., Queen Street, Brisbane
† Luck, H. C., F.R.G.S., Brisbane
McDonald, G. T., L.S., Rocklea
McDonnell, J., J.P., Post and Telegraph Department, Brisbane
Marks, Hon. C. F., M.D., M.L.C., Wickham Terrace, Brisbane
Mein, Hon. C. S., M.A., Supreme Court, Brisbane

- P1 † Miskin, W. H., F.E.S., Lutwyche Chambers. Adelaide Street, Brisbane
- P1 Moore, T. B., F.R.S. Tas., Strachan. West Coast, Tasmania
 Morehead, Hon. B. D., M.L.A., Mary Street, Brisbane
 Muir, A., Creek Street, Brisbane
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ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA
(QUEENSLAND BRANCH).

[The names of the Donors are in *Italics*.]

- ANNUAL REPORT** of the Department of Agriculture, Queensland, for the year ending 30th June, 1888.
From the Under Secretary for Agriculture.
- ABDRUCK** aus Dr. Petermann's Mittheilungen, 1888. Heft 3.
From the Institution.
- ABSTRACT** of Proceedings of the Linnean Society of New South Wales.—November and December, 1887, and January to December, 1888.
From the Society.
- ANUARIO** del Observatorio Astrónomico Nacional de Tacubaya, Par el Año de 1888. Año VIII.
From the Director.
- BOLETIN** de la Sociedad Geografica de Madrid. Tomo XXIV, Nos. 1, 2, 3, 4, 5, 1888.
From the Society.
- BULLETIN** de la Société de Géographie Commerciale de Paris. Tome X, No. 7, 1887-8.
From the Society.
- BULLETIN** de la Société Royale de Géographie D'Anvers. Tome XII, 1, 2, 3, 4, and 5e Fascicule, 1887-8, and Tome XIII, 1 and 2 Fascicule, 1888.
From the Society.
- BULLETIN** de la Société de Géographie Commerciale de Bordeaux. Nos. 19, 20, 21, 22, 23, 24, 1887, and Nos. 1-20, 1888.
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- BULLETIN** de la Société de Géographie de Paris. Tome VIII, 2-4 Trimestre, and 1 and 2 Trimestre, 1888.
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- BULLETIN** de la Société de Géographie de Marseille. Tome XI, Nos. 1-4, 1888.
From the Society.
- CENTENNIAL INTERNATIONAL EXHIBITION**, Melbourne, 1888.—Catalogue of the Exhibits in the Queensland Court. *From the Commissioners.*
- DEPARTMENT OF MINES**, Sydney, N.S.W.—Annual Reports for the years 1886 and 1887; Memoirs of the Geological Survey of N.S.W.; Palæontology, No. 1; The Invertebrate Fauna of the Hawkesbury—Wianamatta Series of N.S.W., by R. Etheridge, junr.; also Mineral Products of N.S.W., by H. Wood; Notes on the Geology of N.S.W., by C. S. Wilkinson, F.G.S.; Description of the Seams of Coal Worked in N.S.W., by J. MacKenzie, F.G.S., and Geology of the Vegetable Creek Tin Mining Field, New England District, N.S.W., with maps and sections, by T. W. Edgworth David, B.A., F.G.S., 1887.
From the Hon. the Minister for Mines.

- DEUTSCHE Geographische Blätter, Herausgegeben von der Geographischen Gesellschaft in Bremen, durch Dr. M. Lindeman. Heft 1, 2, 3, 4, Band XI. *From the Society.*
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- JOURNAL of the China Branch of the Royal Asiatic Society. Vol. XXII, New Series, Nos. 3, 4, 5, 1887. *From the Society.*
- JOURNAL AND PROCEEDINGS of the Royal Society of New South Wales. Vol. XXI, Part 3, 1887, and Vol. XXII, Part 1, 1888. *From the Society.*
- LA GEOGRAPHIE, Nos. 1 and 2, 1888. *From the Editor.*
- LE GLOBE, Journal Géographique, Organe de la Société de Géographie de Genève. Tome XXVII. Quatrième Série Tome VII. Bulletin Nos. 1 and 2, Mémoire No. 1. *From the Society.*
- MEMOIRS of the Geological Survey of England and Wales (official copy). Published by order of the Lords Commissioners of Her Majesty's Treasury. *From W. Weedon, Esq.*
- MITTEILUNGEN der Ostschweizerischen Geogr.—Commer. Gesellschaft in St. Gallen. 1888, 1 Heft. *From the Society.*
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- OPERATIONS of the Survey of India Department (General Report), 1886-1887. *From the Surveyor-General.*
- PROCEEDINGS of the Royal Geographical Society and Monthly Record of Geography. Vol. IX, Nos. 11 and 12, 1887. New Monthly Series, and Vol. X, Nos. 1-10, 1888. *From the Society.*
- PROCEEDINGS of the Royal Society of Edinburgh. Vol. XIV, Session 1886-7. *From the Society.*
- RECORDS of the Geological Survey of India. Vol. XX, Parts 1, 2, 3, and 4, 1888. *From the Director.*
- REPORT of the Directors of the United States Geological Survey, 4th, 5th, and 6th Annual Reports, 1882-3, 1883-4, and 1884-5. *From the Directors.*

- RESULTS of Observations of Comets, VI and VII, 1886, at Windsor, N.S.W., by J. Tebbutt, F.R.A.S., &c., read before the Royal Society of N.S.W., September 7, 1887. *From the Author.*
- REVISTA de la Sociedad Geografica Argentina. Tomo V, Cuaderno XLIX-LV, 1887, and Tomo VI, Cuaderno LVI-LX, 1888. *From the Society.*
- REVUE Geographique Internationale de Paris. Nos. 139-150, 1887, and 151 and 152, 1888. *From the Director.*
- SOCIETE de Géographie de Paris. Compte Rendu des Seances. Nos. 1-16, 1888. *From the Society.*
- SOCIETE de Géographie de Tours. Revue, Nos. 1-7, 1888. *From the Society.*
- THE ACCLIMATISATION Society of Queensland. Report of the Council for the year 1887. *From the Society.*
- THE JOURNAL of the Manchester Geographical Society. 1886, Vol. II, Supplement, and 1887, Vol. III, Nos. 1-6, and 7-12 *From the Society.*
- THE MILDURA CULTIVATOR. Vol. I, Nos. 1, 2, and 25. *From W. Weedon, Esq.*
- THE SCOTTISH REVIEW. Vol. X, No. XX, 1887, Vol. XI, Nos. XXI and XXII, 1888, and Vol. XXII, No. XXIII, 1888. *From the Publisher.*
- THE TORCH and Colonial Book Circulator. Vol. I, Nos. 2 and 3. *From the Publisher.*
- THE SCOTTISH Geographical Magazine. Vol. III, Nos. 11 and 12, 1887, and Vol. IV, Nos. 1-11, 1888. *From the Society.*
- TIJDSCHRIFT van het Nederlandsch Aardrijkskundig Genootschap. Tweede Serie, Deel IV, Nos. 2, and 5-10, 1887. Tweede Serie, Deel V, Nos. 1-4. *From the Society.*
- TRANSACTIONS of the Geological Society of Australasia. Vol. I, Part 3, 1888. *From the Society.*
- TRANSACTIONS AND PROCEEDINGS of the Royal Society of Victoria. Vol. XXIV, Part 2, 1888. *From the Society.*
- TRANSACTIONS AND PROCEEDINGS of the Victorian Branch of the Royal Geographical Society of Australasia. Vol. V, Parts 1 and 2, 1887, and Vol. VI, Part 1, 1888. *From the Victorian Branch of the Society.*
- TRANSACTIONS of the Edinburgh Geological Society. Vol. V, Part 3, 1886-7. *From the Society.*
- TRANSACTIONS of the Royal Society of Victoria. Vol. I, Part 1 (Plates 1, 2, 3, 4, 5, 6). The Anatomy of Megascolides Australis (The Giant Earth-worm of Gippsland), by W. B. Spencer, B.A. *From the Society.*

Obituary.

SIR ANTHONY MUSGRAVE, G.C.M.G., &c.

It is our painful duty to herein record the death of our esteemed patron, His Excellency the late Sir Anthony Musgrave, G.C.M.G., Governor of Queensland, whose dissolution occurred suddenly at Government House, Brisbane, October 9, 1888. His Excellency was enjoying his usual good health up till the previous evening, when shortly before 7 o'clock, while engaged dressing for dinner, he was seized with intense pains in the stomach, which so prostrated him that he fell back into a state of collapse, and expired at 12.15 on the morning of October 9.

The late Sir Anthony Musgrave, G.C.M.G., third son of the late Anthony Musgrave, M.D., Treasurer of Antigua, West Indies, was born in the year 1828. He was Private Secretary to Mr. Macintosh, when Governor-in-Chief of the Leeward Islands in 1850-1; he entered as a student at the Inner Temple in 1851, and became Treasury Accountant at Antigua in 1852. In 1853 he resumed his legal studies at the Inner Temple; he was appointed Colonial Secretary of Antigua in February, 1854, and Administrator of the colony of Nevis in October, 1860. In April of the following year he was appointed Administrator of the Government of St. Vincent, and in May of the following year Lieutenant-Governor of the same place. In May, 1864, he was promoted to the Governorship of Newfoundland; he became Governor of British Columbia in June, 1869; Lieutenant-Governor of Natal in May, 1872; and Governor of South Australia in the following year. In 1877 he became Governor of Jamaica, and received his appointment as Governor of this colony in 1883. He was made a C.M.G. in 1871, K.C.M.G. in 1875, and G.C.M.G. in 1885.

The late Sir Anthony Musgrave was married, first to Christina Elizabeth, the youngest daughter of the Hon. Sir William Byam, of Cedar Hill, Antigua, and Westwood, Southampton, England; and secondly to Jeanie Lucinda, only daughter of David Dudley Field, Esq., of Gramercy Park, New York, and King's House, Kingston, Jamaica, who now survives him.

He took an interest in the Society, and was present at some of its meetings.

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PROCEEDINGS AND TRANSACTIONS
OF THE
Queensland Branch
OF THE
ROYAL GEOGRAPHICAL SOCIETY
OF
AUSTRALASIA.

4th SESSION,
1888-9.

EDITED UNDER THE AUTHORITY OF THE COUNCIL OF THE SOCIETY

BY

J. P. THOMSON, F.R.S.G.S., ETC., ETC.,

Hon. Secretary and Treasurer;

Honorary Corresponding Member of the Société de Géographie Commerciale de Paris
the Société de Géographie de Marseille, and the Royal Scottish
Geographical Society.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. IV.

Brisbane:

WATSON, FERGUSON & CO., PRINTERS, QUEEN STREET.

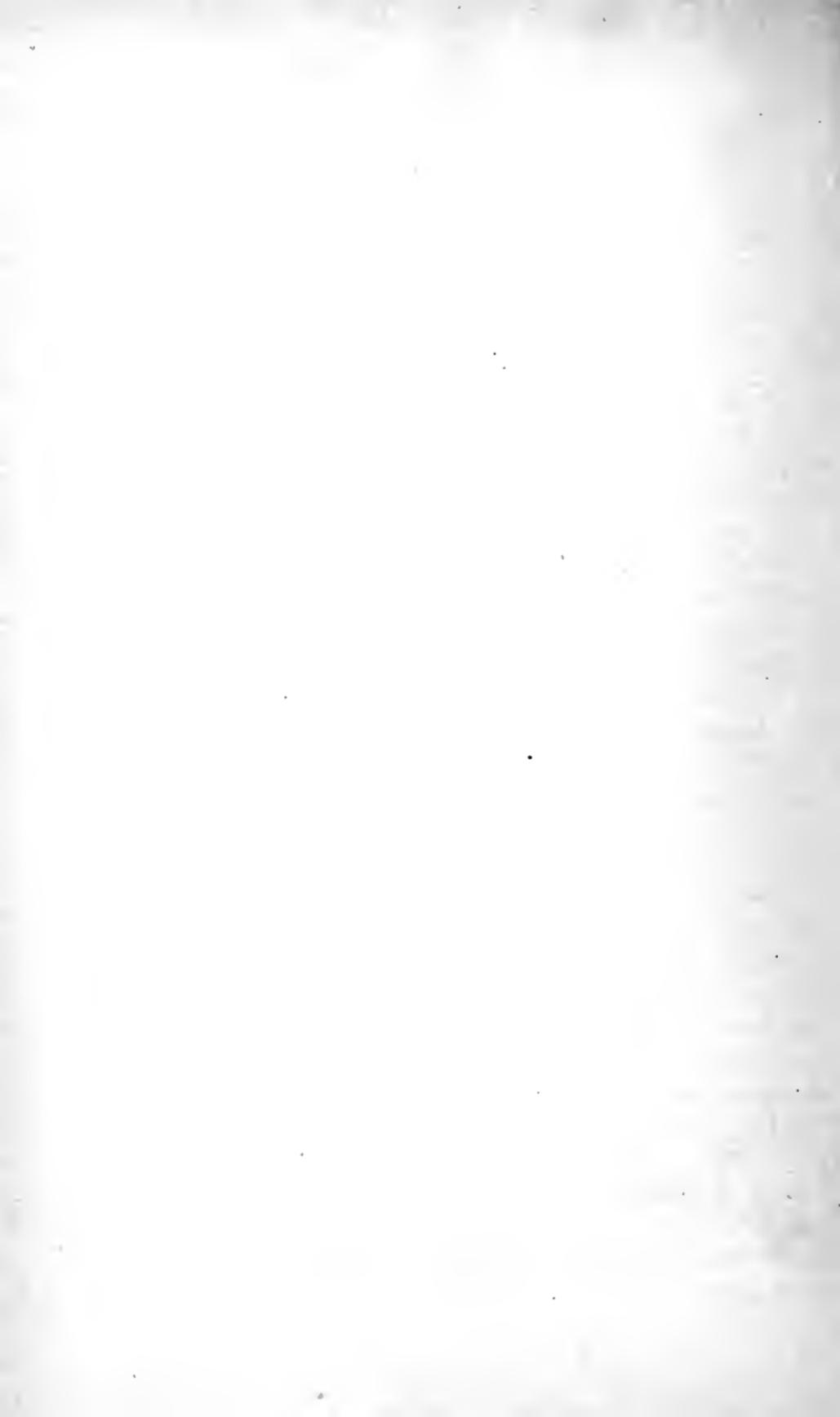
1889.

NOTICE.

All Donations presented to the Queensland Branch of the Society are acknowledged by letter and in the printed Proceedings of the Society.

N.B.—All communications to the Society should be addressed as follows:—

HON. SECRETARY AND TREASURER,
ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA,
BRISBANE, QUEENSLAND, AUSTRALIA.



FIRST ORDINARY MEETING.

FOURTH SESSION.

THE first ordinary monthly meeting of the fourth session of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Thursday, September 13, 1888, at 8 o'clock. The President, DR. WAUGH, occupied the chair.

After the minutes of the previous meeting had been read and confirmed, Messrs. C. B. Fletcher and B. H. Thomson were elected, by ballot, members of the Society.

THE HON. SECRETARY announced the receipt of various exchange publications from cognate institutions, and read a letter from the Victorian Branch of the Society, intimating approval of, and promising co-operation with, the action taken by this Society at its last annual meeting regarding the proposal to grant Diplomas of Fellowship.

THE HON. SECRETARY also announced that on the 15th August last the Council held a special meeting for the purpose of welcoming to Queensland the Society's Honorary Corresponding Member, Sir William McGregor, M.D., K.C.M.G., Administrator of the Government of British New Guinea. After which he proceeded to read a paper entitled "Account of the Exploring Expedition in the steam launch 'Mabel,' in New Guinea," by Mr. H. J. Hemmy, Licensed Surveyor, of Queensland, who accompanied Mr. Bevan on an excursion to the Rivers Aird and Wickham, at the head of the Papuan Gulf, N.G. After a conversation in which the President, Messrs. W. H. Miskin, R. Gailey, H. Trower, and the Hon. Secretary took part, the proceedings terminated.

SECOND ORDINARY MEETING.

FOURTH SESSION.

THE second ordinary monthly meeting of the fourth session of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Lecture Hall of the School of Arts, Brisbane, on the evening of Friday, October 19, 1888, at 8 o'clock. The President, Dr. WAUGH, occupied the chair, and there were present about 180 members and visitors, including a number of ladies, Sir Charles Lilley, Chief Justice, and several Members of Parliament.

After the minutes of the previous meeting had been read and confirmed, the Hon. Secretary submitted, on behalf of the Council, a letter of condolence to Lady Musgrave on the death of her late husband, His Excellency Sir A. Musgrave, Governor of Queensland, and Patron of the Society; the meeting concurred with the substance of the letter, and unanimously resolved that it be forwarded to her ladyship in the name of the Council and members of the Society. The Hon. Secretary also read a letter from the Société de Géographie de Paris, inviting this Society to take part in the International Congress of Scientific Geography, to be held in Paris, in August, 1889.

The following lecture, illustrated by maps and lime-light views, was then delivered by the Author:—

Sudest and the Louisiade Archipelago.

By the Hon. JOHN DOUGLAS, C.M.G., F.R.G.S., Honorary
Member of the Society.

Mr. DOUGLAS then said—Mr. President, Ladies and Gentlemen: Your indefatigable Secretary asked me the other day to read a paper to you before I left Brisbane, on some subject connected with geographical discovery in New Guinea. In the terms of this invitation, I thought I could do nothing better than tell you something of Sudest and the Louisiade Archipelago.

towards which, at the present time, a good deal of interest gravitates, in consequence of the discovery of gold at Sudest. I am to some extent justified in attempting this, for I have visited this Archipelago more than once, and I may be said to come pretty fresh from those Islands. First then, let me explain to you where Sudest is. Here, on this blackboard, I have rudely portrayed the relative positions to which I propose to call your special attention. Here you have South Cape, Su-a-u, as it is called by the natives, the extreme south-eastern portion of New Guinea proper. Here again, to the north-east, about 25 miles, is Dinner Island, in China Straits. Then, mark this deep indentation, Milne Bay, and this point, East Cape, there you have the leading landmarks of Eastern New Guinea. Let me repeat them—South Cape, Dinner Island (Samarai) in China Straits, Milne Bay and East Cape. Now then, from Samarai look away to the south-east about thirty miles—there you have Teste Island, then away to the east of Teste, about one hundred miles, you have Mewstone and Brooker Island, and beyond Mewstone, eastward about seventy miles, you have Sudest. Of course there are any amount of islands between these, but I mention these as our stages, or principal anchorages—Teste, Mewstone, Sudest—these, and hundreds of other islands all within a network of sheltering reefs. Now let me give you a brief sketch of their geographical history. The first record we have of their discovery is from Torres. In 1606, he was trying to get away to the north, but could not manage to double Cape Deliverance, on Rossel Island, east of Sudest. In lat. $11^{\circ} 30'$ south, he came upon what he thought was the beginning of New Guinea, and coasting along to the Straits now called after him, he took possession of the whole country in the name of his master, the King of Spain. He also kidnapped thirty natives for the especial benefit of His Majesty, and so far as we know he never returned them to New Guinea. About one hundred years after this, our own good sailor, Dampier, was cruising about on the north-eastern shores of New Guinea, but he did not come down as far south or east as the Louisiade. The next we hear of the

Louisiade is from Bougainville, the Frenchman, in 1768. Bougainville, on that occasion, described some of the islands of the Louisiade. Then about fifteen years afterwards came d'Entrecasteaux, the French admiral. Bonny d'Entrecasteaux, in his search for La Perouse, and he it was who named most of the islands. Nearly fifty years after that again, they were visited by another French navigator, d'Urville—Dumont d'Urville, in the corvette "Astrolabe." But it is from the account given by Macgillveray, in his narrative of the voyage of H.M.S. "Rattlesnake," commanded by Captain Owen Stanley, in 1849-50, that we learn most of what we know about the Louisiade, and to this day, not much more is known of the islands than can be learned from Macgillveray. Such is a sketch of what is recorded about the Louisiade.

Now let us pass on to my story about the discovery of gold at Sudest, which is the text of my discourse this evening. I am enabled to illustrate what I have to say by some interesting photographs taken by Mr. Young, a gentleman who accompanied me lately on a cruise in the New Guinea schooner "Hygeia," and those same photographs having been transferred to glass, Mr. J. W. Sutton has kindly consented to show you by the lime-light. I may thus hope to interest you more effectually than I could hope to do by any verbal description. But before I show you these, let me tell you how it was that gold came to be discovered at Sudest. In April last, David Lindsay Whyte, a pearl-shell diver, came to me at Thursday Island, and said that he had discovered some gold-bearing reefs at Joannet. He asked me for a protection area. This I could not give him, but I encouraged him to work his reefs if he thought they would pay, and assured him that I would recommend that a protection area should be allotted to him when sovereignty was proclaimed. I took him to Cooktown; got the storekeepers there to interest themselves in his success; and having purchased a cutter for the party, Whyte left Cooktown on his adventurous quest with seven companions on the 23rd of May.

My last injunctions to them were to stick together, and if they

did not succeed at Joannet, to try the Runcie River on Sudest. The Runcie was a stream which I had explored on the previous year with Captain Runcie, of the "Truganini," and whether they were successful or not on Joannet I felt sure, as I told them, that they would find what they wanted on the Runcie. I had come to this conclusion from the character of the geological formation, and my expectation has been justified.

Well, now we commence our cruise, and our illustrations. Here is the "Hygeia" [exhibited on the screen], of which is master our experienced navigator, Colin Thompson, for whom I have the greatest admiration and respect. Colin, as an explorer of New Guinea reefs, is unrivalled, and I always felt confident and happy when in his care. He is one of our indomitable Scotchman, a man not of many words, but one who when once he has taken a thing in hand will see it through to perfection. Colin owned the "Coral Sea," a little schooner which has known her way about for some years in Torres Straits, and my first acquaintance with him was when I fined him £30, for leaving Thursday Island on a trip to New Guinea, without clearing out from port in due form. From then to now we have been the best of friends, and I am happy to say that I induced him to transfer his affections from the "Coral Sea" to the "Hygeia." The "Hygeia" herself, as you perceive, is a smart little schooner. She is laying close to the spot where Cook careened his vessel, the "Endeavour." Now passing from Cooktown we find ourselves at South Cape [view of South Cape exhibited], with canoes and natives in the foreground. Of the canoes which you see at the east end, and throughtout the Louisiade, I may say that though they vary in size and in ornamentation, they are constructed essentially on the same lines, and they are navigated with a good deal of skill. The natives are fine sailors, and in another generation or so I suspect that they will contribute largely to our seafaring population on the coasts, both of Australia and of New Guinea. They beat to windward, and can face a stiff breeze with a good deal of pertinacity; altogether they are much finer sailors than the natives on the coast away to the westward.

Now let us see what Mr. Sutton has next for us. There are two young women you see, digging up taro, on one of the hill-sides of Dinner Island (Samarai). Very fertile are these hill-sides. It is only a little bit of an island forty acres in area, but it is very centrally situated among a group of islands, and it provides the most sheltered anchorage in China Straits. Here I built a good house on one of the hill tops, and from this summit of about two hundred feet above sea-level there is a splendid view; opposite, the mountains of the mainland tower up into the clouds. On either side, with intervening stretches of water, rise the mountains of Sariba and Logia. The building of this house was an event of immense importance in the history of China Straits. First of all, there was a kind of strike among the natives, the material had to be carried to the hill top, and the natives of the neighbourhood refused to help. One of the teachers had preached to them that if they carried the timber for the government, they would certainly go to hell and perish everlastingly. Fortunately, however, a party from Milne Bay came in, who were not deterred by this dread of future torment. They were willing enough to offer their services as porters, and the work went on merrily. During the building of this house hundreds of natives from the neighbourhood came to look on and wonder.

Dinner Island is separated by a narrow strait, about two miles in width from the mainland of New Guinea, and when it becomes too small for the growing commerce of these parts, there will be an overflow settlement somewhere else not far off. The missionaries, meanwhile, are going to form a station at Stanley Harbour, on Sariba, about three miles to the north-east.

Here again [exhibiting another slide], you have a village scene on the margin of one of the numerous bays, which are to be found among the islands which surround Dinner Island. There is the inevitable canoe, with its festoons of white shells decorating its prow. It is drawn up on the sandy shore, behind it you see a motley group of villagers—men, women and children, and behind them again, their houses, nestling in a dense grove of

palm trees, with bright crotons and dracenas intermingling. It is well-nigh impossible to imagine anything more beautiful than the combinations, which groups like these supply. The brightness of everything is so dazzling, and the coloring so intense; the azure sea, the yellow sands, the rich foliage, and the dark skins of the people glistening in the sunlight. Would that some of our great painters could see these glories of tropical nature and depict them in all their vivid reality.

Now we pass to Teste Island, thirty miles to the south-east from China Straits. Here, standing on the margin of the ocean are a lady and gentleman of the country—a most interesting picture this. Arm in arm, you see they calmly confront the artist. I call them Darby and Joan. There is a good deal of sunlight and shadow in their composition. They are evidently a happy and contented couple, not graeced, you observe, with many habiliments, but they are modest, unconseious people, and I will answer for them that they are true man and wife. Indeed, I think I may safely say that the married folk of these islands are, as a rule, virtuous, honest, and sober; sober of course they are, for not one of them, except a few perhaps of the more roving gentry who have visited an Australian port, knows what drink is, or would thank you for it if you offered it them. The South Sea Islander, on the other hand, is very kindly disposed to a bottle of beer or of ease gin; as yet, however, I am happy to say, that the taste for drink has not spread to New Guinea. They have no stimulating decoctions, and they do not even make use of the toddy palm.

The next picture tells a different tale. Here, you see, is a little pent-house, or shealing, on the beach. That shealing covers a grave, and there is a man sitting beside it, watching. For the most part, I have seen women keeping this death watch. Poor creatures, how one pities them! When a chief dies, or an old patriarch, public opinion requires that his wife should keep watch over his dead body, buried, perhaps, only a couple of feet in the ground, and there she sits, and sits, and sits, chained to the ground by custom, for weeks and months together. It

is horrible; but is it not public opinion, and what woman or wife dare revolt? You may be able to understand how unpleasant it must be to live in such close proximity to the dear departed one, when the interment is so shallow, but the odour is one of sanctity, maintained by that most exacting of all masters—public opinion; and so the poor woman weeps out her widowhood, and inhales the most noxious gasses, with the sweet consciousness, no doubt, of a duty performed, and an example supplied. There are not many revolutionists in New Guinea, and, as a rule, the people belong to the strictest sect of the Conservative party. There might be much to tell about Teste, necessary as it once was for the recruiting vessels, but that is all over now; and we pass on to Mewstone, the gate, as I call it, of the Louisiade. Brooker Island is close to Mewstone—Brooker Island of evil repute—the scene of Ingham's murder, and many another bloody deed. Here, on this screen, you have six Mewstone men, fine athletic fellows, and all of them good sailors. They are not beauties, certainly, still I like the Mewstone men, and, in spite of their murderous associations with the Brooker Islanders, there is a great deal of good in them. On the occasion referred to, I wished to find a friend of mine, called Tamaka; so, one Sunday morning we anchored off Tamaka's village, and landed in order to call upon him. But Tamaka was not at home, all the houses were shut up, and Tamaka had gone to the east—or to windward, as the saying is in these parts—so we were told by one of his neighbours, Tabita, who asked to be taken with us, so that he might find Tamaka for us. Next day, therefore, we took Tabita with us, and beat up for Sudest, though on that night we had to anchor under Huxley Island, I think; at any rate, it was under one of the Calvados Chain, a beautiful group of islands which have been depopulated by the yearly raids of the natives from the Engineer Group. The one good thing which the Brooker Islanders have done, is that they abolished the chief of Slade Island, in the Engineer Group. He, at any rate, will make no more head-hunting expeditions. This dispensation of justice, however, has

not, I fear, resulted in much benefit to the eastward-living people; for the Brooker Islanders themselves are still incapable of resisting the special facilities for murder, which they enjoy from the possession of fire-arms, and this we shall see as my story proceeds. Well, next day, the 19th of June, we were beating up to make Joannet Island, when we passed close to Bryerly Island. There were several canoes on the beach, and when they saw us they immediately put to sea in a rather suspicious way. However, we bore down upon them, and being assured by Tabita that one of them was Tamaka's canoe, we paid particular attention to it, hailing them to come alongside of us. Still they gave us a wide berth, until we hove to, and lowered a boat to board them. At last we got alongside of them, and Tamaka came on board of us, not confident and cheerful, and glad to see me and his old friend Colin Thompson, but shaking from head to foot, and clearly in a blue funk. Evidently he had been up to some mischief, but what it had been of course we could not tell then. In half-an-hour or so, however, he had regained his equanimity, and what contributed to this, no doubt, was the fact that his canoe meanwhile had sailed away before the wind, and was already some miles off. Tamaka, being now more comfortable, agreed to do what I wished him to do, namely, to go over to St. Aignan's, in order to get another friend of mine, named Molass, whom I was anxious to see. That night we anchored in Joannet Harbour, and the same evening Tamaka started for St. Aignan's, an island about seventy miles to the north-west. Next day we sailed along the northern shores of Sudest, and just before sundown we sighted the "Juanita" cutter, anchored at the mouth of the Runcie River. It was pleasant to know that she was all right, and that they had gone to the place and to the anchorage which I had recommended them, when we last parted at Cooktown. The anchor had not been down long on this evening—the 20th of June—when Whyte, the leader of the Juanita party, came on board, and told us that they were all well, and had found good gold. This, of course, was great news, and we

heard all about it first. Then we heard that there was weeping and wailing among the natives of one of the inland villages. Biowa—that was its name—had been attacked by some canoes from the westward, which had landed their men at Ia, an island off the south side of Sudest; and coming up from this Ia, with the people of Ia, they had killed four men and two women. They had also carried off two children. Here, then, was the solution of the mystery, and the cause of Mr. Tamaka's embarrassment. He was one of the raiders; and if we had only known what we afterwards learned, we should have found the actual heads on board of the canoe which we had pulled up in order to get hold of Tamaka.

The next day we spent in Sudest with the natives and the diggers; a considerable party of natives met us on the hills above the Cholmondely Cascades. From them we heard a full account of the Biowa massacre, and they were especially indignant that the raiders should have been possessed of a gun. If they had only come with their ordinary weapons they would have fought them, but there was no fighting against people with guns. I listened to all this, and took what notes I could, Mr. Young, the meanwhile taking an impression of the motley group. I am sorry to say that I cannot show it you, but here are some of the diggers at work in a deep rocky dell, into which we descended from the hill top where we had met the natives. [Slide exhibited.] The scene is just such an one as may be expected, the men are panning their wash dirt. We were with them for about half-an-hour, and during that time they washed out some nice little specimens and got some coarse gold. Then we set off to make for a native village on a hill top, about three miles off. So long as we could walk on the open hill tops it was pleasant enough, and sometimes we were gladdened by a glint of the ocean, but every now and then we had to dive into a wooded gully with very steep slippery sides, and then after crossing the stream at the bottom, we had to climb on all-fours up a formidable ascent. At last we reached our halting place on a hill top, and there we found a few small houses perching under the welcome shade of

overhanging palm trees ; our luncheon basket was produced, boys were sent up the palm trees to pull cocoa nuts for us, and in a short time we were all comfortably seated, enjoying the shade, the rest, and the delicious deep drafts of cocoa-nut milk. Several hours were spent in this way. We started for the landing place at four o'clock ; it was not more than six miles by a short cut, and we would easily cover that distance in two hours. That six miles was about the most severe travelling I have of late years experienced. Whyte, who was our guide, being young and lusty as an eagle, thought nothing of it, I suppose ; the sidelings and the rocky water-courses were child's play to him—to me they were rather serious, and my lame ankle nearly gave way under me. Nevertheless, a little after sunset we reached our starting point, and there we found a boat from the "Hygeia" waiting for us. It was certainly the hardest work I have done for many a long day, and if it had not been for those occasional dips into the steep slippery glens, I should have enjoyed it much. As it was, I was completely done up and could scarcely crawl in to the finish. That evening we had a few of the diggers on board. Next day, Mr. Musgrave and Colin Thompson made an excursion along the coast westward, and on the following day, the 23rd, we weighed anchor early, and reached a secure anchorage to the east of Bosynet Point, on the south side of the island, passing Ia, the island from which the predatory party had advanced on Biowa. Next day we explored a tidal creek—a creek right under Mount Rattlesnake, and made the acquaintance of a few natives, who confirmed the story of the Biowa massacre, which we had heard on the other side of the island, with the slight difference, that instead of two children having been carried away, they said that there were three. On the following day, the 25th, we once more sailed westward and made Ia. Here, on the hill tops, we saw a good many natives, armed, and evidently in a troubled state of mind. On coming to an anchorage, we discovered two large canoes full of people, which had just put off from Ia, and were making for Sudest. We intercepted them, Mr. Musgrave took one boat and I took another, and we successfully cornered the

canoes, though the men in them all escaped and took to the mangrove. In the canoe captured by Mr. Musgrave, there were two women and two children. We tried to make them of some use in order to get into communication, but we failed in this, and finally had to liberate them without much result, though we obtained a good deal of confirmation as to the actual offenders, sufficient at any rate, to justify me in authorising the destruction of the canoes which had been seized. This was done. Some new grass houses on Ia were also destroyed. The prime offenders in the matter were no doubt the Brooker Islanders, aided and abetted by friend Tamaka, the Bryerly Islanders, and the Ia Islanders. The best thing, however, now to do was to recover the captive children, but before I proceed to that, let me show you on the screen our Ia Island prisoners, as they camped on the deck of the "Hygeia." Poor people, they were terribly frightened at first, but on the second day they recovered their equanimity, when they found that we were good to them, and all of them, the children as well as the women, were quite bright and lively when we set them at liberty again, enriched as they were with several precious tokens of our good-will, in the form of tomahawks and calico. It took us sometime and trouble to unravel the whole story, but we got at the most of it, bit by bit, and we finally rescued the children from the Brooker Islanders. This was done, partly by a little pardonable bribery, and partly by intimidation and the timely seizure of a canoe. One of the Brooker Islanders held out about the last child, a mere baby at the breast, but he preferred at last to surrender it rather than to lose his canoe, and we found a foster mother for it in a sister of Tamaka's, who agreed to go back to Sudest, in the canoe which took back the rescued children to the diggers at the Runcie: They were handed over to David Whyte, and by him they were forwarded to Biowa, where I hope they will live long enough to tell to the next generation the story of the last raid of the Brooker Islanders. I don't think it is likely that the Brooker Island people will have another opportunity of the same kind, there are too many white men about at Sudest now for pranks

of that kind. I need hardly say that Mr. Tamaka got a good talking to, after we found out the real cause of his trepidation when we picked him up off Bryerly Island. The heads had been quickly traded away for valuable consideration, and are no doubt now in possession of some of the islanders to the northward of Mewstone and Brooker Islands. Strange, is it not, that such an interest should be attached to these curiosities? What a thrilling chapter of cotemporary history might be written on "heads, scalps, and other symbols of victory." Who, after all have been the most successful head-hunters? In its cruelest form this practice cannot survive much longer. What shall we say of it under its more refined forms—will it survive? Tamaka, who is a philosopher, assures me that it will. But what does he know about it? Tamaka, however, was true to his word, he went over to St. Aignan, as he had promised, and he brought Molass to me at Mewstone. When I last parted with Molass at St. Aignan's, he was arrayed in a regatta shirt, white trousers and straw hat. Now when I saw him he had dispensed with these precious figments of civilisation, and had donned the garb of nature. He appeared in his own skin, a fine bright brown one it was, without a speck on it, and glistening in the sun. I should not have known him, if it were not that he beamed all over with delight on seeing me. His eyes danced and his white teeth glittered quite kindly on me. What a beautiful young man I thought him! And this is Molass, reverted to his original righteousness. He had a great deal to tell me about his father and mother, and about the people of St. Aignan, how they were good now, and would treat us well if we landed there. On our side, of course, we had taken care to let them know that there would be no more recruiting or kidnapping, and to that extent Molass had doubtless been a missionary of good-will. He had told them all that henceforth there was to be peace to them, and he assured us that there would be peace to us. Molass was with us for nearly two days. Of course he got a good many presents, but above all things, what do you think he asked for? It was soap—what a magnificent idea for Pears' people! Here was a

reverted barbarian craving for soap—what a revelation! “*Sanitas sanitatum, omnia sanitas.*” Of course he got soap, but not Pears’, only a bar of yellow. What pathos there is in the thought of that bar of soap at St. Aignan’s. The white man asks for gold, and thirsts for it as he would for the hidden treasure; the black man asks for soap, and rejoices when he finds it. But then Molass had been to Queensland, and had contracted one of our harmless habits. It is to be feared, however, that he will find it difficult to set the fashion among his countrymen. I could not prevail on Molass to come in with me to Dinner Island. He had promised his father not to leave home again, so we had to say a regretful farewell to Molass.

The Hon. JOHN DOUGLAS said, in conclusion, that the colony of New Guinea had now been launched, and as he had a great deal to do with the preparatory work he wished to say something about it. It was said by some people that very little had been done for the money expended, but he disputed that; a great deal had been done. It was true, if they reckoned up what they had actually to show in goods and buildings for the expenditure, it might not make a good return, although they had several houses, boats, and other possessions, but that he held was an altogether erroneous way to estimate the return for the money spent. They had got a largely increased knowledge of the natives, and the natives knew much more about them. The islanders now know something of the nature and influences of government, and while he did not say they altogether liked the government, still he believed the New Guinea native possessed a considerable degree of intelligence, and would be able to adapt himself to the altered state of affairs. He was a man many degrees superior to the Australian aboriginal. He might not like the white man, but still he believed he could be adapted to the uses of the governing people, and that they would be able greatly to improve his position. Nothing could be more degraded than the lives of many of the islanders now, but he for one did not fear on their account the advance of civilization. He hoped the colonies would not grudge the necessary expense connected

but he trusted when the federation of Australia—which they all with the establishment of good government in New Guinea. He was afraid a time was approaching when this small expenditure would be grudged. He saw some members of Parliament present, and would have been glad to see more. What he wished not only members of Parliament but everyone to understand was that the honour of Australia was at stake in this matter. It was at the wish of the Australians that Great Britain annexed New Guinea; there was no wish whatever for the annexation in Great Britain. By the annexation there was no doubt Australia had gained a great protection for its northern frontier, and if, instead of costing £15,000 a year, it cost £50,000, he did not think the money should be grudged. The mother country desired that the colonies should unite to carry out the administration of this new territory. Some had responded heartily, and others had backed out or broken their word. He thought it was the duty of Australia—a duty undertaken before the world—to carry out to the letter this agreement. Of all the colonies Queensland alone had contributed her full share in this matter. He admitted that New South Wales, Victoria, and New Zealand had agreed to contribute their share of the subsidy, but they did not admit their liability for the part expenses. He would shortly return to Thursday Island, but although now occupying a position—a subordinate position—under the Queensland Government, he would never cease to take a deep interest in the future of Australia. He might not, except in writing, have another opportunity of referring to this question, and would take this chance to point out that New Guinea formed the starting point in the foreign policy of Australia. It was the desire of the home Government that the colonies should unite on this question. That had been the great wish of Lord Derby, and although his policy had been greatly blamed and misunderstood, still there was no doubt that so anxious was he to attain this end, that he sought even by a policy of irritation to bring the colonies to combine on this matter. Here, then, they had a foreign policy. It might be considered insignificant by some,

hoped for—came about, that this work of the administration of New Guinea would not be left to Queensland alone, but would be the task of a united Australia. (Loud applause.)

Captain G. P. HEATH, R.N., in thanking the Hon. John Douglas for his interesting and instructive lecture, referred to his own acquaintance with the Louisiade Archipelago, while serving on board the "Rattlesnake." He said those reminiscences had, to him, added to the lecture additional interesting pleasure. He also mentioned Professor Huxley's connection with the "Rattlesnake," as Assistant-Surgeon.

The HON. SECRETARY concurred with Captain Heath in his reference to the substance of the lecture, and on behalf of the Society thanked Mr. Douglas for the valuable assistance he had rendered it during his connection with British New Guinea. He moved a vote of thanks to the General Committee of the School of Arts, for the privilege the Society enjoyed in meeting in their Hall. The motion was carried unanimously, and the proceedings terminated.

THIRD ORDINARY MEETING.

FOURTH SESSION.

THE third ordinary monthly meeting of the fourth session of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Thursday, December 6, 1888, at eight o'clock. The President, Dr. WAUGH, occupied the chair.

After the minutes of the previous meeting had been read and confirmed, Messrs. J. H. M'Connel, Cressbrook; W. H. Holt, F.R.C.I., Springsure; P. C. Smith, Rockhampton; Roger North jun.; Brisbane; A. J. Boyd, and A. D. Chater, Toowoomba, were elected, by ballot, members of the Society.

The HON. SECRETARY, after announcing the receipt of various exchange publications, referred with regret to the death of the late Hon. F. T. Gregory, M.L.C, &c., who was one of the Society's honorary members; he also read a letter from Lady Musgrave, acknowledging the receipt, with thanks, of the letter of condolence sent her by the Society.

The HON. SECRETARY then read a paper, entitled "The Relations between Commerce and Geography," being the introductory lecture delivered to the class of industrial and commercial geography in the Heriot-Watt College, Edinburgh, by H. R. Mill, D.Sc., F.R.S.E., from which the subjoined is abstracted.*

Dr. Mill, in his lecture, pointed out that commercial and industrial geography had a direct bearing on the distribution of the products of value to mankind, and the means of making them available. Commerce was a channel, fed by widespread springs, draining areas of production, flowing into the great trade centres, and re-issuing in numberless streams to the region of consumption. The real cause determining all the complicated modern develop-

* *The Scottish Geographical Magazine*, Vol. III, No. 12, December, 1887.

ments of the commercial world was that commodities were so abundant, or that they could be made so abundant, in some places as to be unnecessary, or at least superfluous, while in other places they were necessary or of value. Hence, at the outset, two great and distinct branches of science were required to throw light upon the relations of commerce—physiography, to show why products occurred naturally in one place and not in another; and economics, to define the value and equivalence of exchange; and the two were of equal importance.

There were two great modifying influences which affected commercial geography unequally—the physical and the political conditions of various countries. The physical was always the greater power, although occasionally for a short time the political element had had the predominating influence. The two motives which led to exploration of unknown regions had from all antiquity been the same—the desire for gain and the lust for power. The former drew caravans of merchants, with their wares for exchange, across pathless deserts; tempted them down unknown rivers; even led them out, creeping from point to point, along the shores of the vague and terrible sea. The lust for power led armies into regions and through dangers that no other influence was strong enough to make men dare. Dr. Mill traced the history of the relations of geography and commerce from the earliest recorded periods, when the Phœnicians traded to India; when continents stretched in unknown vastness before Alexander; and when new worlds in the west and east opened up to the view of the monarchs and adventurers of Spain and Portugal, up to the discovery and colonisation of Australia. One of the most recent contributions of commerce to scientific geography had been the knowledge it had given men of the bed of the ocean. The great probability of instituting a lucrative whale and seal fishing and ivory trade will doubtless direct commercial enterprise to encourage science in obtaining a more perfect knowledge of the Antarctic regions, while the necessity for increased extension of submarine telegraph cable will also suggest a corresponding development in marine traffic and con-

tinental railways. Referring to trade material, the author traced the main points in the history of sugar from the time of Alexander the Great, when found growing in Asia, and the sweet cane mentioned by Jeremiah and Isaiah as imported from a distant country, when its possession was a rare luxury, to the present day, when civilized life recognised its necessary use. The detection of sugar in the beet-root by Marggraff in 1747, and the establishment of a factory for its manufacture near Breslau in 1801, were referred to, also the attention directed to the synthesis of saccharose in 1885 by two German chemists, who announced their successful accomplishment of this, by the passing of an electric current through a mixture of starch, sulphuric acid, and water, and the manufacture of Remsen's saccharine, benzoylorthosulphonic imid, a substance obtained from coal-tar, about 300 times sweeter than beet-sugar. For commercial purposes a knowledge of the physical conditions of the earth was absolutely essential, and it was even more necessary in enabling a cultivator to recognise new products of value, and to judge when the time had come for placing all land under the grand necessities that they could see no prospect of ever producing artificially.

Mr. W. H. MISKIN and the HON. SECRETARY entered upon a discussion of the paper, after which the proceedings terminated.

FOURTH ORDINARY MEETING.

FOURTH SESSION.

THE fourth ordinary monthly meeting of the fourth session of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Thursday, January 17, 1889, at eight o'clock. The President, Dr. WAUGH, occupied the chair.

After the minutes of the previous meeting had been read and confirmed, the Hon. W. D. Box, M.L.C., the Hon. J. D. Macansh, M.L.C., the Rev. W. M. Walsh, P.P., Messrs. H. S. Gannon, R. W. Moran, P.M., A. F. Wood, and J. W. Boys were elected, by ballot, members of the Society.

The President announced that the Council of the Royal Scottish Geographical Society had unanimously conferred that Society's Honorary Diploma of Fellowship upon the Hon. Secretary, Mr. J. P. Thomson. In making this announcement the President congratulated Mr. Thomson upon the distinction conferred upon him.

THE HON. SECRETARY then read a paper entitled "The Colorado River of the West," by H. M. Cadell, B.Sc., F.R.S.E., Her Majesty's Geological Survey of Scotland,* of which the subjoined is an abstract. The paper was illustrated by a large geological atlas of the region described, the property of the Society.

The geological structure of the Colorado basin is of the simplest kind. The rocks lie in a series of great flat plateaux, uniformly upraised from the bed of the ocean in which they were formed, and they have, after long ages of exposure, been eaten away and deeply dissected by streams and rivers, so that their anatomy can be studied with the greatest ease. There is probably no other part of the world so well fitted to impress on the mind the marvellous erosive power of running water. The Colorado, in flowing for ages over these tracts of horizontal strata,

* *The Scottish Geographical Magazine*, Vol. III, No. 9, 1887.

has excavated a series of gorges altogether unique in their depth and architectural magnificence. For hundreds of miles the river rushes along the bottom of a chasm thousands of feet deep, across barren, rainless desert, shunned alike by the hunter, the miner, and the settler, and inhabited only by a few wandering tribes of Indians. The scenery of this region is wonderful beyond description. The rocks have generally brilliant red, yellow, or purple hues, and are carved by Nature's graving tools into endless varieties of architectural shapes and patterns. The whole length of this "Great Walled River," from its sources amid the snow-clad peaks of the Rockies to its mouth in the Gulf of California, is 2,000 miles, and its drainage system, which covers 255,049 square miles, is the second largest in the United States.

The basin is physically divisible into two portions. The upper part has a general height above sea-level of 4,000 to 8,000 feet. It is sharply separated from the lower region by a line of mural precipice, from whose brink the surface of the country suddenly drops from an elevation of 6,000 feet to levels ranging between 1,300 and 3,000 feet above the sea. From the foot of this huge boundary wall there stretches westwards and southwards along the lower reaches of the Colorado a vast and nameless desert, bristling with sharp rocks and terrible in its grim desolation.

From the summit of the Kaibab Plateau, in the Grand Cañon district, magnificent views are to be had of the wondrous region below. Every ravine of the Kaibab is dry and carpeted with a turf of mountain grass, smooth as a lawn and richly bedecked with flowers, and the trees, which are large and noble, stand well apart in the lower part of the plateau. Following the windings of the river, the distance from the Little Colorado to the Grand Wash, is $217\frac{1}{2}$ miles. At the confluence of the two Colorados, the Grand Cañon has a depth of 3,600 feet. Three or four miles west of this point the land rises quickly to the summit of the Kaibab, and the gorge deepens in consequence to about 6,000 feet. The Kaibab division, which is about sixty miles in length, is the most sublime part of the Grand Cañon. At the Grand Wash the river circulates through a gateway 5,000 feet in height.

The height of the river-bed falls from 2,640 feet at the Little Colorado, to 1,000 feet at the Grand Wash, giving the bottom of the Grand Cañon an average slope of 7.56 feet per mile, and an irregular slope which varies from 12.07 feet to 5.01. The average fall in the Marble Cañon is 7.82 feet per mile; the whole fall, from the head of the Marble Cañon, to the foot of the Grand, is 2,190 feet, and the distance $283\frac{1}{2}$ miles. The total fall between Green River Station and the Grand Wash is 5,000 feet.

The Grand Cañon is not simply a chasm, like a great crack with straight sides, but is divided into two distinct parts. There is first an outer valley, from five to six miles broad, between vertical walls of cliff 2,000 feet in height. The inner, or second part of the Cañon, runs like a trench along the middle of this floor. It is 3,000 feet deep, and from 3,500 to 4,000 feet in breadth, measuring from brink to brink between the nearly perpendicular walls.

The walls of the outer Cañon are of limestone and brilliant red sandstone. They constitute the Aubrey division of the carboniferous formation of this region. The strata of the inner gorge consist of red and brown sandstones and massive beds of purplish limestone. These strata rest on the upturned edges or an enormous mass of older stratified rocks, which form the lower part of the Cañon wall, and which are believed from fossil evidence to be of Silurian age. There is a still older group of rocks on which the Silurian beds in turn rest unconformably. The Archæan schists, which may be popularly described as granite, are the primeval foundation on which the stratifications have been formed.

The dryness of the plateau region is extreme and the heat intense. From June to September the temperature at mid-day is seldom below 90° , and often exceeds 110° F.; the relative humidity is from 0.3 to 0.4 of saturation, and the average annual rainfall is probably about four inches.

After a short discussion the proceedings terminated.

FIFTH ORDINARY MEETING.

FOURTH SESSION.

THE fifth ordinary monthly meeting of the fourth session of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Thursday, April 11, 1889, at 8 o'clock. The President, Dr. WAUGH, occupied the chair.

After the minutes of the previous meeting had been read and confirmed, the HON. SECRETARY read the following letter, addressed to the President of the Society:—

[TRANSLATION.]

Geographical Society of Paris.

(Founded 1821),

International Congress on Scientific Geography, 1889.

Paris, January 28th, 1889.

The President of the Royal Geographical Society
of Australasia, Queensland Branch.

Sir,

Referring to a letter of the 12th June last, in which the Geographical Society of Paris apprised you of its intention of convoking an international Congress of Societies connected with geographical science, at the time the Universal Exhibition is being held, we have the honour to inform you of the decision recently arrived at by the Committee of organisation of this Congress.

The Congress will be held from the 5th to the 11th of August, 1889, in the buildings of the Geographical Society of Paris, No. 184, Boulevard Saint Germain. Only one general meeting will take place in the Trocadero, which has been placed by the Exhibition Commissioners at the disposal of the scientific societies; the other meetings being held in the building of the Society.

The railway companies are being requested to issue tickets to members of the Congress at reduced rates.

The programme of subjects to be discussed by the Congress will be reduced to six groups, viz. :—

- (1.) Mathematics :—geodesy, hydrography, topography, and cartography.
- (2.) Physics :—meteorology, climatology, geology, geographical distribution of plants and animals, geography of the oceans, ethnography, and medical geography.
- (3.) Economics :—commercial and statistical geography.
- (4.) History :—historical geography, history of geography, and cartography,

(5.) Didactics :—teaching of geography and diffusion of geographical information.

(6.) Voyages and exploration.

The Organising Committee has decided to allow members of the Congress *carte-blanche* as to the manner in which subjects are to be presented or questions submitted for discussion at the meetings ; communications having reference to this matter should be addressed to us as early as practicable, in order that they may be forwarded to the committees whose duty it is to regulate the order in which the subjects will be discussed. In every case the committees of the various groups reserve to themselves the right to construct a programme of questions, the discussion of which appears to them the most useful, and on which an opportunity of reply will be afforded.

We have the honour to remind you that the Organising Committee has decided to ask each geographical society for a summary of voyages in the region which it represents, and also of the publications which have especially contributed to the progress of geographical science during the nineteenth century. This summary should consist of two parts, the first being an enumeration of the explorations made by such members of each society as are natives of the country which it represents, indicating the dates and places visited, and having succinct reference to the discoveries made, and to the economic and commercial results thereof. Sketch maps showing the routes might accompany the letterpress. The second part should embrace an index of the principal publications relating to scientific geography, by scientists of the region represented by each Society ; where the title of a work does not sufficiently indicate its contents the subject treated of should be given in as few words as possible. Publications or explorations prior to the commencement of the present century should not appear in these abstracts.

These abstracts thus compiled will be handed in at the beginning of the Congress, and passed on to a special commission, whose duty it will be to arrange them in the form of a complete work, which, with additions easily made during the next ten years, will be a monument of the history of geography during the nineteenth century. The names of the authors of such abstracts will be attached.

The Organising Committee is of opinion that this international character of the Congress should be insisted upon, carefully guarding at the same time against political discussion. As an instance of the stand taken by the Geographical Society of Paris, the oldest of all in respect to the confraternity which should exist amongst scientific men of all nationalities, it may be stated that it was found necessary to remind M. de Lesseps, in his address to our General Assembly of the 7th December last, that science was a stranger to such discussions of political tendency as are calculated to induce dissension and division among nations.

Count BIZAMONT, } Commissioners
GAUTHOIT, } of the Congress.

The HON. SECRETARY announced that the President, J. N. Waugh, M.D., Mr. W. H. Miskin, F.E.S., the Hon. A. C.

Gregory, C.M.G., &c., ex-President of the Society, and himself had joined the International Congress of Scientific Geography as representing the Society.

The HON. SECRETARY then read a communication from Mr. J. J. Brown, referring to his movements in British New Guinea, prospecting for gold, after which the proceedings terminated.

SIXTH ORDINARY MEETING.

FOURTH SESSION.

THE sixth ordinary monthly meeting of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Thursday, May 16, 1889, at 8 o'clock. The President, Dr. WAUGH, occupied the chair.

After the minutes of the previous meeting had been read and confirmed, Dr. J. A. Cairns-Penny, Captain J. L. Michael, and Mr. John Fenwick were elected, by ballot, members of the Society.

The HON. SECRETARY announced the receipt of various donations, and the appointment of the Hon. C. S. Mein, M.A., Messrs. E. J. Bennett and John Fenwick as joint delegates to represent the Society at the International Congress of Scientific Geography, to be held in Paris in October next. He referred to the hurricane in Fiji from January 21st to 25th, 1889, and stated that the lowest reading of barometer during its progress was 28.61, while in ordinary weather its mean height was 30 to 30.10; he also stated that the storm was accompanied by heavy rain, especially at "Wailailai, Bua, Vanua Levu, where 38.64 inches was registered from Saturday, 19th, to Sunday, 27th; he also announced that the Council had decided experimentally to have the usual recess of four months during the hotter season of the year, instead of during the cooler season as heretofore.

The subjoined paper was then read by the author:—

Geographical Distribution of Plants.

By W. SOUTTER, Esq., Secretary and Manager of the Acclimatisation Society, Bowen Park.

The earth, with very few exceptions, presents the aspect of a natural garden, teeming with vegetable productions of every variety of form, of hue and magnitude. Notwithstanding the

extremes of temperature—from the chill atmosphere of the polar regions to the fervid glow of the tropics—each varying atmospheric belt possesses its own peculiar adapted form of plant life. There is no region almost, so arid, moist, or cold, which does not contain its appropriate vegetation. It might therefore be asked, by what means and under what conditions have all these groups of plants obtained possession of the various localities. Inquiries in this direction, in many instances, may truly seem a speculation not likely to be profitable in itself, nor likely to lead to ultimate success. From the days of Linnæus down to the present time, this subject has occupied the attention of many of our eminent botanists, and, as may be expected, great diversity of opinion has been expressed; one party maintaining that all vegetable forms are modifications of each other, or the result of a certain concurrence of molecules dispersed through matter, hence liable to be produced in any situation where the necessary conditions for their existence and development occur. Another is of opinion that all plants originated in some central point, from which they have by a gradual process become distributed over the earth's surface. Others believe that several such centres existed, as tropical, temperate, and cold. Another theory is that at first only genera existed, and that all present species are the outcome of generic admixture. A prevalent belief is that all species of plants originated where they now appear, as the untransported and natural productions of the soil and climate.

The creation and original distribution of the various genera, species, and varieties of plants, and by what means they obtained possession of their present localities, is a matter of speculation, and I fear little light can be thrown on the subject, even by scientific observation. It is of course well known that many natural agencies are constantly at work, which are calculated to a certain extent to spread the species. The ocean currents, rivers, winds, birds, and animals all assist in the distribution. That seeds are carried by ocean currents for very long distances is evidenced by the fact that yearly living seeds are carried from the coast of tropical America and deposited by the Gulf Stream

on the shores of Europe; or, again, we find on our own coasts cocoanuts and other seeds which are carried from the islands in the Pacific. Yet it often occurs that these ocean-carried seeds are deposited on the coasts of countries which are unadapted to their nature, hence the yearly supply of seeds carried from tropical America to Europe do not secure for themselves any permanent existence in the European flora. What, then, it may be asked, are the conditions necessary to the successful development of vegetation and its unaided continuance by descent? They are various, both in kind and degree, some modification of the general conditions being necessary for each particular species. It may be the cool valley or the moist warm jungle, the mountain sides or the high table-land, the porous gravel or the adhesive clay, the clear stream or the stagnant lagoon, the vegetable earth of the peat bog or the saline soil of the sea-coast; under each of these varied conditions plants peculiar to their locality are found, but transfer one from the soil in which it flourishes to a soil other than its own, and feeble growth and altered habit will soon prove how little its new situation is congenial to it.

Heat and moisture in combination are the most favourable conditions for the perfect development of vegetation as regards luxuriant growth. There is no place on the globe where the heat is too intense for vegetation to exist, provided moisture and soil be present.

Generally speaking, the temperature diminishes from the equator to the poles; the peculiar kinds of vegetation also follow this course, until the extreme cold of the biting north shuts out vegetation altogether, except perhaps a wonderful little cryptogamic plant—*Palmella nivalis* (Red Snow)—which is found encrusting the surface of the snow. There is every reason to believe that this little lone representative of the vegetable kingdom reaches even to the Pole.

In offering a general view of the distribution of plants over the globe, it may be stated that at present there are upwards of 60,000 known species of plants enumerated; comparatively few of this great number belong indiscriminately to all climates, if we

except a few of the mosses and lower orders. This limitation of particular plants to certain latitudes must remain partly unexplained—it may be owing to certain peculiarities in their structure. Be that as it may, we have a clearly defined restriction imposed by the climatic conditions of every place on the character of its vegetable productions, and each great division of the earth's surface seems to bear the imprint of a distinct creation of plants. The little island of St. Helena, on the west coast of Africa, possesses a flora peculiar to itself, not a plant of which is to be found on the neighbouring west coast of the African mainland. The vegetation of the Cape of Good Hope is unlike that of the south of Europe, although these two places climatically are little dissimilar. The plants of the East Indian Islands form another, those of China and Japan another, and Australia again another. It does not follow, however, that plants removed from one country to another in a corresponding latitude will not grow; in many instances they succeed well, as, for instance, the coffee, from Arabia, grows well in India, Africa, America, &c.; the sugar cane, originally from China, is successfully grown in all tropical and sub-tropical countries, while the potato, originally of South America, is grown world-wide.

In this brief survey of plant life as regards its geographical distribution, we shall begin where—

O'er the wide region of the frozen North
 The Ice King reigns, thron'd on eternal snow,
 And in his grasp holds the pulsating earth,
 Shrouded and fettered, reft of verdant life.

The northern limit of plant life is situated in Northern Russia, Siberia, where the spruce and larch grow in stunted bushes in lat. 75°. In Lapland and Norway the trees found to approach nearest the perpetual snow limit are the dwarf willow and dwarf birch; they can scarcely be designated trees, as they seldom exceed 3ft. in height, and oftener 3 to 6 inches. In a southward direction, through Lapland, come the common birch (*Betula*), the mountain ash (*Pyrus*), then a species of alder, which is known as the cold alder (*Alnus barbata* and *A. Siberica*), so called from the fact that it is not found indigenous south of lat. 60°. Con-

tinuing southwards we come to the northern limit of the ash, the oak, and the beech. The northern limit of the oak has been traced through Europe; it runs from lat. 63° , coast of Norway, to lat. $57\frac{1}{2}^{\circ}$, on the confines of Asia, hence it proves the mildness of the climate on the western coast of Europe, compared with that of the interior. Norway and Lapland possess a more temperate climate than any other country in the same latitude. At Tornea, at the head of the Gulf of Bothnia, the birches are magnificent, while the Scotch fir attains a height of upwards of 60ft. in lat. 70° , while in British North America no vegetation of any magnitude is found beyond lat. 60° ; this refers to the eastern portion, which includes the shores of Hudson Bay. It is reported that some moderately-sized forests exist somewhere between the Yukon River of Alaska and the Mackenzie River of British North America, in about lat. 65° .

In the Orkney Islands, on the north of Scotland, except the hazel, no tree is found. On the coast of Norway the spruce and hazel cease to grow at about the same point, while in Sweden the spruce is found on the Baltic coast eight degrees nearer the Pole than the hazel. In Norway the spruce terminates at lat. 67° , while the Scotch fir extends to lat. 70° , and the birch to 71° . On the limits between Europe and Asia the mountain ash, alder, and juniper, which in Norway grow under the Arctic circle, scarcely reach the lat. 60° .

The plants of Great Britain are well known, and require only a passing glance. The oak, elm, and beech are natives, and may now be seen growing in every country where the enterprise of the Briton has led him. Singularly enough the oak and elm succeed almost everywhere, while the beech languishes anywhere beyond its native shores. The wild flowers of Britain are numerous, and some of them exceedingly beautiful, while historical interest surrounds not a few. The burly thistle, the emblem of the Scot, the rose, adored by the Englishman, while to the sweet little shamrock the heart of the Irishman warms wherever he sees it; and the wild daisy (*Bellis perennis*), the joy of childhood, and the companion of old age, turning its golden

eye sunward, "even on the green mounds in the auld kirkyard," awakens in the heart of every Briton the memories of "auld lang syne." No country in the world has its flora so endeared to the hearts of its people as Britain; every poet has woven in his garland of thought the wild flowers, from the "wee modest crimson-tippit flower" to the sturdy oak, which extends his brawny arms to the breeze, and shakes them defiantly at the gale. But we must travel onwards, and glance in passing at the grain crops of Europe. If we turn our attention to the southern coast of the Baltic, from the northern extremity of Jutland to as far south as lat. 52° , we find little but large tracts of heath, intermixed with patches of bilberry and wortleberry. South of this barren tract every species of cultivated grain flourishes; this food-producing belt comprises the Netherlands, the greater part of France, the central part of Germany, Poland, and South Russia.

The line which limits the cultivation of grain is like that of trees, extending further north on the western side to that on the east; the 70th parallel of latitude in Norway some seasons ripens grain, while in European Russia very little corn is grown beyond 60° , while on the eastern extremity of Asia, in Kamschatka, the limit descends as low as the latitude of London, 51° . The same occurs on the east coast of the continent of America, where the successful cultivation of corn does not succeed beyond 52° . The corn-growing belt in the northern hemisphere extends from about the 70th degree of latitude to 30° .

As regards fruit, various kinds, such as the apple, pear, gooseberry, and currants have a wide range of distribution; from 62° up to the 20th degree some of these fruits can be successfully grown. The vine is otherwise, it being confined to restricted areas, which do not follow any particular degree of latitude. In the Old World the vineyards occupy about 20 degrees of latitude, while in America only about half that number is suited to the vine, or, in other words, in the Old World the grape grows in lat. 50° , while in America it does not grow beyond 40° , but in both hemispheres the plant is not really profitably grown beyond 40° and 30° respectively.

In northern Italy we first come upon the cultivation of rice. This plant extends to, and south of, the equator, embracing an area of upwards of 30 degrees of latitude. Here we also come upon the olive. This plant from time immemorial has been grown in southern Europe; its cultivation extends from the Atlantic Ocean to the Black Sea, bounded on the north by the mountains; it extends through a part of France, and Turkey, south of the Hæmus, also Spain and Portugal, and Italy, south of the Apennines, and all along the Mediterranean. In Europe the olive grows as far north as 45° , while in America it scarcely reaches 35° . The climate of Queensland is admirably adapted to the successful growth of the olive, as is evidenced by the fact that the plant bears heavily. Mr. W. H. Couldery, of Ageston, Logan, has a magnificent olive grove, which yearly produces a very large crop. Were this more widely known, I have reason to believe the cultivation of this valuable oil-producing plant would shortly become more extended. Towards the southern limit of the olive we meet the orange, lemon, and the citrus family generally. At Nice and Genoa, and at Naples, they grow luxuriantly. In the same latitudes we come upon the Spanish chestnut. The citrus belt may be said to extend round the world, between latitudes 28° to 34° north, and 20° to 38° south.

Following a direct line south of London through Algeria, we come upon a portion of the earth unadorned by either vegetation or habitation. This may be truly termed a desert, for not even the humblest weed rears its head above the great ocean of sand, while between this desert and the Mediterranean is one of the most fertile. Crossing over to the shores of the Red Sea, we come upon the rich garden of Arabia. Here we first find the mimosa, or acacias; these plants extend right through the Tropics to upwards of 40° south. On the opposite bank of the Red Sea we have the fertile valley of the Nile, yielding various vegetable productions of considerable value. Here, as in Arabia, the coffee grows to perfection. With reference to the remaining southern portion of Africa, little need be said, except that its most southern portion has probably supplied more ornamental bulbous

plants, which adorn European conservatories and gardens, than any other part of the globe.

Before going back to the Old World, we shall glance for a moment at the New. British North America, with its gigantic forests of pine, oak, elm, birch, maple, hickory, &c., contributes largely to the vegetable world; the cork oak grows to perfection, as also does the sugar maple. On through the States, we come upon the tobacco, rice, cotton, maize, sugar, &c., while the narrow neck joining North and South America supplies us with that most valuable timber, the mahogany. To the New World also belong that curious class of plants which belong to the cactus family; these are distributed over the southern portion of the States, the northern portion of South America, and the West Indian Islands. Here also are found many of our lovely orchids, and other epiphytical plants of great beauty and variety. Upon the declivities of the South American mountains may be found within a comparatively small compass every gradation of temperature, from the limit of perpetual snow to the burning tropical plains, 12,000 feet beneath, and corresponding vegetation follows the variation, from the humble mosses and lichens which merge from beneath the snow to the stately palm or the graceful bamboo, and other forms of tropical plant life.

But we must now turn again to the Eastern Hemisphere, and take a glance at the vegetation there. From the shores of the Red Sea, throughout the whole of India, the vegetation is most varied. Here every form of tropical plants are found, many magnificent timbers being among them. The Indian oak, teak (*Tectonia grandis*), so well known, and much used in ship-building, is found in several parts of India; we also come upon the well-known fruit, the mango, and many other plants of economic value. Passing on southward we come upon Ceylon, rich with verdure of all sorts. Here the tea plant flourishes, as also does the coffee, although of late years the cultivation of this plant has been less extensive, owing to a disease having broken out amongst the plants, known as the coffee disease, technically called *Hemeleia vastatrix*. A moth also made its appearance

about the same time, which made great havoc in the plantations. Ceylon is also suited for the growth of the cinchona, nutmeg, allspice, cinnamon, cardamon, vanilla, cassava, and all tropical fruits. To the south-east, a little south of the equator, we come upon what may be termed the tropical garden of the world, namely, Java. Here every conceivable plant of a tropical nature grows to perfection. It is here we find the mangosteen (*Garcinea mangastana*), that delicious fruit spoken so highly of by all who have tasted it. A little to the north, under the equator, is Borneo, which closely compares with its smaller neighbour to the south. The vegetation of Borneo is not much known, but from the products which from time to time reach the European markets it is surmised that many valuable plants exist. Eastward, past the Celebes, we touch New Guinea. Here we find vegetation of a somewhat different class appearing, which, as we progress south-eastward, becomes more closely allied to that of our own continent. On touching the land of our adoption, "it may be our nativity," we are brought face to face with that plant which is now known nearly all over the world; I refer to the eucalyptus. These plants may be said to be in possession of the whole of Queensland, for, except in some few restricted areas, some representative of this family is to be found, most of which are large trees. The family comprises upwards of 50 varieties. Australia generally possesses very few plants of an economic nature as food, oil, or fibre-producing, and even where such occur, but little use is made of the product; even the aborigines have but a very meagre list of plants which they used, or use, as a food. A few are known to us as being used by them for this purpose, to wit, the roots of nardoo, *Discoria sativa*, *Colocasia antiquorum*, *C. macrorrhiza*, *Mymphaea gigantea*, &c. Several seeds are known as being eaten, as *Sterculea quadrifida*, *Aruacaria Bidwillii* (bunya), *Castanospermum australe*, *Sesbania aculeata*, &c., while the textile plants, from which they make their lines, nets, &c., are only few. Time will not permit to enlarge upon the geographical distribution relating to Australia; a whole paper might be devoted to this continent alone, and could no doubt be made most interesting.

A knowledge of the geographical distribution of plants, besides being interesting to botanists, meteorologists, and young scientists generally, has an importance and interest for us, a rising colony peculiarly its own, besides the usefulness of timbers, and the scenic effect of trees. The influence of large plants upon the meteorology of a country is worthy of notice: this knowledge has been gained by deep investigation and scientific study of the laws that govern plant life. At present this knowledge is being applied in several parts of the world with success. That forests have great climatic influence on countries there is no doubt; several instances might be cited, the Island of Ascension one, which thirty years ago was a barren sun-dried unwatered place, with no regular rainfall; upwards of eighteen years ago a large number of trees were planted on this island, and, as years rolled by, and the plants grew on, the rainfall became more regular, until at the present it may be classed as a fairly habitable place. Another instance, the removing of trees from large tracts of country, or killing by ringbarking, has its effect. Such an instance came under my own observation in this colony. A large tract of country, I should say, roughly speaking, about 100 to 160 square miles, had the whole of the trees ringed, to improve, so they said, its stock-carrying capabilities. Not a clump nor a belt of living trees was left; for miles and miles the eye could see nothing but the bleached gaunt trees, with their white naked arms, piercing, ghostlike, the dry, hot air, that they had once upon a time laden with their own life's essence. There they now stand as hundreds of thousands of monuments to the memory of the destructive influence of unscientific development and unreasoning action. The effect of this wholesale forest destruction is that this particular locality has far less rainfall than the surrounding green tree country. I have watched the rainstorms travel across the green country; as soon as the dead trees were fairly entered upon, the whole of the cloud seemed to rise away from the contact, they no doubt finding more congenial attraction in the atmosphere above. This I have witnessed, not once, but at least half a hundred times. It would, therefore, be wise for us as

Queenslanders to look well ahead, and endeavour if possible to conserve large tracts of forests, if not for our own benefit, at least for succeeding generations.

Mr. W. H. MISKIN concurred with the author's views regarding the influence of forest on rainfall; nothing appeared so bad as the destruction of large areas of forest, which, he was sure, greatly diminished the rainfall.

Capt. EVERILL also supported the author's views regarding the influence of forest denudation in the diminishing of the rainfall.

The PRESIDENT (Dr. Waugh), however, while prepared to admit the effect of forest in conserving or storing rainfall, could not agree with the author's views; he failed to see how the precipitation over any given area could be influenced by its forest.

The HON. SECRETARY upheld the President's views; he considered the forest was produced by the rainfall, and *not* the *converse*; and in support of his views he quoted the opinions of, and referred to the observations by, Professor Draper, of New York, and Mr. Abbott, of New South Wales, which showed that the destruction of forest does not in any way diminish the rainfall of the country; he considered the conditions of climate were influenced and governed by solar action to a far greater extent than hitherto recognised by meteorologists.

Mr. SOUTTER, in reply, advocated the theory set forth in his paper, after which the proceedings terminated.

ANNUAL MEETING.

THE fourth Annual General Meeting of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Monday, July 15, 1889, at 8 o'clock. The President, Dr. WAUGH, occupied the chair.

After reading and confirming the minutes of the previous ordinary monthly meeting, the following candidates were elected, by ballot, members of the Society, viz. :—Messrs. S. H. Weedon, Caboolture, W. E. Roth, B.A., W. M. Watts, and J. E. Burstall, Brisbane.

The Hon Secretary then read the following report:—

Report of Council, Session 1888-9.

GENTLEMEN,

The Council has the honour to submit the following annual report upon the operations of the Society during the preceding year:—

MEMBERSHIP.

The fourth session of the Society ended on June 30, 1889, when the number of its members was 118, made up in the following manner:—four honorary, four corresponding, five life, and 105 ordinary members. Notwithstanding the deletions, in accordance with existing rules, the Council views with pleasure the numerical increase of staunch and faithful supporters, and the monthly accessions to the ranks of the Society of valuable and desirable members. The Council desires to afford the greatest

possible encouragement to individual members, whether of the honorary or ordinary class, who, possessing knowledge favourable to the objects of the Society, are desirous to contribute to its literature. While the chief functions of the Society are generalised in the collation and dissemination of geographical knowledge of Australasia and other parts of the world, the Council is particularly mindful of the requirements of our own Colony, and invites information upon all geographical matters connected therewith in their various aspects, whether upon the vegetation as relating to botany, or upon the soil, rocks, and solid formations as relating to geology, or upon the creeping things as relating to zoology, or upon the feathered kind as relating to ornithology, or upon the human race as relating to anthropology—all of which combine to weld themselves into one harmonious homogeneous whole; which, being designated geographical science, amuses, instructs, and qualifies us for the higher pursuits in life, while its absorbing, penetrating, and aggrandising influences discipline and subordinate our inordinate desires, whereby we may live doing good that others may benefit thereby. The Council earnestly commends to all classes of colonists, but more particularly to the youthful section thereof, the science of geography as the most fascinating and nutritious of studies; let them diligently study and explore the natural beauties and accessible stores of wealth of that sunny, invigorating, and free land, marshalled by the troops of bright sparkling gems of the constellations of the Cross and the Centaur, and beautified by the wavy and brilliant colours of Australia's national flag, and they shall have much inward peace and joy over the fruits of their labours; let them guard and protect their natural wealth by familiarising their minds with the various conditions and resources of their heritage, and not lose their national independence by leaving for strangers to do that which by indifference has been neglected.

FINANCE.

The Council begs also to submit the following financial statement:—

ANNUAL BALANCE SHEET
OF THE
ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA
(QUEENSLAND BRANCH).

Dr. FROM JULY 1ST, 1888, TO JUNE 30TH, 1889. Cr.

	£ s. d.		£ s. d.
To Balance in Q.N. Bank, June 30th, 1888	2s 19 5	By Printing the "Proceedings and Transactions" of the Society	76 13 6
„ Entrance Fees and Subscriptions from July 1st, 1888, to June 30th, 1889	157 6 6	„ Printing Circulars and Post Cards, and the purchase of Stationery and Postage Stamps	2s 5 11
		„ Proportion of Cost to the Society for the Queen's Jubilee Address.. .. .	5 5 0
		„ Advertising in Local Papers	3 3 6
		„ Caretaker of Museum, for attendance at Meetings	1 5 0
		„ Freight and Entry on Volumes of the Proceedings of the Victorian Branch	0 8 3
		„ Expenses of Meeting in School of Arts	0 15 0
		„ Balance in Q.N. Bank, 30,6,89	70 9 9
	£186 5 11		£186 5 11

J. P. THOMSON, HON. TREASURER.

Compared with Vouchers and Cash Book, and found correct.

HERBERT H. A. RUSSELL, HON. AUDITOR.

1st July, 1889.

As the foregoing shows, the accumulated funds of the Society during the past year were £186 5s. 11d., and the total expenditure during the same period was £115 16s. 2d., which leaves in the Q.N. Bank, after settling all liabilities up to date, a credit balance of £70 9s. 9d., exclusive of over £36 cash in hand. Notwithstanding the constant and somewhat heavy cost of printing and circulating its literature, the Council marks with much pleasure and satisfaction a substantial and steady improvement in the finances of the Society during the currency of the past year.

MEETINGS OF THE SOCIETY.

The Society has held seven meetings during the session. a which six papers were read; to the authors of these the Council

desires to tender its best thanks. The second of these meetings was adjourned for a week, out of respect to the memory of the late Patron of the Society, His Excellency Sir A. Musgrave.

COUNCIL MEETINGS.

During the session the Council has held seven ordinary and three special meetings; the business transacted at the former was of a general character, on the affairs of the Society; of the latter, the first was held to welcome to the colony His Honour Sir W. MacGregor, K.C.M.G., the Society's honorary corresponding member. On this occasion, Sir William expressed much gratification at the attention shown him by the Council, and promised to further the interests of the Society in New Guinea by every possible means. The second special meeting was held to deal with communications from the Société de Géographie de Paris, inviting co-operative action with it in the convocation of an International Congress of Scientific Geography, to be held in Paris in August, in connection with the International Exhibition. At this meeting it was decided that the President, Dr. Waugh, Mr. W. H. Mislin, the Hon. A. C. Gregory, C.M.G., &c., our ex-President, and the Hon. Secretary, Mr. J. P. Thomson, should join the Congress as members representing the Society in this colony. The Council commissioned the Hon. Secretary to prepare on behalf of the Society, at the special request of the Commissioners of the Congress, a report upon the exploration in Australasia during the current century; this report was completed, and after being submitted to the Council, it was transmitted to the Commissioners of the Congress in Paris, about the middle of June last. At a subsequent ordinary meeting of the Council, the Hon. C. S. Mein, Messrs. E. J. Bennett, and John Fenwick were appointed joint delegates to represent the Society at the Congress; these gentlemen were furnished with the necessary credentials, and were instructed to bring before the Congress, for discussion, a few prepared questions upon matters in which the Society is especially interested. The Council is much gratified at the success attending its efforts in arranging for the full representation of the Society at the important assembly of the International

Congress. The third special meeting of the Council was occupied in arranging for the issue of diplomas of membership; after the completion of negotiations with our sister branch in Victoria, a form of certificate of membership was prepared in Melbourne, and adopted by all the branches of the Society. This official diploma, the issue of which marks a distinct epoch in the history of our Society, will be presented by our honoured President to members, at this meeting, who have fulfilled their obligations to the Society, and will, the Council feels sure, supply a want felt by members. The Council has also had under consideration the question of establishing a Fellowship of the Society; the proposal was first brought forward by the Hon. Secretary of our Society at its last Annual Meeting, in the form of a resolution; copies of this resolution were subsequently sent to our sister branches. Since then the Council has carefully considered the whole matter, and resolved to submit for your approval, at this meeting, a reconstructed resolution in substitution of that passed at the last Annual Meeting, affirming the expediency of the establishment of a limited Fellowship, to be conferred *only* on persons who have rendered *signal* service to geography, or to the Society. This distinctive attribute will be analogous to the medals and grants awarded annually by our sister Societies in Europe and elsewhere. Unlike the distinction of honorary and honorary corresponding membership, it will leave the possessor free to take an active part in all matters connected with the Society and its objects. This resolution, copies of which have previously been forwarded to the other branches of the Society, has been unanimously adopted by the New South Wales branch, which has taken co-operative action at its last Annual Meeting; the Victorian branch has, however, as yet shown no activity in the matter, further than the expression of somewhat contrary and undecided opinions in a recent communication.

PUBLICATIONS.

The Society has continued during the session to publish its volume of "Proceedings and Transactions," and the Council has

pleasure in testifying to its satisfactory execution, both in the printing and editing. With the object of supplying our members, through the medium of our columns, with geographical information from all parts of the world, the Editor has, with the approval of the Council, decided to publish in each future issue of the Society's volume of Proceedings, Geographical Notes abstracted from the current literature of kindred institutions in various parts of the world, which would otherwise be inaccessible to members. To these Geographical Notes, which will prove an interesting factor in the Society's literature, and which will appear in Vol. IV., now in the hands of the printer, almost ready to issue; the Editor invites original contributions upon matters connected with Australasia, and other parts of the world, from members of our Society, and from friends of geographical science.

LIBRARY.

Valuable accessions to the library, consisting of books and periodicals from all parts of the world, in various languages, continue to increase; these are chiefly acquired in exchange for the Society's literature, from kindred institutions, and from Government Departments, whom the Council desires to thank. The Council also desires to again acknowledge with best thanks its indebtedness to the Trustees of the Queensland Museum for the privilege enjoyed by the Society in meeting in the library room of the Museum.

EXPLORATION.

The successful ascent of Mount Owen Stanley by the distinguished and indefatigable member of our Society, His Honour Sir W. MacGregor, K.C.M.G., is a matter for much congratulation to the Society; this is all the more gratifying when we glance at the past history of New Guinea exploration generally, and more particularly the Owen Stanley Range, which has long occupied the attention of Geographical Societies, especially those in Great Britain, and over which much capital and energy has been wasted in ill-advised and badly-arranged abortive attempts to penetrate its hitherto unknown regions. Central Australian ex-

ploration has also been represented by our branch in New South Wales, who despatched Mr. A. J. Vogan to collect information upon the various tribes of aborigines, and the conditions of the country.

OBITUARY.

It is the painful duty of the Council to conclude the session with the announcement of the demise of our late distinguished Patron, His Excellency Sir Anthony Musgrave, whose sudden and untimely death cast a gloom over the entire colony. The Council has also to make the sad announcement of the death of our late distinguished honorary member, the Hon. F. T. Gregory, whose early explorations in Australia have contributed so much to our knowledge of the physical conditions of the Continent.

For the Council,

J. P. THOMSON.

On the motion of Mr. R. Gailey, seconded by Mr. H. C. Luck, the Report and Balance Sheet were unanimously adopted.

The following letter was also read.

Government House,

Brisbane, 10th June, 1889.

Dear Sir,

I am much obliged to the members of the Queensland Branch of the Royal Geographical Society of Australasia for their kind felicitations, and I accept with pleasure their invitation that I shall be Patron of the branch Society.

I take a warm interest in the progress of geographical knowledge, and I have to thank you for sending me a copy of the Proceedings and Transactions of the Society for 1887-8.

Believe me,

Yours faithfully,

H. W. NORMAN.

The Honorary Secretary,
Queensland Branch,

Royal Geographical Society of Australasia.

The HON. SECRETARY then moved the following resolution, viz. :—

That this meeting adopts the following reconstructed resolution, in substitution of resolution passed at last Annual Meeting. viz. :—This branch affirms the expediency of the Royal Geographical Society of Australasia granting Diplomas of Fellowship as distinctive attributes. That the other branches of the

Society be invited to unite with this branch in forthwith procuring to be incorporated with the general Federal Constitution of the Society the following rules, viz.:—Upon the recommendation of the Provincial Council, subject to the approval of the branch Society, at an annual or an ordinary meeting thereof, the Honorary Diploma of Fellowship may be conferred on such persons as have rendered signal service to Geography, or to the Society, provided always that the total number of Fellows shall not exceed twelve. Each Diploma shall be signed by the President and Hon. Secretary of the branch Society, and a record thereof duly entered in its minute book, and a notification published in its volume of "Proceedings and Transactions." Recipients of the Diploma shall be privileged to designate themselves "Fellows" of the Society, and may use the initials F.R.G.S.A. after their names, as long as they continue to be members of the Society.

Mr. THOMSON explained that the Fellowship would be analogous to the medals and grants awarded annually by kindred Societies in Europe and elsewhere; unlike the distinction of honorary and honorary corresponding membership, it will leave the possessor free to take an active part in all matters connected with the Society and its objects.

He stated that the resolution, copies of which had previously been forwarded to the other branches of the Society, had been unanimously adopted by the N.S.W. branch at its last annual meeting.

The PRESIDENT and Mr. W. H. MISKIN referred to a letter on the subject, received from the President of the Victorian branch of the Society.

The motion was seconded by Mr. R. GAILEY, and carried unanimously.

The PRESIDENT then presented members with their Diplomas of Membership. Diplomas of Membership from the International Congress of Scientific Geography, Paris, were also presented to the President, the Hon. Secretary, and Mr. W. H. Miskin.

The following officers and councillors were elected, by ballot, for the session 1889-90, viz. :—President, W. H. Miskin, F.E.S.; Hon. Sec. and Treasurer, J. P. Thomson, F.R.S.G.S.; Members of Council, J. N. Waugh, M.D., R. Gailey, T. S. Sword, H. C. Luck, Hon. C. F. Marks, M.D., M.L.C., and Peter McLean.

On the motion of the Hon. Sec., seconded by H. C. Luck, Mr. W. Weedon was appointed Hon. Auditor.

The retiring President then vacated the chair to his successor.

Mr. MISKIN, in taking possession of the chair, thanked the members for the honour they had conferred on him in placing him in the distinguished position of President of the Society; he promised to further its interests to the best of his ability, and he trusted its progress throughout the year would be one of great prosperity.

The HON. SECRETARY announced that Messrs. J. H. McConnel, of Cressbrook, and W. H. Holt, of Wealwandangie, near Spring-sure, have during the past session become Life Members by compounding the usual life subscription; also that the usual recess will be held during the hotter months of the session, instead of the cooler months as heretofore.

The HON. SECRETARY proposed a vote of thanks to the retiring President and Council Members; in doing so he accorded a high tribute of praise to the former for his interest in the work of the Society.

Mr. H. TROWER, in seconding the motion, desired the name of the Hon. Secretary to be added to those proposed; Mr. Thomson's duties were arduous, and his able services invaluable to the Society; this request being complied with, the motion was carried unanimously, and conveyed formally to Dr. Waugh and Mr. J. P. Thomson by the President.

Mr. E. A. LEONARD addressed the meeting on the desirableness of procuring a room for the depositing of the maps and publications of the Society; he considered the Government should make proper provision for the establishment of the Society, similar to that made by the N.S.W., Victorian, and South Australian Governments for the branches in those colonies.

The PRESIDENT concurred with the views of the last speaker; he thought it possible that rooms might be provided in the new Museum to be erected.

Anniversary Address.

By J. N. WAUGH, M.D., &c.,

(*The Retiring President.*)

The report of Council, which you have just heard, has given all information as to the number of our members, and our financial position.

We have, I regret to say, to lament the loss of two of our members by death—of Mr. Frank Gregory, and of our late Governor and Patron, Sir Anthony Musgrave.

On the importance of sound geographical education, I need not enlarge when addressing a Geographical Society; but I may observe that increasing energy is now at work in this field. The Universities of Oxford and Cambridge have, with financial assistance from the Royal Geographical Society, established each a readership or lectureship on geography. We are but a little folk in comparison with the large and influential Society in England, but still we can do something, and if with increased numbers we have more workers, we may look to soon take a good place among the older Societies. I noticed, on the printed heading of a letter recently received from the Geographical Society of Paris, a somewhat suggestive sentence—“Geographical Society of Paris, founded in 1821, *recognised as being of public utility, 1827.*” Now this recognition of the benefit conferred on the public by the Society means a great deal more than a mere compliment. It means State aid as to quarters, and a liberal contribution to their funds. A similar state of things holds in the Southern Colonies of Australia, and this brings me to a subject which we have always felt to be of very great importance to our well-being and to our success, viz., a room in which we can hold our meetings, and which we can use as a library for our books, maps, &c. Now, while I am no advocate for any one or for any Society asking the Government to do for them what they might do for themselves, still I think that we may with reason ask for assistance on the matter of quarters. Our printing absorbs nearly all our funds.

I may now refer cursorily to what has been done in matters geographical. In our own immediate neighbourhood the work

done in New Guinea is perhaps of the most importance, but I need hardly do more than refer to it, seeing that the daily press has given pretty well all the information we have, so that all taking an interest in exploration work in these parts are fairly informed upon the subject. We have to-day an advance report of Sir William MacGregor's ascent of Mount Owen Stanley, and shall soon have all details.

The most active centre of expeditionary work has doubtless been in Africa, where we find this until lately almost unknown country traversed in many directions, and territory annexed or "protected" to a vast extent. Stanley has succeeded in rescuing Emin Bey, but has not yet reached the coast. De Brazza has opened up the Congo, and an immense area, the "Congo Free State," has come under European "administration." The French expedition from Loango, along the course of the Congo, as far as Nyangwé, and thence due east to Zanzibar, is only one of these continental crossings.

Mr. Arnot's journey from Natal to Bihé and Benguela, and eastward to the copper country of Katanga (Msidi's country), to the sources of Zambesi and Congo, which seem to arise on opposite sides of one watershed, the hill of Kaomba, shows that Livingstone's fixed idea, from tradition, that from one hill would be found the sources of four rivers, flowing to four points of the compass, was not perhaps altogether unfounded; for Zambesi, the Leeba of Livingstone, has a northerly flow at first, then southerly, then west, then east; while the Lualaba (or Congo) flows, like the Zambesi, very circuitously, the hill Kaomba dividing the basins of the two great African rivers, which rise in that neighbourhood, Zambesi flowing to the east, and Congo to the west. The paper of this energetic missionary is most interesting. In the territory of Msidi, King of Katanga, he came upon most extensive caves in the sides of the Sambowe Mountains, inhabited by a tribe which, under the protection of these strange residences, successfully resisted the tribute gatherers of King Msidi, although he is a ruthless marauder upon all his neighbours. One cave was described as "having two openings five miles apart,

of 400 yards in width, taking from sunrise till noon to pass through on camels; the opening being too high for a mounted man to touch the top with his spear." Livingstone was on his road to Katanga, when death overtook him on Lake Bangualo. To Mr. Arnot, the Royal Geographical Society bore testimony that "in his kindness to the natives he was equalled only by the Society's gold medallist, Mr. Joseph Thomson," and to this kindness of manner he probably owes his success in reaching Katanga, and returning. He reports that the chief at Bangualo, where Livingstone died, complained bitterly that his promised reward for allowing Livingstone's property to be taken away had never been paid. The law of the country is, that all the property of a stranger dying there comes to the chief. The Royal Geographical Society, at whose meeting the paper was read, granted £50 to Mr. Arnot, to be expended in presents, which he offered to take with him on his return to Katanga, and give to Chitambo, the chief. Commercial results may follow this journey, for the Portuguese authorities at Benguella have sent orders for any quantity of india-rubber, which, in the Bihé country, to the eastward of the Kwanza and Kukema rivers, is extracted from the *roots* of a plant, "talamba."

On the west coast, we see an interesting future, as described in the journeys of Mr. H. H. Johnston, British Consul for the Cameroons, and Vice-Consul for the "Oil Rivers." This experienced mountaineer's ascent of Mount Cameroons, his accounts of his journey up the old Calabar and Cross rivers, among cannibal tribes, are very interesting. He says "there is something remarkable in the way in which these negroes spring to the contact with civilisation, and hasten to avail themselves of every facility for acquiring knowledge which our missionaries or merchants place in their way." That this knowledge may, and often does, lead to the abuse of rum and firearms supplied by unscrupulous traders, does not weaken the testimony of an authority like Mr. Consul Johnston, as to their being easily improved under good influences. Upon this subject I may just refer to Captain Wissmann's trip into Central Africa. On one

occasion he remained for a time with a tribe remarkable for their beautiful town or large village, neatly constructed, very clean, and all the people happy in an Arcadian bliss. Some three months afterwards he passed through the same country and found the village destroyed; of the inhabitants, many killed, and the remainder carried away by slave-hunters, in the employ of Tippoo Tib, on whom Stanley was relying to assist him to reach Wadelai and Emin Bey, and who afterwards refused any such assistance. The reason is not far to seek. Emin Bey had suppressed the slave trade in his own province, and as far as his influence extended. I may mention that Emin Bey is himself a great authority in geographical matters, especially on that of his own and neighbouring provinces, and a scholar in comparative philology, especially of African languages. But he has always kept his observations in science subordinate to his duties as Governor of a district, which had been really abandoned by those who placed him there. For any details of Emin's doings, you may consult Mrs. Falkin's translation of a work, edited by Professor Schweinfurth and others, entitled "Emin Pasha in Central Africa."

In the lake districts of Africa, while the British explorers and missionaries have been the real geographical workers in chief, and the first to open up the country from the time when Livingstone said, "I have opened the door, I leave it to you to see that no one closes it after me." others have followed, and have now claimed large areas of country as their own territory—but the above fact remains. Great Britain made no territorial claims, and the native chiefs were powerless to effectively resist. We now find that from the Cape Colony, the whole of the east coast, north to the Equator, is taken up by European Powers—Portugal, from Delagoa Bay to Cape Delgado; Germany, thence to Wanga; and Great Britain, a small strip to the north of the German boundary; while on the west coast, Germany claims from the British boundary, the Orange River, to the Nourse; Portugal, thence to the Congo; France, thence to the Cameroons; Germany again claiming a large tract of country in the Cam-

erous district. Then came the old British settlements on the "Oil Rivers," Slave and Gold Coasts. Other settlements, as that of Great Britain in Sierra Leone, and the French on the Senegal and Gambia, carry us up to the neighbourhood of Cape Blanco, leaving only the coast line thence to the Morocco boundary unoccupied by Europeans on the Atlantic coast.

Mr. Joseph Thomson's expedition in the Atlas Mountains should be read, as showing how essential is good pluck to successful exploration among such folk as he met in his journey, as narrated in the *Scottish Geographical Magazine* for April, 1889.

Lieutenant Gélé's expedition shows that river Makua or Wellé does join the Mobangi, and is thus an affluent of the Congo.

In Asia, we note Mr. Younghusband's journey from Peking, across the desert of Gobi, through the whole of Mongolia to Kashgar, and down, through the Mustagh Pass, into Cashmere. He found that in Eastern Turkistan, Russian goods had altogether supplanted British, and that, because they were stronger and better adapted to the tastes of the people. On the Arctic Sea, Russia has done good work by the mouth of the Lena. The construction of the Obi-Irtish railway, across the Ural Mountains, through a pass of only 600 feet in height, to the Bay of Chanuder, by Cape Balkoff, will carry, by the rivers Obi and Irtish, goods from the far south, from Semipolatsk. Burmah will soon supply us with a mass of information. Reports are coming in, and are noticed in the "Transactions" of various Societies. Mandalay has been connected by triangulation with Manipur, in Assam, and thus with the main triangulation of India. A practicable route from Assam to Upper Burmah has been found through the Patkar Mountains, which separate the two countries. Colonel Woodthorpe, in Upper Burmah, says, "one way of getting information from natives regarding country, and which was found more successful than cross-questioning them, which always tires them, was to have the ground dug up in some convenient spot, and get them to roughly construct a map in relief, and this information, when carefully sifted and compared, is found to be of great use. In this way a great deal

of information may be obtained, and the natives take a kind of childish pleasure in such work. The scale was a day's march to a notched stick."

In the far North, we find Dr. Nansen travelling (at the expense of Mr. Gamel, of Copenhagen), across the ice plateau of Greenland, from east to west—a journey of forty-six days—for some weeks, at an altitude of 9,000 feet, and at a temperature of 40° to 50° below freezing point. Mr. H. Rink, sent by the Danish Government to ascertain the truth as to the inland ice over all the interior of Greenland, and whether or not it differed from ordinary glacier ice, shows that it is now settled that ice exists continuously without break, as to its outer edge, up to 75° N. on the western coast, and to 67° N. on the eastern coast. It thus presents an almost uniform sheet of ice, of more than 1,000 feet in thickness, rising gradually towards the centre, and is thus an illustration of the glacial period of the geologists. Dr. Nansen will probably lead a party to try and reach the North Pole by Franz Josef Land. While among the ice formations, we may notice an excellent paper in the December, 1888, number of the "Royal Geographical Society's Proceedings," upon the "Conservative action of Glaciers," by Douglas Freshfield, a very experienced ice traveller, who chiefly opened up to us the glacier system of Caucasus. Just to touch upon the evidence against the ploughing, scooping action generally attributed to glaciers—even to the scooping out of large lakes, as that of Geneva by the Rhone, Constance by the Rhine, and valley formations by the same agency—he shows that glaciers, on retiring, leave no hollowing out, but irregular hummocks, and this is the case within the lines of the great Moraines, over vast areas in the Eastern States of America. An Alaskan glacier is described as having moved over a soft bed without disturbing it. American surveyors show that huge ice sheets, of the second glacial epoch, advanced over soft gravel bottoms without disturbing the surface more than to a very small extent. The ice covering protects the surface from the destructive influence of weathering, and diminishes erosion. Again, U-shaped valleys have been described as

having been originally V-shaped, and having been altered in form by the action of ice rivers; but would it not be more consistent with observed facts to regard the V-shape as due to the cutting action of water upon an originally U-shape depression? Dr. Tyndall says that "a glacier of 1000 feet in thickness will press upon every square yard of its bed with a weight of 486,000 pounds, and such weight, with a motion derived from pressure from behind, *must excavate*." Now the viscous nature of ice, as shown by Bordier, of Geneva, in 1772—long before its re-discovery in our time—permitting the upper layers to slide over the lower ones, the motion of the upper surface is no measure of that of the ice lower down, so that the necessity of its excavating power is not so evident. Professor Heim says that glaciation is equivalent to relative cessation of valley formation. In Alaska, glaciers are reported to exist far larger than any in Europe, and as being the most accessible of their size. The Rev. W. S. Green has spent some time in surveying the Selkirk range, in British Columbia, and its extraordinary array of glaciers. The paper is none the less interesting from its being an account of the first survey and mapping done in this range of mountains, except along the line of rail.

In South America—in the Argentine Republic—we find concessions made and money granted for many railways, among them one from Buenos Ayres, across the Andes into Chili, at a cost of £5,600,000, and a guarantee of 6 per cent., another through the almost unexplored country of the Gran Chaco. Upon the railways already begun, or for which concessions have been granted, the Government guarantee an average of $5\frac{1}{2}$ per cent. upon a sum of £57,580,000, and a mileage of 7,455. Now this means exploration over a vast extent of country almost unknown—"for it may be truly said that the progress of exploration goes hand-in-hand with new railways."

Some sheep farmers from the Falkland Isles, Chili, and elsewhere, have settled down on the coast of Patagonia, near Cape Virgin. Gold seekers have also been scattered up and down in this place, some of whom got gold to the amount of £1,000 a

man. The Chaco district, referred to above, extends from about 19° to 29° S. lat., and presents a curious state of things as regards rainfall. From November to May it has an absolute downpour; at this time the head-waters of the river Bermejo have a lagoon 40 leagues across. The rainy season is followed by one so dry that animal life almost perishes for lack of water. These rains are presumed to be the result of the north-east winds that blow up the Amazon, Tapajos, and Madeira rivers. There, in November, they meet the cold winds from the South Atlantic, having swept across barren Patagonia, and the rain falls on the Chaco, forming the great forest district. The rainfall here is not less than 80 inches, almost the whole of which falls in six months, and in seasons of extraordinary floods the rivers Picolomayo, Paraguay, and Bermejo overflow their banks, creating a vast sea, far exceeding in area the overflow of the Nile.

I have just touched lightly upon matters geographical. While the increasing desire for geographical knowledge will stimulate this and other Societies in their work, commercial requirements constitute the great inducement to research. Railway work through regions previously almost unknown, carried on by surveyors and others trained to observe and report, must always give us reliable detail, seeing that such reports must be checked and verified before large sums are expended. As an instance the "Fishery Board for Scotland" employed Dr. Hugh R. Mill to take sea temperatures on "the Continental Shelf," that is, the shallow portion of the Continental slope, lying within 100 fathoms, and have sent Dr. Gibson upon similar work in the North Sea and Baltic, and propose other expeditions. Before finishing, I wish to call your attention to a paper read before the Royal Geographical Society, in February, 1889, by Samuel E. Peal, "on the origin and orthography of river names in Farther India." He shows the absolute necessity, or at least strict propriety, of retaining the native names of rivers and mountains, where they can be ascertained, and of carefully following, where no written language exists, the native pronunciation. "For," says the writer,

“the names of rivers especially are about the last to change in any age or country, being frequently retained long after the originating language is extinct—as in America—and the subject is of special interest where Aryan and non-Aryan races have evidently overlapped in times past.” Again, he says, “It behoves all Geographical Societies to discountenance and to oppose the irregular and misleading spelling of river names especially, for in this age of rapid publication, new and popular maps may become common, and will be the means of perpetuating errors which may now be easily removed from geographical maps.”

I intended to have drawn your attention to a subject of great interest to those who specially study physical geography, viz., to Darwin's theory of coral formations, or rather to the evidence adduced, with a view to show that such theory is no longer tenable, but I find that my notes would unduly lengthen my paper. You will find an instructive article upon this subject by Dr. Guppy, in the March, 1889, number of the *Scottish Geographical Magazine*.

It now only remains for me to say that whatever success has attended our branch of the Society hitherto, a very large share has been, and is still, due to the enthusiastic and unflinching work of our Honorary Secretary and Treasurer. Our thanks are due and are most cheerfully and readily accorded to him.

On the motion of Mr. GAILEY, seconded by the HON SECRETARY, it was unanimously resolved to publish the address in the “Proceedings and Transactions” of the Society.

The proceedings then terminated.

GEOGRAPHICAL NOTES.

EUROPE.

The Channel Tunnel.—The closer connection of the two great countries, France and England, and the more intimate social and commercial relations by a more simple, safe, and speedy means of communication than that now in vogue by the steamship, has long puzzled the brains of statesmen, engineers, and geographers. Besides the study of physical geography proper, there is also the equally interesting and useful study of commercial and economical geography, as it is from this latter standpoint that the subject of the closer union of these two countries appeals to us. The earliest records we know of in connection with our subject date back to A.D. 1750, when the Academy of Amiens invited competition for the best means to facilitate the closer relations of France and the United Kingdom. M. Desmarests took the prize with a proposition to burrow a tunnel under the Channel, which was to be lit with lamps and available for carriages. A little later a French mining engineer, M. Mathien, drew elaborate plans of a project on the lines of the former one, and submitted them in 1802 to Napoleon, then First Consul. In 1833 M. Thome de Gamond proposed to throw an artificial isthmus across the channel. Propositions of bridges, tube-tunnels, and train-bearing ships, succeeded each other with more or less rapidity, but it was not till 1836 that Thome de Gamond, after spending years in the study of his subject, conceived the idea which has developed finally into the "Channel Tunnel Scheme." An eminent English engineer, Sir John Hawkshaw, after examining the proposed scheme, reported on it and proposed certain modifications. At the time of the Paris Exhibition, an Anglo-French company, presided over by M. Michel Chevalier and Sir Richard Grosvenor, was formed for the purpose of bringing the subject prominently before the Governments of the two countries; but the Franco-German war in the following year speedily banished all thought of the tunnel from the French mind. In 1874, however, the Governments were again considering its feasibility. An international committee was appointed to draw up a plan of the jurisdiction which each country was to have over the new "way." This was done, and in the official report of its proceedings we find a definite

plan of rules as to its management. The years 1875-6 were spent in sounding the Channel and piercing its bed, with a view to finding the best points to connect by means of the tunnel. From the results obtained during these two years, the scheme was considered perfectly practicable, and a company was formed in London—"The Submarine Continental Railway Company"—and presided over by Sir Edw. Watkins, for starting the work, which commenced on both sides of the Channel in 1881. The work was necessarily slow at the commencement, and judging by the rate of progress attained, it was estimated that it would require three and a half years to complete the tunnel, when it was hoped the journey from London to Paris would be effected in five hours. The boring-machine used on the French side was the "Brunton," which carried several discs armed with knives. This was found rather cumbersome and non-effective, and was speedily replaced with that of Colonel Beaumont, which was being used with great success on the English side. This was in reality a drill of large dimensions, having arms in front in the shape of a T carrying fourteen steel points, which on being rotated scored out the rock to a uniform depth. The motive power used was compressed air, obtained from four Colladon compressors, which also purified the air in the works by means of forced draught. The work went on apace till 1882, when orders were issued to the Submarine Railway Company from the English Cabinet to suspend all operations till a commission should be instituted to inquire into the means of closing the tunnel effectively when required, as in case of war. Whilst the inquiry was being held, the public themselves carried on a hot controversy on the same subject, and journalists, engineers, military men, and others, each gave their individual opinions. The report was drawn up by the commission in May, 1882, and proposed several schemes whereby communication might be cut off and the tunnel blocked in case of war. The general opinion in military circles was that no danger would exist in time of war from the tunnel, as it could be flooded almost instantaneously. A certain section, however, of the army, led by the Duke of Cambridge and Lord Wolseley, declared themselves opposed to the tunnel, as a standing danger to the English people. The matter was then referred to Parliament, with the result that the work was ordered to be suspended *in toto* on the English side. And thus it rests now. Agitations have been set in motion for the purpose of persuading the Government to allow them to resume this beneficial work on several occasions since, but up till now they have not been successful. However, it will be only a matter of time; and when ill-founded prejudices have given way to the arguments of those who can see in the near future the mutual benefits to be derived by France and England from it, then will be resumed the work of submarine excavation, which will rank with the highest engineering achievements of this or

any other age.—*Bulletin de la Société Royal de Géographie d'Anvers*, Tome xiii., 1889.

Geographical Professorships in Europe.—Professor Wagner, in the new “*Geographisches Jahrbuch*,” gives a list of the geographical chairs in the universities of different countries of the world. Germany heads the list with nineteen chairs, not including that connected with the *Kriegs-akademie* of Berlin. In Austria-Hungary there are fourteen, including technical and commercial schools. Denmark has an extraordinary professorship. In France there are nineteen professorships and lectureships connected with the various universities, besides seven lectureships in special institutions. In Great Britain there are two chairs, one at Oxford and one at Cambridge. In Italy there are thirteen professorships, in Holland one, in Russia three, and in Switzerland two.

Geography in the French Government Service.—There was some time ago a geographical department established in connection with the French army, and recently a similar department has been attached to the French Ministry of Marine and the Colonies. Of the latter, its business is—
 (1) To collect and classify maps relating to the French colonies; (2) To publish new maps, and particularly maps showing the results of treaties; (3) To collect and classify geographical documents illustrating treaties concluded with native states.

ASIA.

Exploration of Andre Krassnow.—The Thien-Schan has recently been explored by M. Andre Krassnow, who was sent by the Imperial Geographical Society of St. Petersburg. He has travelled the southern shores of Lake Balkasch, the Gulf Ala-Koul, the valleys of Tokess and Issyk-Koul. He has found two new clusters of glaciers—those of Fride and Kolpakouski, on the upper parts of the rivers Sirtass and Kuelu. He has also visited the Chinese town of Utschturfan, in Kasehgarie. In the preceding geological epoch the Thien-Schan was covered with large glaciers, nearly as large as those of Western Europe during the glacial period: they came down to the borders of Lake Issyk-Koul, covering the high ridges between Issyk-Koul and Alatan. The modern glaciers are only the worn-out relics of the former ones. M. Krassnow has found a wide difference between the flora of the north-west slopes and those of the south-east. On the former plants common to Europe are found which do not exist on the others. According to this Russian traveller, the Loss (yellow land of China) of Thien-Schan is the result of the action of the rains on the mud of the

glaciers, modified by the dryness of the atmosphere, which agrees with the observations of M. Laspayr. M. Krassnow has observed the phenomenon of the drying-up of Central Asia; this process goes on very rapidly—the villages originally situated on the banks of Lake Issyk-Koul are to-day 250 yards distant from the same. M. Krassnow has seen on the rocks designs traced by pre-historic peoples; which designs prove that in the mammoth period man even then possessed the horse as a tame animal.—*Bulletin de la Soc. de Géog. de Marseille*, Tome xiii., No. 2, 1889.

M. de Mayrena, King of the Sedangs.—Between the Cambodge and the Annam there dwell certain savage tribes, called collectively Moïs. In the upper valley of the Bla, left tributary of the Mekong, to the west and on the confines of the Annamite province of Bin-Dhin, the Moïs form a strong federation of seventy villages, and are called Sedangs. These are very industrious, extracting iron ore and making instruments and arms, which they barter for food and cloth. They are a very independent people likewise. In 1888, a French officer, M. de Mayréna, was sent to visit them. He received a subsidy from the colony and an escort of militia. He so won the confidence of these people that they proclaimed him their king under the title of Marie I. He created a constitution, a body of horse-guards, and an order of merit. He is now in Paris, offering France the protectorate over his kingdom in exchange for a subsidy. France, naturally denies his right to his title and territory, and an order has been issued to arrest him if he attempts to return to the valley of Northern Bla.—*Révue Soc. de la Géog. de Tours*, April, 1889.

Russian Expedition to Thibet, led by Colonel Pevstow.—An expedition is now *en route*, which has for its object the exploring of the most unvisited portions of Thibet. Colonel Pevstow set out in the early part of March last with a considerable following, making his way to the region of Samarcand. It was his intention, on the setting in of spring, to go *viâ* the pass of Bedcl towards Yarkend-Daria, to explore the course of the river as far as Yarkend. Thence by Dhotan and Kerim to the mountains in the south-east, and there spend some time in exploring the surroundings. His return trip he intends to make *viâ* the country farther east, which is practically untraveller.—*Ibid.*

LAND TENURE IN CHINA.—Extract from the *Journal of the China Branch of the Royal Asiatic Society*, Vol. xxiii., New Series, No. 2, 1888.—From time immemorial all the arable land of China has been parcelled out among the general mass of cultivators, and is held by them direct from the State, subject only to the imposts by the Government. The only exception to this general rule is a tenure which prevails in the metropolitan province and in certain parts of Manchuria, where large tracts of land are held by Manchu chiefs and others as mesne lords under grants from the Crown.

Subject to this all the land in China proper is held by the peasantry in minute subdivision, under deeds issued and controlled by the local authorities. In China the authorities generally hold that, theoretically, the land belongs to the Crown, on the general principle embodied in the maxim that all under the sun belongs to the Emperor, and all the people are his servants. The Crown or Government is the nominal owner of all waste lands, and is the final reversioner of all arable lands which for any reason become tenantless, as from failure of heirs, or from being abandoned on account of famine, civil war, and so on. Original grants of such land may be had from the local representatives of the Government by the first comer, on his undertaking to bring it under cultivation and pay the usual taxes. Titles so obtained are good against all the world. On the other hand, land once in private hands may be dealt with at pleasure. It can be freely sold, mortgaged, or leased without interference on the part of the Government; and the same terms are used to express the sale and purchase of land as those expressing the sale and purchase of ordinary chattels. The land tax is generally moderately light, amounting on an average to one-twentieth or one-thirtieth of the gross produce. This is not on the better soils anything like a full rent, and owners who do not farm their own lands can always let them at a rent which leaves something considerable over, after paying the Government demands. . . . And though the Crown or Government is deemed nominal owner of all waste lands, it never attempts to exercise any rights of private ownership over them, but stands rather as a trustee for the general public. . . . Land tax is paid directly to the officers of the Government. There are no middlemen corresponding to the zemindar class in India, or hereditary rent-receivers or farmers-general of taxes. Certain enactments appear on the statute-book, making it penal for "wealthy landowners" to make themselves responsible for the taxes of their poorer neighbours. . . . There are two kinds of land tenure: (1) military, (2) common. Military: After the conquest of China by the present Manchu dynasty (1644) the conqueror made large grants of the confiscated lands in Chihli and elsewhere to his followers. The princes of the blood, the victorious generals, and some at least of the banners in their corporate capacity were thus endowed. The grants were to the first takers and their heirs without power of alienation. No rent was reserved to the Crown; and the condition, implied if not expressed, was the military service, which the grantees were, in any case, bound to render their sovereign when required. . . . The new owners, whose military establishment probably required their service elsewhere, do not appear in any case to have settled down on their property. They occupied, in fact, and still continue to occupy, so far as they exist at all, the position of mere rent-receivers, the collection of the rents and the management of the estates

being delegated to agents known as Chwang T'ou, who are recognised for that purpose as *quasi* Government officials. The condition of the peasantry was not probably materially altered at first by these changes, except that instead of paying taxes to the Government they now paid rent to the new landlords. But, apparently, the rents have been raised from time to time, till the cultivators have been reduced to a state of abject poverty. Their deplorable condition and the impossibility of collecting the rents have been the subject of various memorials from the Viceroy of Chihli in recent years. In one of these, published recently (*vide North China Herald*, August 18, 1888), he says the rent on some of these lands is as much as Taels 0·80 per mow, which would be about 20s. an English acre—more than five times, he says, what the land tax on the ordinary tenure lands would be, and adds that 30 or 40 per cent. of it is uncollectable. . . . In passing, I may notice a sort of *quasi* military tenure which still exists, in name at least, in many parts of China. The lands under this tenure are known as Tun or military colonies. They were granted originally to certain clans or families—disbanded soldiers, either Manchus or Chinese—in consideration of their performing certain specified duties, *e.g.*, guarding a frontier or (and more generally) furnishing annually so many boats and men for the grain transport service between the Yangtze provinces and Peking. In return for these services they had the privilege of cultivating certain areas, not indeed free of land tax altogether, but at a less rate than what the common people paid. The land was declared to be inalienable outside the families affected to the particular service, otherwise it in no respect differed from the common tenure. . . . Common tenure applies to ninety-nine-hundredths of the land in China. The conditions attaching to this tenure are three: (1) Payment of land tax; (2) supplying of statute labour; (3) payment of fee or tme on alienation.

1. The Land Tax.—At the beginning of the present dynasty a poll-tax (Ting Yin) was levied on all adult males, but by a series of decrees during the reign of K'ang Hi (1662-1723) it was incorporated with the land tax, which was henceforth and still is called by the generic name of Ti-Ting-Gin—land and poll-tax. About the same time the amount of the combined tax was fixed once and for all time. A decree of the year 1711 declared that the land tax should be levied in all time coming according to the rolls of that year, and that no extra levy should be demanded in respect to any increase of population. . . . The gross amount of the land tax, therefore, varies with the prosperity of the country; but for any particular locality, when once it has been fixed, it cannot constitutionally be raised. This, however, has not prevented the local officials from tacking on from time to time small extras under various designations, such as allowance for difference of scale, transport fee, collector's fee, and so on; so that although the nominal

amount as stated in the title deeds remains constant, the landowner has to pay perhaps half as much again. . . . For the purposes of tax collection, as indeed for all other Government purposes, the territorial unit is the Hsien, or district, presided over by the District Magistrate, an officer appointed by the Imperial Government for a short term of years, and always removable. He is at the same time tax collector, judge, and general administrator. As tax collector, however, he is not required to give in any account of his receipts. Each district is assessed in the Government revenue books at a fixed sum. That sum the magistrate has to furnish, and no more. Whether he collects it or not, he is held liable for it to the Government.

2. The Corvee or State Labour.—This service is nowhere defined, but it may be described as furnishing on occasion of so many carts or animals or boats for Government transport purposes, the supplying of labour for digging out canals, repairing city walls, and so forth. The abolition of this system has been advocated, unsuccessfully, however, by Chang Chih-Tung, sometime Governor of Shansi.

3. Payment of a Fee on Alienation.—This heading may be divided into four classes: (*a*) Transfers by sale; (*b*) transfers by mortgage; (*c*) succession by inheritance; (*d*) acquisition of waste lands.

(*a*) *Transfers by Sale.*—The invariable method of transferring land is by deed-poll made by the seller, and subscribed by him and the middlemen. It usually recites that the seller being in want of money, and having first offered the land to his kinsmen, who decline to buy, he has arranged through the middlemen to sell it to so-and-so for so much. . . . The names of the vendor and middlemen are written in full by the copyist: but underneath each subscribes his own private mark or affixes his seal. . . . The purchaser does not sign. . . . As many as eight or ten (middlemen) are sometimes employed, never less than two. . . . Another indispensable party to the transaction is the village Tipao or headman, whose seal must be attached to the deed of sale before it can be registered at the office of the District Magistrate. The onus of registration is thrown on the purchaser, and by law the land is liable to confiscation if this is neglected. If the deed is in order, registration is obtained as a matter of course upon payment of a fee, nominally three per cent. on the purchase money, but which in reality amounts to five or six per cent., including the usual extras for meltage, yamen's fees, &c. To avoid this heavy tax, it is common, perhaps universal, for the price to be understated in the deed of sale. Thus, Tls. 3,000 being the real price, the sale will purport to be made in consideration of Tls. 1,500, or the seller will execute two deeds, in one of which he purports to convey the land for, say, Tls. 1,400, and in the other for Tls. 1,600, both in identical terms. One of these only

goes to the magistrate to be stamped; the other is retained by the purchaser as a receipt for his money. . . . The acquisition of land by foreigners at the open ports is effected in the same way as that described above, only the native vendor does not "sell" the land, but leases it in perpetuity. No fee is charged by the authorities for this transaction.

(b) *Transfers by way of Mortgage.*—A form of transfer formerly much in vogue, and still practised, is known as Tien. The effect of it is that the land changes hands in consideration of a sum of money paid down; but the original owner is entitled at any time, on repayment of the money, to get back his land. No interest is payable on the one hand, and no account of rents and profits is required on the other. Unless the old owner comes forward to reclaim it, the land becomes the absolute property of the occupier; and the term outside of which the land cannot be reclaimed has been fixed by law at thirty years (reign of Kien-Lung, 17th year).

(c) *Transfer by Succession or Inheritance.*—All over China one rule holds good with regard to succession, viz., that on a man's death all his property, real and personal, is equally divided among his male children—whether by his wife or by concubines. If there are no male children, he may adopt a son from among his relations in a certain defined order; or if none be chosen, his relations, in council assembled, may appoint one for him, and such adopted son shall inherit all. It is only on the complete failure of male heirs, when daughters are allowed to succeed. . . . The actual division of property is a matter of arrangement. Sometimes the sons all live in common and no division is made; and when there be mother and unmarried sisters to be kept, this plan is the one generally adopted.

(d) *Acquisition of Waste Lands.*—As before stated, all waste lands, or otherwise unoccupied, are deemed public property, and rest in the State. But anyone so choosing may take possession of such lands and cultivate them. He makes application to the District Magistrate, and unless the original owners put in an appearance, the applicant, after a certain period, receives his title—good against all the world. No payment by way of purchase is made; but it is a *sine quâ non* of retaining the land that he must cultivate the land, or another may oust him. . . . No tax is levied on such newly acquired lands till after the decent period of from six to ten years, according as they are alluvial or hilly. They are then surveyed, and a land tax imposed in relation to the present value of the soil and the local customs. For this purpose three classes are recognised, depending on the quality of the land—best, medium, and poor—and the tax is fixed accordingly. For the best rice lands the tax averages four or five shillings per English acre, while on poor lands it is sometimes less than sixpence. . . . Pasture is valueless in Central China, where no cattle are reared. . . . New land formed by accretion of alluvial

deposit is deemed Government property. In cases of land being washed away in one part and formed in another, the proprietor follows his land, so to speak, and claims indemnification out of the new formation to the extent of his loss. A riparian proprietor may not annex, out of hand, new land thus formed and joined to his own; he must get such land surveyed and pay an increased tax. Similarly a proprietor of lands washed away applies for a reduction of tax in proportion to his loss of land.

Probably one-half of the whole soil of China is tilled by peasant proprietors. The other half is chiefly owned by retired officials and their families—the class known as the Literate and gentry. . . . There is no class of hereditary nobles in China . . . ; titles generally being bestowed for life only, or a limited number of lives; each successive title being of a lesser degree, thus finally becoming lost altogether. Also, this levelling rule prevents great accumulation of wealth, as a man's possessions are equally divided between all his male children on his demise. . . . Large areas of land are owned by these families, and generally leased to small farmers. In Central China the holdings are very small, often less than an English acre, and seldom more than four acres. The tenancies are from year to year, on verbal agreement. Rent is paid in kind, the best lands giving 50 per cent. of total crop, and poorer lands less. The land generally yields one or more subsidiary crops besides the main crop; these belong wholly to the tenant. . . . In the statute-book appears an enactment to the effect that in the case of any remission of land tax the landlord should allow the tenant to benefit to the extent of three-tenths of such remission; and he is "exhorted" in bad times not to insist on his exact legal claims. . . . As to the extreme fertility of the soil, those who have had the opportunity to learn inform us that one mow will support one individual (six people to one acre). At this rate one square mile can support 3,840 persons.

The following extracts from local reports will give a general idea of the land tenure in the various provinces:—

"Manchuria.—Land sells at about \$150 per acre. Rentals paid at the rate of 5 per cent. on value, if in money; if in kind, from $\frac{1}{3}$ to $\frac{2}{3}$ of the produce. . . . There are several owners of 100 acres, and not a few of 200; persons owning more than 500 are rare. A man owning 100 acres is regarded as a man of wealth. Chief crops are millet and pulse; of the former an acre produces 3,500 lbs., value \$23 per acre. Land tax, 6d. or 7d. per acre."

"Chihli Province.—Average size of holding, 13 acres; rent per acre, Tls. 3·6 for first-class land. Rent in kind, 50 per cent. from first-class land. Largest landowner, 16,000 acres. Percentage of landowners of more than 16 acres, 60 per cent.; more than 1,600 acres, 10 per cent. Value of land,

first-class, Tls. 60 per acre ; third-class, Tls. 18. Land tax (no distinctions made), Tls. '0594 per acre. $1\frac{3}{4}$ acre is required to support one individual."

"Shansi.—Average size of holdings, 5 acres ; 16 acres being considered a large estate. Land tax, about 1,800 cash per acre."

"Ning-Hsia District.—Average size of holding, 50 acres ; rent, 4,000 cash per acre ; land tax, about 6 piculs of rice per acre."

"Kiangsu District.—Average size of holding, 4 acres. Rent is paid in kind, being at the rate of 4 bushels per picul of the harvested crop of rice."

NOTE.—6 mow go to one English acre.

We will give more on this interesting subject later.

Population of China.—According to the Imperial Board of Revenue, the population of the Chinese Empire was, in 1885, over 379 millions. The population of British-India, according to the census of 1881, including half of the Native States, exceeded 253 millions.—*The Scottish Geographical Magazine*, July, 1888.

The Population of Japan.—The total population of Japan, from the census of 1885, is 37,868,987, which gives a density for the whole country of 256 per square mile, or about the same as that of Italy. On January 1, 1885, there was found to be 19,157,977 males living, and 18,711,110 females. The total population is about the same as that of the United Kingdom. — *The Scottish Geographical Magazine*, February, 1889.

AFRICA.

The Slave Trade.—During the last fifty years, and while our attention has been concentrated on other countries, Mahomedanism has been creeping slowly, but surely, over nearly one half of Africa. In some parts—those nearest our boundaries—these people have established small empires, whose boundaries are constantly varying by reason of frequent internecine wars. These empires or states—Bongo, Darfour, Ouadaï, Bornou, Sokoto, Gaudou, situated along the Niger and about Lake Tsad district, from Timbuctoo as far as Choa, Abbyssinia, and Egypt ; these form the scene of the ferocious and odious slave trade. There, the sultans themselves are the real slave dealers. Their troops, finances, &c., are reinforced by the money obtained by the sale of their subjects. By some astute reasoning, they prove, satisfactory to themselves, that their actions in this respect, are in accordance with the lessons of the Koran. According to the law founded on that sacred book, no Mussulman may be a slave. God having given him the right to command and to be free, all infidels must serve him. If the blacks of the Soudan embraced the creed of Islamism, these petty princes could no longer

make a profit from selling them ; therefore, they compel a part only of their subjects—the most vigorous—by force, which is their only mode of conversion, to embrace Islamism. The remainder form the veritable supplies for their masters, who, if he runs short of cash to pay his officers, or to procure arms, a “battue” takes place in some particular province. Thousands are caught and then chained, men, women, and children together, to be driven across the deserts on one side, or to the markets of Marocco, at Fezzan, or in Egypt ; where, with the complicity of the Mahdi, and even the Turkish Pashas, on condition of so much per head, this dealing in men is everywhere carried on secretly, in the face of all the existing treaties. This I know has been denied, but I emphatically repeat it, nor am I the only one who says it. All travellers in these parts bear me out ; when one reads the accounts of voyages, not of missionaries—for it does not always suit them to see it—but of fair thinking, observing men, one finds my statements corroborated. Nachtigal says, “In the eyes of the Mussulman, it (slavery) has not ceased to be lawful ;” and again, “Is it not natural for those seeking an increase of fortune, to do so in this manner, which accords so well with their religious (?) convictions ?” Schweinfurth says, “After the bloody battle of Kordofan, slave hunting was authorised by Mehemet-Ali, who not only encouraged it, but made it a source of supply for the treasury. With one part of the captives, he formed regiments with which to subjugate the unhealthy Soudan ; with the remainder, he paid his officers and functionaries.” Further on he says, “I passed eight months on the Red Sea exploring the coasts of Nubia and Egypt. The slave trade was flourishing, and I denounced it ; but my reports on the subject received no more attention than those of my predecessors. The consul at Djedda and the others feared to make difficulties with the European Governments, and what in a Portugese or Spaniard was considered an act of piracy, was, in an Arab, lawful. Not a cruiser was to be seen in the Red Sea, notwithstanding the fact that one gunboat would have sufficed to place surveillance over the passage between the two shores, and render the human traffic impossible. Nor is this all. In the same region of the Soudan, the Touaregs, after the style of pirates, completed the work of the princes. They roamed from the heart of the Sahara to the villages of Bambara, and, ravishing the women and children, transported them across the desert, suffering indescribable agonies, as far even as the oases on the borders of our possessions. So much for the Soudan ; but the eastern slopes of Africa, facing the Indian Ocean from the Zambesi to the sources of the Nile, are still in the most deplorable condition. From here are obtained the slaves destined to be supplied to the Arab dhows of the Indian Ocean or the Red Sea, and shipped to the Mussulman of Indo-China, the Persian Gulf, Arabia, Turkey in Asia, and even Mesopotamia, where they are admitted

by the same means used in Fezzan and Egypt. The south of Choa, the country of Niams-Niams, the plateaux of Lakes Victoria and Albert Nyanza, those of Tanganyika, of Nyassa, the banks of the Zambari, and all round Bingoneolo, Msiri, Kassongo, Manyema, and Zambar on the banks of the Congo, and even, thanks to Tippoo-Tib, the provinces which separate the Congo and Quadaï, are the scenes of this fearful destruction and squandering of human life. In these places, unlike in this wise to the Soudan, it is not the Mahomedan kings who, condemning those whom they hate to be sold, perpetuate slavery, but outside regular slave dealers. They come from Egypt and pursue this cruel avocation as far as the Albert Nyanza. These Arabs or mongrels are not numerous, but they surround themselves with bands of negroes—perhaps taken at the coast, or perhaps inland brigands. It is with these mobs of ruffians that they attack inoffensive villages, and it is, thanks to these, that they are able to get the slaves to the coast, when they have experienced no demand for them in the numerous inland markets.

No one yet knows anything of the centre of our Africa. It is spoken of as a desert, sterile and uninhabitable. It is found, on the contrary—and our missionaries every day confirm it—to be the most lovely portion of the country. It has only been judged by the country in the vicinity of the coast; there, the climate is unhealthy and often deadly to Europeans. . .

It was at the time, twenty-five years ago, when explorers and the early missionaries first penetrated these upper regions (the upper plateaux which contain the huge lakes or inland seas, which are caused by the torrents of perpetual rain, and which are the source of the four great rivers of Africa, with their affluents, and which make these parts so beautiful, and of such fecundity) to carry in their train civilisation and the faith, that the slave merchants, instructed probably by those who had been the guides of the travellers, first began to make their raids on this fair district. It is a lovely region where the temperature, on account of its altitude (5,000 feet above sea-level), does not exceed in the heat of the day 32° centigrade, and at night 17° or 18° centigrade. No part of Africa shows such numerous villages, or villages so thickly populated. There peace reigned, the tribes were patriarchal, and arms unknown. It was only towards the coast, or on the banks of the Zambesi, that the latter had been introduced. Their (slave hunters) chiefs were mongrels, issue of Arabs and coast natives, mussulmen in name only enough to give them a deep hatred of the negro race which they ranked below animals, and for whom only slavery or death was bad enough. They well justified the African proverb, viz. :—“ God made the white man ; God made the black man ; but the Devil himself made mongrels.” Their bloodthirstiness, utter disregard for human life, and their cruelty, shame to-day the heart of Africa. The people are

oppressed and cut down incessantly. Our missionaries of Tanganyika write, that not a day passes on which there do not pass before their eyes caravans of slaves, to be used as ivory porters, or human cattle.

The whole Soudan from the ocean to Egypt, and, thanks to the Mahdi, to the Red Sea, all the uplands of Africa from the sources of the Nile to the Zambesi, all the slopes of East Africa are open to the hunting and sale of negroes. This is an immense country, twice the size of Europe, whose population is estimated by some explorers at 100,000,000 souls. At least 500,000 slaves per annum are killed in the attempt to fly from their pursuers, and at such rate, if births ceased, in fifty years, these fair regions of Africa would be a desolate solitude. Cardinal Lavigerie, in the *Revue Géographique Internationale*, Paris, Nos. 156, 157, Oct., Nov. 1888.

Captain Binger's Travels in Africa.—Captain Binger, who has been travelling in Africa since the beginning of 1887, has just returned to Marseilles (1st May) after a most successful and extended journey. He left Bamakou on September 11, 1887, having for his object the following the detour of the Niger from thence to Say, and to try to establish relations with Kong and Salagha, and place this country in direct communication with the Upper Niger and the settlements of Grand Bassam and Assinie. In this he has been successful.

Kong is about 450 leagues from the coast of Grand Bassam, the intervening territory is profusely abounding in gold mines. This locality, containing about 10,000 inhabitants, has not been previously visited by white men, and our gallant explorer experienced great difficulties and dangers by reason of snares and ambushes laid by the natives; and it was only by his extreme patience and indefatigable energy and determination that he was enabled to carry on his journey.

Leaving Kong, he explored the Mosi and Grousi, and proceeded to Boutoukou, returning eventually to Kong in eleven days—a journey which takes the natives nineteen to perform. Binger has shown himself, by his determination and hardihood, combined with all the abilities necessary to a successful explorer, a pioneer of whom France may be proud, and whom all Europeans might well copy.—*Revue de la Soc. de Géog. de Tours*, April, 1889, and *Bulletin de la Soc. de Géog. Commerciale de Bordeaux*, May, 1887.

News of Mr. Stanley.—At the February meeting of the Royal Geographical Society, Sir Francis de Winton stated that Stanley was at Urenia, on the 17th August last, near to the spot where Major Barttelot was murdered. From there he sent a messenger down to Stanley Falls to Tippu-Tib, to announce his arrival, and to state that he would remain there for ten days, after which he would return to Wadelai. He asked Tippu-Tib to accompany him, and said that the road was easy, that plenty

of food could be obtained, and that Emin Pasha had large stores of ivory. A second messenger arrived at Stanley Falls with four letters from Stanley, but those had, unfortunately, been detained by the Belgian officials at Stanley Falls, and were expected to arrive in about three weeks from the date of the meeting. In those letters he hoped full intelligence would be given of what Mr. Stanley intends doing as regards his return journey.—*Proceedings of the Royal Geographical Society*, Vol. xi., New Monthly Series. June, 1889.

Kilima-njaro.—Herr Otto Ehlers claims to have set his foot on the ice-cape of the famous African mountain, Kilima-njaro. Having selected the northern slope for the ascent, which faces the dry Masai plains, and is consequently much freer from ice and snow than the southern side, whence all previous attempts have been made, he states that the altitude reached was over 20,000 feet. Dr. Abbott, an American naturalist, accompanied him part of the way. Tracks of elephants, buffaloes, and antelopes, were found up to and beyond 16,000 feet above sea-level.—*Proc. R.G.S.*, February, 1889.

AMERICA.

The Height of the Andes.—The Cordillera of the Andes has presented for some time a curious phenomenon. It has been found from observation that the height of the prominent peaks is gradually being reduced. Quito, which in 1745 was 9,596 feet above sea-level, was no more than 9,570 feet above it in 1803, and 9,567 in 1831; it was scarcely 9,520 in 1867. Thus the height of Quito has decreased 76 feet in 122 years. The Peak of Pichincha has decreased 218 feet in the same period, and its crater has sunk (descended) 425 feet in the last twenty-five years. That of Autisana has sunk 165 feet in sixty-four years.—*Bulletin de la Soc. de Géog. de Marseille*, Tome xiii., 1888.

Travels of Vicomte Joseph de Brettes.—This young explorer, on his arrival on American territory, met with great obstacles in trying to penetrate the Chaco. The desertion of his following and the cholera prevented him for sixteen months from carrying on his intended travels. During this forced delay, however, he was not idle; on board his yacht "Le Crevaux" he carried on lines of soundings and bearings in the rivers Paranas and Paraguay. Finally, owing to the assistance of the Consul-General of Bolivia, M. José Monte, M. de Brettes started his expedition through Northern Chaco, accompanied by a Paraguayan peon and fifty Guana Indians. He travelled towards the Bolivian frontier through a quite new and unknown region. Soon, however, for fear of the fighting Indian

tribes, Chamacocas and Guanas, the Indian escort and the peon abandoned M. de Brettes, who, notwithstanding the wound of an arrow, kept on his march, accompanied only by his faithful dog "Diana." His knowledge of two Indian dialects, his prudence in relations with the peoples he met with, and his general kindness, obtained for him a new escort, and in spite of great hardships and scarcity of water, he reached the Bolivian territory in ten days' journey from the River Pilcomayo. From Bolivia he persuaded the "caciques" (or princes) of Aksecks to accompany him, with thirty Indians, on his return journey to Apa, where they were presented to the Brazilian Government. Apart from his carefully noted journey, geographical positions exactly determined, and ethnographical notes of tribes visited, M. de Brettes has brought back with him numerous specimens of Incas pottery found in old ruins, some leagues from Bolivian territory. These potteries have a real artistic elegance, somewhat resembling the Archaic vases from the island of Cyprus and Asia Minor.—*Bulletin de la Soc. de Géog. de Marseille*, Tome xiii., 1889.

The German Expedition.—The expedition under the leadership of Dr. Karl von Steinen, who was sent to explore the country washed by the River Zingu, one of the main affluents of the Amazon, has returned to Cubaya, capital of the province of Matto Grosso. The Zingu, or Chingu, is an important river of the interior of Brazil, having its source on the northern slope of that mountain chain separating the basin of the Amazon from that of the Rio de la Plata; it then continues through the province of Para, passes Pombal, and then joins the Amazon on the right hand in latitude $1^{\circ} 42' S.$, to the east of the island of Aquiqui, making a distance of 1,753 miles from south to north. Waterfalls are met with at a distance of 87 miles up the river, which, of course, prevent further navigation. During this new exploration, the party investigated numerous affluents of the Zingu, of which the principal are on the left—the Trubario, Barubo, Trahy, Bacauris, Alevar, Cariay, Guiriri, Turucuri, and the Juranssu; on the right, the Jaganda, Rio dos Boys, Fresco, Rio das Arinos, Jtoma, Itabagua, and Pacaxa. They came across also hitherto unknown Indian tribes, who seemed of a superior degree of civilisation. These aboriginals, whose numbers they place at about 2,000, are advanced agriculturists, though still using stone implements in their ignorance of metals.—*Bulletin de la Soc. de Géog. de Marseille*, Tome xiii., 1888.

Immigration in the Argentine Republic.—Mr. G. Jenner, the English Consul at Buenos Ayres, in a report drawn up by him in connection with some recently compiled tables of immigration, states that in 1857 the number of immigrants who entered the Republic was 4,951; since that time the number has increased year by year, until in 1888 it reached a total of 155,632. It is calculated that this year 200,000 immigrants will

land in the country, also that the population, which is now about 3,500,000, will exceed, at the present rate of increase, 7,000,000 by the end of the century. From a classification of the immigrants according to nationalities, it appears that over 65 per cent. are Italians, about 15 per cent. Spaniards, and 10 per cent. French. This condition of affairs is, however, unsatisfactory to the Republic authorities.—*Proc. R.G.S.*, June, 1889.

OCEANIA.

Successful Ascent of the Owen Stanley Range, New Guinea.—We are indebted to our honorary corresponding member, Sir William MacGregor, K.C.M.G., for the subjoined information concerning his exploration and successful ascent of the Owen Stanley Range:—On May 17, 1889, Sir William started inland from camp forty miles up the Vanapa River, with a party composed of four Europeans and thirty-eight others; on the 30th May he crossed Mount Musgrave at an altitude of 8,000 feet above sea-level; on the 1st June he crossed the Vanapa River and commenced the ascent of Mount Knutsford, the top of which he reached on June 6, at an altitude of 11,157 feet; descending the mountain, he crossed the head waters of the Vanapa River on June 9, at an altitude of 10,130 feet above sea-level, and ascending a ridge of the Owen Stanley Range, crossed Winter Height at an altitude of 11,882 feet, being the first place reached on the top of the range; travelling in a south-east direction along its crown, he crossed Mount Douglas at an altitude of 11,796 feet, and on June 11 reached the highest summit of the Owen Stanley Range. This crest, which Sir William named Mount Victoria, is 13,121 feet above sea-level, and one mile in length; it is constituted by six or seven disintegrated masses of rock, each being about 66 feet wide on top, and their structures so decomposed that an ordinary stick could be easily inserted therein. By a singular coincidence of nature, the peaks of the extreme ends culminated at an equal altitude of 13,121 feet above sea-level. Each of the peaks on Mount Victoria were ascended, their structure examined, and the features of the surrounding country in all directions observed, and their approximate position located by angular measurement and estimation. The following new mountains were named and observed to the north of the Owen Stanley Range:—Mount Albert Edward, 12,500 feet; Mount Scratchley, 12,000 feet; Mount Gillies, 8,000 feet; and Mount Parkes, also 8,000 feet. The Owen Stanley Range, which is drained on its southern watershed by the Vanapa River exclusively, extends in a continuous unbroken chain for a distance of thirty miles from

Mount Victoria in the south-east to Mount Lilley in the north north-west, its lowest point being Dickson Pass, 10,884 feet above sea-level. Between the Owen Stanley Range and the Brown River are situated Mount Service, Mount McIlwraith, and Mount Morehead, all of which attain to an altitude of 10,000 feet to 11,000 feet above sea-level; also Mount Musgrave, 9,100 feet, and Mount Belford, 6,000 feet. The Vanapa River flows from a source of 11,000 feet above sea-level on the south and central ridge of the main Owen Stanley Range north from Mount Victoria, and situated between Mount Griffith and Mount Knutsford. From the top of Mount Victoria the northern coast of New Guinea, extending some distance into the German possession, is plainly visible some twenty miles farther off than the southern coast, and the country on the northern watershed appeared much flatter than that traversed by the expedition in British territory. The climate from 4,000 feet to 8,000 feet was most inhospitable—the days were sultry, the nights raw, and the fog dense. Over 8,000 feet the climate entirely changed to one of the finest in the world, with a clear sky and dry, cool atmosphere. Daisies, buttercups, forget-me-nots, beautiful grasses of various kinds, heaths, and skylarks were found on Mount Victoria; its summit at night was covered with hard white frost and icicles, and in the day time, from 11 a.m. to 3 p.m., the temperature in the sun was 70°, and in the shade 52°, with the corrected barometer indicating 19·050. The mean altitude of the four peaks of Mount Victoria is 13,076 feet, and the mean corrected barometer 19·080 inches. In addition to other discoveries, strawberries were found on the top of Mount Douglas. The Owen Stanley Range is composed of slate, granite, and quartz, and Mount Victoria of crystalline micaceous schist, while the general physical conditions of the neighbouring country is of the most rugged and precipitous character, entirely unsuited for cultivation. The natives did not appear to inhabit the highest eminences of the Owen Stanley Range, but they frequent the top of Mount Musgrave, and hunt on the slopes of Mount Knutsford to an altitude of 9,700 feet; those met with were very friendly, and neither they nor the several tribes passed through *en route* showed the slightest fear or superstitious dread for the uninhabited heights of the Owen Stanley. This phase of character, when compared with previous experiences, was considered somewhat remarkable. No forest exists to within 1,000 feet of the top of the Owen Stanley Range. Many varieties of plants were collected, some of which are new and of an Alpine character. Botanical, entomological, ornithological, geological, and other collections have been made, and are now under examination, the results of which will doubtless add much to our knowledge in these departments of science. Shell ornaments and other articles from the north coast of German New

Guinea, in possession of the tribes of natives inhabiting the mountainous country, indicated that trade routes of communication, probably round the end of the Owen Stanley Range, extend across New Guinea, connecting the northern and southern coasts. The native men, who appeared to possess no implements of warfare, were stout and well-built, with short legs; their plantations, which were cultivated and enclosed by fences, produced yams, sweet potatoes, sugar-cane, and tobacco. In the lower section of the range the surface of the ground and the trunks of the trees were covered with a thick layer of moss, which obstructed progression and rendered footing insecure and often dangerous. The density of the forest, which in itself retarded marching operations, was rendered more obstructive by an interspersed of extensive areas of bamboos, which, although almost as slender as reeds, were packed close together and towered far above the tallest trees.

A Peculiar Tribe in New Guinea called Kukukukus.—Our member, Captain J. M. Hennessy, of the New Guinea Government yacht "Merrie England," writes to us, under date July 7, 1889, as follows:—"In that part of New Guinea (British) which lies inland of the Karama district (south coast), that is, between Freshwater Bay and the Aird River, there dwells a tribe possessing most marked peculiarities. Their village, situated on one of the many mountain ranges which rise like so many giant steps towards that mighty backbone range, the Owen Stanley, has an altitude of 3,000 feet. The temperature experienced at this height accounts for the unaccustomed sight of the native of New Guinea affecting wearing apparel; this latter is of a very rude description, and is manufactured out of the inner fibrous bark of some tree of the mulberry species. When beaten out, it is fashioned into a sort of long tunic, not unlike in appearance an English carter's extemporised rain-coat, viz., an ordinary sack with holes cut for the head and arms. This garment gives the natives a very strange appearance, as one is accustomed to meet their neighbours of the plains clothed in nothing heavier than string. These latter live in great dread of the Kukukukus, and with reason, for they have the reputation of being very ferocious, and they are all cannibals. It is their custom to make raids on the villages and plantations of other tribes, and after despoiling them of all that is valuable or eatable, to kill the men and carry off all the young women whom they can lay hands on. Once caught, these latter rarely escape; one, however, has succeeded in doing so, and it is owing to this fact that I have been able to learn what little is known of this strange people. They have an abominable custom of using these female captives for the gratification of their animal propensities, but in an abnormal manner, only to be expressed by the French word 'gamarouche.' When the supply of these captives grows too large by reason of successful raids,

the earlier ones are killed off and eaten. It is supposed that the reason of this disgusting custom lies in the undesirability of having a large population: it was noticed that only a few women were with the tribe—just sufficient, seemingly, to reinforce this race to the required numbers. Great superstition surrounds this blood-thirsty people; any accident or misfortune in the way of failure of crops or loss of canoes, or sickness, is accredited to the Kukukukus by their neighbours within the radius of their evil report. My informant, a member of the tribe to which the escaped woman belongs, seemed terribly afraid lest, even as he spoke with bated breath (on board the vessel anchored two miles off the coast), this ferocious tribe should hear him, although we must have been at least ten miles in a direct line from the ranges where they dwell. When we proposed visiting these unnatural monsters, he begged us not to do so on any account, as, he told us, it would be our last visit to that or any other tribe. He told us how they would surround us like snakes in the grass; and it was wonderful to see this man imitate with his body on the bare deck the writhing, wriggling motions of a snake, representing how the wretches crawl through the long grass and lie in ambush for hours to catch unsuspecting women at work in their plantations. On another occasion I hope to be able to give the result of personal observation of this unique tribe.

Leprosy in New Caledonia.—*Le Colon de la Nouvelle-Calédonie* gives terrifying accounts of the spread of this contagious disease in that island. It has not attacked the white population, but has made great progress among the black indigenous population (kanakas), and especially among the northern tribes. *Le Colon* says:—"The first appearance of leprosy is not of recent date; it is generally supposed to have been introduced into New Caledonia by a Chinaman, who himself died of it about twenty-two years ago at Tendé Tendé. However that may be, it is certain that the northern tribes are most affected with it. . . . The number of lepers, according to official censuses, is 4,000. . . . It is not only the mainland which is thus attacked. If Uvea has been lucky enough to escape the contagion, it is not so with Lifu and Maré: Lifu counts 20 lepers, while Maré scores at least 100." The Consul-General of New Caledonia has voted 5,000f. for precautionary measures against this fell disease.—M. Gebelin, *Bulletin Société de Géographie Commerciale de Bordeaux*, April, 1889.

Samoa.—Dr. George Turner, in a paper read before the Royal Scottish Geographical Society, Edinburgh and Glasgow, in April last, says:—"It is argued that German interests predominate in Samoa. Let us look for a moment at this question. The total area of land in Samoa is estimated at 670,720 acres. Of this is claimed by Germans 135,122 acres; British, 233,600 acres; Anglo-Americans, 276,000; total, 694,722 acres. We have

here a deficit of 24,002 acres. This shows that until some investigation of the question of land purchase is held, it is impossible to say which nationality owns the most."—*Scottish Geographical Magazine*, Vol. V., May, 1889.

Fresh Explorations in German New Guinea.—Dr. H. Zöller, accompanied by three officers, started from the coast of Constantine Harbour in November last, and spent four weeks in the interior of German New Guinea. The party ascended the Finisterre range of mountains to an altitude of 9,000 feet, at which point Mount Gladstone was 1,000 feet above them. A new chain of mountains, lying between the Finisterre and Bismarck Ranges, and rising to an altitude of about 10,000 feet above sea-level, was discovered, and named the Kratke Range, after the Governor-General of the district. Altogether, about 140 miles of country were surveyed—*Proc. R. G. S.*, March, 1889.

GENERAL.

Universal Time and the Prime Meridian.—M. Tondini de Quarenghi, Barnabite missionary, delegate of the Academy of Science of Boulogne to the learned bodies and foreign governments, with a view to the unification of the measure of time, informs the Geographical Society, in the name of the aforesaid Academy, of means of arriving, during this year, at a practical application of universal time. This complement of the unification of weights and measures being arrived at within the century of adoption of the Metrical system, seems to realise the prognostications of D. Struve, the Russian astronomer, who, in his report on the Washington Conference, prophesied the establishment of universal time in 1890. After being flattered by the unhopèd-for support of the Mediterranean Union, which heads their notice with "Unification of the Almanac" — "The Adoption of the Meridian of Jerusalem, proposed by the Academy of Sciences of Boulogne, as the Universal Prime Meridian" — "Immediate Application of the Universal Time, conjointly with Local Time, to International Telegraphy and Telephony;" — and after paying homage to the persevering energy of M. A. Gromier, its founder, M. Tondini observes that so-called universal time is, in fact, used now. Paris time is used on all the railways in France. Universal time proper will only be of use with regard to international relations and scientific bodies. M. Tondini shows the trouble arising from the difference of time in all parts of the globe with regard to telegram dates, and he explains a novel dial plate, easily applied

to all clocks, showing universal time, combined with local time. For public buildings it is capable of much simplification. This apparatus forms the subject of a brochure, "Universal Time Dial" (Gauthier-Villars), which has received flattering notices from Comr. Banaré, and from M. Caspari, engineer, and from the Minister of Marine. By the aid of a later projection, M. Tondini explains an "Universal Indicator of all the Times of the Globe," which he is going to submit to the Government of France for the telegraph offices or other interested departments.

. As to the meridian of Jerusalem being chosen as the initial one, "the Boulogne Academy of Science has," he says, "explained the reasons for this long-considered choice in a memoir addressed to the principal learned societies of the world." This idea is encouraged by all the highest authorities in France, and is under serious consideration in England and Germany, and other countries in the East, where it forms the subject of a report by Coumbary-Effendi, Director of the Meteorological Observatory of Constantinople, to S. E. Menif-Pasha, Minister of Public Instruction. In conclusion, M. Tondini, as representative of the Boulogne Academy of Science, begs of the Society of Geography of Paris, that support to which is to be attributed the great progress which this subject has achieved during the past year, and to keep before the Government the following propositions:—"To apply universal time to telegraphy." "To use both universal and local time on each telegram." "To adopt the meridian of Jerusalem as the prime meridian, already recommended on scientific, practical, and historical reasons."—*Compte-rendu Société de Géographie de Paris*, Nos. 8 et 9, 1889.

Park Areas and Open Spaces in Cities.—E. R. L. Gould, Ph.D., in a paper read before the American Statistical Association, in May, 1888, advocating the chief uses of open spaces on the same lines as that promulgated by Professor Jevons, states that, in his view, every park should possess, as a part of its equipment, a concert hall. He instances France, Germany, and Denmark, where every little town possesses its concert garden, where the summer evenings are spent in pleasant social intercourse, listening to music, or witnessing fireworks or pantomimes. During the summer months concerts should be given as often as every other week-day evening in every one of the large and moderately sized open spaces. The hours for music should be early, say between seven and nine o'clock. There is everything in the surroundings of city working classes to drag down, but little to uplift. The moral influence of parks, especially with provisions for recreation as outlined, would be very great. "Foul air prompts to vice and oxygen to virtue," as surely as the sunlight paints the flowers of our gardens.—*Pub. of the American Statistical Association*, June - September, 1888.

Geographical Societies of the World.—From a sheet of the section of the twelfth volume of Professor Wagner's "Geographisches Jahrbuch," we learn that the total number of geographical societies which have been founded since the year 1821 is 124, and of these 23 have not survived, so that at the present date there are altogether 101 geographical societies. Of these, France and her colonies have more than any other country—29, with 19,800 members, and a gross income of about £12,200. Next comes Germany with 22 societies, 9,200 members, and an income of £4,600; followed by Great Britain and her colonies with nine societies, nearly 5,600 members, and an income of £12,000. Altogether, there are 130 geographical serials published in the world—45 in French, 41 in German, and only 10 in English.

The Internal Heat of the Earth.—Herr Huyssen, Official Director of Mines, Berlin, states, with regard to the increase of temperature beneath the surface of the earth, that the boring at Spevenberg, near Berlin, has now reached a depth of 4,176 feet, that at Seckenwitz 4,390 feet, and that at Schladebach 5,735 feet. At Spevenberg, at a depth of 3,490 feet, the temperature was $107\cdot6^{\circ}$ Fahr.; at Seckenwitz, at a depth of 3,555 feet, it was $91\cdot5^{\circ}$; and at Schladebach, at a depth of 5,735 feet, it was 134° . Herr Huyssen points out that, as yet, the latest observations indicate no rule as to the ratio of increase with depth; the increase of heat seems to be neither geometrical nor arithmetical, nor conformable to any fixed rule.—*Proc. R.G.S.*, June, 1889.

Antarctic Regions.—The proposal for a German expedition to the Antarctic regions seems likely to become a reality. It is affirmed that a contract has been concluded with an American firm of shipbuilders for the building of two steamers, specially constructed for ice navigation. Among the places the expedition proposes to visit are the South Shetlands, the South Orkneys, South Georgia, and the Bouvet Islands.—*The Scottish Geographical Magazine*, January, 1889.

MISCELLANEOUS.

Mr. W. H. Miskin.—Our President, Mr. W. H. Miskin, has been offered and accepted the Presidentship of the Geographical Section of the Australasian Association for the Advancement of Science, rendered vacant by the death of General Sir Edward Strickland, K.C.B., F.R.G.S., the first meeting of which takes place in Melbourne, on January 7, 1890.

Mr. J. P. Thomson.—At a meeting held in October, 1888, the Council of the Royal Scottish Geographical Society, unanimously conferred that Society's Honorary Diploma of Fellowship upon our Hon. Secretary and Treasurer, Mr. J. P. Thomson, who is thereby declared a Fellow of the Society.

Lecturer in Geography at Cambridge.—Mr. J. Y. Buchanan has been appointed to the post of Lecturer in Geography at the University of Cambridge, vacated by the retirement, through ill-health, of Dr. Guillemard. —*Proc. R. G. S.*, June, 1889.

Dr. Nansen.—The young Norwegian, Dr. F. Nansen, who succeeded last summer in crossing, with his party, the inland ice of Greenland, from east to west, has arrived at Copenhagen. —*Proc. R. G. S.*, June, 1889.

The Royal Geographical Society of Australasia.

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- ABSTRACT of Proceedings of the Linnean Society of New South Wales,—January to July, 1889. *From the Society.*
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- CONGRES INTERNATIONAL des Sciences Géographiques en 1889. Comités du Congrès and Programme de Questions. *From the Congress.*
- DEPARTMENT OF MINES, Sydney, N.S.W.—Memoirs of the Geological Survey of N.S.W.; Palæontology, No. 2; Contributions to the Tertiary Flora of Australia; also Records of the Geological Survey of New South Wales, Vol. I, Pts. 1 and 2, 1889; also Descriptive Catalogue of Minerals, Metals, Fossils, and Timber of N.S.W., exhibited at the Centennial International Exhibition of Melbourne, 1888. *From the Hon. the Minister for Mines.*

- DEUTSCHE Geographische Blätter, Herausgegeben von der Geographischen Gesellschaft in Bremen, durch Dr. M. Lindeman. Heft 1 and 2. Band XII. *From the Society.*
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- JOURNAL of the China Branch of the Royal Asiatic Society. Vol. XXII. New Series, No. 6, 1887. Vol. XXIII, Nos. 1 and 2, 1888. *From the Society.*
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- ROYAL Geographical Society. List of Fellows, January, 1889. *From the Secretary.*
- SOCIETE de Géographie de Paris. Compte Rendu des Seances. Nos. 1-10, 1889. *From the Society.*
- SOCIETE de Géographie de Tours. Revue, No. 8, 1888, Nos. 1-5, 1889. *From the Society.*

- THE GEOGRAPHICAL Society of Australasia (South Australian Branch). The Rivers of the Northern Territory of South Australia, and the Nullaboy Plains, and the West Boundary of the Province.
From the Society.
- THE JOURNAL of the Manchester Geographical Society. 1888, Vol. IV.
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- THE PROCEEDINGS of the Royal Society of Queensland. Vols. I-V, and Vol. VI, Parts I-IV.
From the Society.
- THE TORCH and Colonial Book Circulator. Vol. II, Nos. 6 and 7.
From the Publisher.
- THE SCOTTISH Geographical Magazine. Vol. IV, No. 12, 1888, Vol. V, Nos. 1-7, 1889.
From the Society.
- TIJDSCHRIFT van het Nederlandsch Aardrijkskundig Genootschap. Tweede Serie, Deel IV, Nos. 2, and 5-10, 1887. Tweede Serie, Deel V, Nos. 7-10. Deel VI, Nos. 1-7, 1889.
From the Society.
- TRANSACTIONS and Proceedings of the New Zealand Institute. 1888, Vol. XXI (fourth of New Series).
From the Institute.
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PROCEEDINGS AND TRANSACTIONS
OF THE
Queensland Branch
OF THE
ROYAL GEOGRAPHICAL SOCIETY
OF
AUSTRALASIA.

5th SESSION,
1889-90.

EDITED UNDER THE AUTHORITY OF THE COUNCIL OF THE SOCIETY
BY

J. P. THOMSON, F.R.S.G.S., ETC., ETC.,

Hon. Secretary and Treasurer;

Honorary Corresponding Member of the Société de Géographie Commerciale de Paris,
the Société de Géographie de Marseille, and the Royal Scottish
Geographical Society.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. V. PART I.

Brisbane :

WATSON, FERGUSON & CO., PRINTERS, QUEEN STREET

1889.

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FIRST ORDINARY MEETING.

FIFTH SESSION.

THE first ordinary monthly meeting of the fifth session of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Monday, September 2, 1889, at 8 o'clock. The President, Mr. W. H. MISKIN, F.E.S., occupied the chair; and there were present—His Excellency General Sir H. W. Norman, G.C.B., G.C.M.G., &c., Governor of Queensland; The Honourable Sir William MacGregor, K.C.M.G., M.D., &c., Administrator of the Government of British New Guinea; Lady MacGregor, and a large attendance of members and visitors.

After the minutes of the last annual meeting had been read and confirmed, Mr. S. W. Hartley, of Rockhampton, was elected by ballot a member of the Society.

The PRESIDENT announced that he had been offered the Presidentship of the Geographical Section of the Australasian Association for the Advancement of Science, the assembly of which would take place in Melbourne in January, 1890; considering the offer highly complimentary to the Society, he had accepted it.

The PRESIDENT then said that the meeting would proceed to the principal business of the evening, which was the reading of the subjoined paper upon the recent explorations in New Guinea. The paper, he stated, contained a great deal of interesting information, more exclusively of a scientific character, concerning the geographical conditions of part of south-east New Guinea, in their various aspects. He thought it very desirable that a paper of that character should appear in the "Proceedings and

the camp, and, although assisted by only one man, a track was cut through the scrub and jungle, for a distance of seven miles in the interior, along the line of march. His Honour's movements were much impeded by the ill-health of his few followers, and the afternoon torrents of rain which spread from the thunderstorms of the interior; the forenoons were sultry and the vegetation soaking wet in the morning. Although traces were everywhere observed, no natives were seen. This district possesses a dense forest, many of the timber trees of which are valuable. Included in these are the cedar and ilimo; the latter is supposed to be white ant proof. Cultivation is rendered impracticable through the narrowness of the gorges and the steepness of the hills, the latter being composed of slate, with numerous thin veins of white quartz; this may be accepted as the general geological condition of the district. In some of the creek beds large isolated boulders of conglomerate and smaller ones of basalt were observed, but no traces of gold or other valuable metals were found.

While exploring the district about two and a half miles from the depôt, a prominent rock, which was named Jack's Rock, was discovered on Mount Gleeson. This rock, whence a clear unobstructed view of the high lands of the interior, even to the summit of the Owen Stanley Range, may be obtained, is situated at an altitude of about 1,000 feet above sea-level, and its point of vantage is strongly recommended to future observers.

On the 17th May, reinforcements having arrived on the previous day, the expedition, which then numbered forty-two persons all told, composed of four Europeans, George Belford, a Samoan half-caste, five Polynesians, and thirty-two Papuans, started for the interior. The highest point of the long spur of Mount Gleeson was traversed at an altitude of 1,292 feet. Another ridge of about 800 feet high was crossed and the evening camp made at the confluence of the Exton Creek and the Vanapa River, at an altitude of about 300 feet. From Exton Junction the expedition crossed over two miles of broken country, composed of very steep and precipitous ridges, the altitude of which did not,

however, exceed 700 or 800 feet; several creeks were also crossed and their beds examined, but, although the formation was slate and quartz, with favourable indications of gold, none was found on washing the gravel.

Taula Creek was reached at an altitude of 583 feet, and the steep western end of Guba Hill ascended and crossed at an altitude of 1,000 feet. The geological conditions of this district are of a quartz and slaty nature, the hills rugged and precipitous, and the timber of no great proportions. Although many of their traces were observed upon the trees along the ridges, yet no natives were, at this stage of the journey, seen. Cæsar Hill was traversed, and the Atoa Creek—a fine clear stream of 20 yards breadth, with a slaty and basaltic boulder bed—crossed at the 500-foot level. The steep rough spurs and ridges of Mount Kowald were next ascended, its summit crossed at an altitude of 2,750 feet, and its northern side descended to the right bank of the Vanapa River, the current of which at this point runs very rapidly over a rough rocky bed. Although straight and in great abundance, the timber trees on Mount Kowald are not of large proportions. The crossing of the Vanapa River, which was accomplished by means of a raft constructed by Mr. Belford, who gallantly and voluntarily swam the muddy seething torrent, was a tedious and difficult task, owing to the partially flooded condition of the river and its irregular and obstructed channel. The expedition continued its journey for a short distance along the left bank of the Vanapa, until impeded by the intrusion on its banks of the huge rocky escarpments of mountains, which narrow the river's course and render the traverse of its bed impracticable; consequently the spurs of Mount Belford were ascended, and the march continued along the crest of its summit at a height of 3,500 feet, thence down the precipitous and rough northern side of the mountain to the Joseph River, which, winding along the southern base of Mount Musgrave, at this point passes the 2,635-foot level.

The formation of Mount Belford is of the usual slaty and quartz nature, covered with forest of fine timber trees, and, like

unto Mount Kowald, more frequented by birds than any other section of the country through which the expedition passed. From the existence of their paths and camp sites, this mountain region appears to be largely patronised by native hunters, although they neither plant nor reside on it. Tall and graceful wild bananas, a pepper somewhat similar to the *Piper methysticum*, only in this case growing as a tree from 20 to 30 feet high, a very fine rhododendron, and several other rare and valuable botanical specimens, were observed on Mount Belford. The natural history department was also strongly represented by that silent and pestiferous insect the scrub tick.

Following a native hunting-path up a spur from the Joseph River, the expedition ascended the slopes of Mount Musgrave, to the crown of one of its main ridges, at an altitude of 5,000 feet. Here was found a large hunting house, to which was given the name of Goodwin Lodge. This house, which was about 25 feet long, 10 feet wide, and 6 feet high, having a roof covered with the leaves of a dwarfish pandanus tree, presented the appearance of recent occupation, and, although one of their dogs was running about, no natives were seen, nor responses heard to vigorous inviting shouts. The ground around the house was wet and swarming with leeches, and the atmosphere alive with mosquitoes, so that a prolonged halt at Goodwin Lodge was considered undesirable. Following the crest of the ridge in a westerly and northerly direction from Goodwin Lodge, the expedition reached the main crown of Mount Musgrave, at a height of 5,588 feet above sea-level, where it camped. Taking advantage of a short halt made here for the purpose of forwarding the rear baggage, the native path was followed to the western end of the crest of the mountain, whence angles were taken to and good views obtained of the Owen Stanley Range, and the general conformation of its southern aspect; from this point a large native village was seen on one of the ridges at the foot of the south-west spur of Mount Knutsford. The many noises peculiar to native festivity were heard during the first night on the mountain, proceeding from a locality apparently situated some

miles to the north-west, and the next day they honoured the camp by a visit; friendly relations having without difficulty been established, the expedition was visited by numbers of these mountain people during its stay in the locality, and the relations throughout were of the most friendly character, a circumstance which rendered the operations of the expedition agreeable, and the services of the natives of great value in the supply of food. Their language bears strong relations to the Papuan dialect, and they are physically stronger than the coast men, perhaps a little shorter, having long, strong bodies, but generally shorter and more muscular legs; they wear neither nose nor ear ornaments, nor do they tattoo. The older men wear caps made of the best of cuscus fur, with frontal ornaments made of white shells ground down to thin plates, and sewn together with cheek pieces of black cassowary feathers; others wear caps that are less picturesque, though more elaborate, trimmed with the tusks of boars and the teeth of dogs. Youths generally affect head-pieces made of native cloth, apparently manufactured from the bark of the mulberry tree, into which they gather their thick mops of hair. On the breast they wear a piece of net-work, with small meshes about 8 to 10 inches deep, and long enough to extend rather more than half way round the ribs, from where it is fastened behind by strings from its four corners. They all wear the perineal band, as worn at the eastern end of New Guinea, but every man and boy is clothed with an additional girdle of the cloth made from the bark of the mulberry tree, about 10 or 12 inches deep, cut up into lappets, over which they also wear in front as an apron, a small net bag about from 9 to 12 inches in length. On the neck, legs, and arms they wear rings of cane, some of which are plain, others plaited or twisted. Their features, which are remarkably good, indicate more character and strength than those of the average coast man, and the cheek bones in many are rather broad and prominent. The nose is generally of the Semitic type, with nostrils either not arched or much so than is usual in Papuans; the chin and under jaw are also stronger. Although less shy than other tribes,

having seen more of white men, and possessing all the volubility of the Papuan race, they are apparently superstitious and nevertheless easily frightened. Although weapons of any kind were never seen in their possession, they stated that the bow and the spear were both used by them. They grow yams, sweet potatoes, several varieties of bananas, good tobacco, and possess abundance of food, which they readily exchanged for salt, beads, and cutlery. Doubtless, owing to its possession, they do not prize tobacco. Small parcels of peas, beans, and tobacco seeds, which they cultivate, were procured from this interesting tribe of natives, who always made a rule to leave the explorers' camp before night-fall. None of their women were seen. After a day had been spent in camp on the main crown of Mount Musgrave, the expedition continued the ascent of its crest, along which it proceeded for a distance of 2 miles, and again camped at an altitude of 7,180 feet. The temperature here was 70° at noon and 60° at night, and the climate raw and foggy. Everything upon the face of the mountain was saturated with moisture and clothed with moss, which lent to the sombre forest a weird and lonely aspect, and even at this altitude the mosquitoes were troublesome. Next day the traverse of the crest was continued, when, after ascending to a place 8,000 feet above sea-level, and observing no indications of a favourable connecting spur with Mount Victoria, the expedition retraced for a mile to the 7,180-foot level, and commenced the difficult and perilous descent of the northern face of Mount Musgrave to the 6,000-foot level, where further progress was then arrested by a precipitous line of rocks, crossing the path at right angles. The dangerous position of the expedition at this stage was rendered more critical by a dense curtain of mist which so completely enveloped it as to render an observation of surroundings impossible. Compelled by circumstances, the party camped for the night in this inhospitable and miserable position, subjected to a temperature of 58° Fahrenheit at night, 60° in the morning, and 67° at noon. Next morning the aspect was so uninviting that the Papuan members of the expedition refused to proceed on the journey. However, after the adminis-

tration of certain medicine, many real and pretended cases of sickness were cured, and a start being made, Sir William succeeded, single-handed, in cutting a track right down the rocks and precipices, which was probably the most precipitous and dangerous ever traversed by carriers; even the natives at first refused to risk the descent, but, after being assured of the safety of their leader, they eventually hazarded the dangers of the path, and, by great perseverance and unflagging exertions, the expedition descended to the edge of a small creek, at an altitude of 4,300 feet above sea-level, weary and greatly discouraged by small progress and inhospitable surroundings. At the 3,380-foot level on Mount Musgrave, a small precipitation occurred at night, and the whole zone was enveloped in fog; at an altitude of 5,588 feet a little rain also fell towards the evening, and the fog envelop commenced to close before noon. The trees of this zone are not of large size, and most of them appeared to belong to the myrtaceous family; there is plenty of fine timber growing below the 6,000-foot level, but above that altitude the trees are smaller and generally very crooked. The summit of the mountain, which was found to be 9,150 feet high, is narrow in places, but not so rocky as a distant view of its general appearance indicated. The geological conditions of the whole mountain, from base to summit, are slate and quartz, with well marked white veins of the latter, between the 6,000 and 7,000-foot levels. Owing to the unsatisfactory physical condition of several of the members of the expedition, Sir William was obliged to continue the journey from last camp, at the 4,300-foot level on the north side of Mount Musgrave, with only Mr. Belford, two Polynesians, and six Papuans; Mr. Cameron, His Honour's acting Private Secretary, with the remainder of the party, at his own wish, returned to the camp on Mount Musgrave, and awaited Sir William's return.

Continuing the descent across a succession of precipitous cliffs and rugged gorges, bristling in their grim and desolate solitude, the expedition succeeded in reaching the base of the steep rocks at the foot of Mount Musgrave, and the Vanapa River at the base of Mount Knutsford, about noon on the same day. The

Vanapa at this place runs west by south, and is not more than half the size of its section at the west end of Mount Belford. As a traverse of its channel, which was 30 to 40 yards wide, was altogether impracticable for men carrying packs, and dangerous under whatever circumstances owing to its obstruction by huge irregular boulder piles, and seeing no easier accessible route over the comparatively short gap of 3 miles which separated them from Mount Victoria, it was decided to ascend Mount Knutsford, and follow the steep spur connecting it with the Owen Stanley Range. Accordingly, the dangerous and difficult task of crossing the Vanapa River was undertaken, and accomplished by means of a temporary bridge constructed by Belford, at a place where an accident or fall from it into the river would have resulted in certain death. The altitude of the river at this crossing was 2,790 feet above sea-level, and the temperature at mid-day 68° Fahr. From the left bank of the river, they commenced the ascent of one of the leading spurs of Mount Knutsford, which was rugged and precipitous, and camped at two native houses used by them as a halting place, at an altitude of 500 feet above the river crossing. At this point no rain fell, but there existed a partial obscuration by fog from early in the afternoon. Next morning the ascent of the mountain was continued, and after traversing an estimated distance of 2 miles, the evening camp was made at the 6,500-foot level, where the temperature at 3 p.m. was 72° , and at 6 p.m. 67° . This region was completely enveloped in fog by the middle of the afternoon, but no precipitation occurred; and here, as on the higher zone of Mount Musgrave, the trees were generally not large, and the forest possessed a similar myrtaceous character; and, excepting a few mountain pigeons, which were hard to obtain, no game was seen. The ascent was commenced early next morning, and a distance of 1 mile traversed by noon, when the temperature was 64° Fahr., and the whole region completely enveloped by a column of dense fog. After a most laborious and difficult ascent of the almost perpendicular face of a precipitous and rugged spur, which, but for the existence of the friendly

roots, trunks, and branches of moss-draped trees, would have been inaccessible to packers, a camp was made in the afternoon, on a razor-backed ridge barely wide enough for a path, at an altitude of 8,300 feet, where the last shower of rain, met with on the upward journey, fell; excepting the small quantity caught from this shower no water could be obtained at this camp. This region was remarkable for its awful, depressive, pervasive, death-like stillness, which was doubly intensified by the grim sepulchral appearance of the trees, with their roots, trunks, branches, and, slightly, even their leaves, enshrouded in thick clinging garments of moss, which rendered them dismal to the eye and repulsive to the touch. The surface of the ground and the vegetation were soaking wet, and the dense curtain of vapour, especially when its wavy motion caused it to ascend from the abysmal ravines, or break on the rugged spurs, caused the surroundings to appear more gloomy and awe-inspiring, and the rugged and precipitous spurs and ridges even more terrible and inaccessible than their real condition indicated. Even the birds aided nature in its dismal solitude, by withholding their cheerful sounds; the leaves of the forest emphasized the stillness of the region by the absence of their rustle; while the members of the expedition appeared enthralled by the intensity of the solitude, for they seldom conversed, and uttered but whispers. At this camp, the number of the party was further reduced by one Polynesian and three Papuans, who were sent back to the camp on Mount Musgrave. Twenty pounds of rice was hidden in a secure place at this camp, and the party, now consisting of His Honour, Sir William MacGregor, G. Belford, Joe Fiji, and three Papuans, provisioned with fifty pounds of rice, thirty pounds of flour, about six pounds of ham, about the same quantity of salt beef, and armed with two shot guns and one revolver, continued the journey on the morning of the 4th June, without breakfast, and after proceeding three-quarters of a mile up the face of Mount Knutsford, they camped at a native hunting depôt, with three cooking places excavated in the ground about 18 inches wide, nearly the same depth, and half filled with small stones. The

altitude of this camp was 8,815 feet, and the temperature at noon in the shade 63° Fahr. As the forest trees were larger and straighter, and there existed less abundance of moss than in the region between 6,000 and 8,000 feet, and as it was found that the upper margin of the dense afternoon fog, that had settled down on the region immediately below, reached no higher, it was considered that this camp marked the upper line of the dismal wet vaporous mossy zone.

The next day, at an altitude of 9,000 feet, the expedition entered an undergrowth of bamboos, with stems about an inch in diameter and easy to cut; this continued until the 9,500 feet level was reached, when the character of the bamboo changed entirely: here the stems grew as close together as wheat, and their tops ran completely over and entirely obscured the heads of the tallest trees, so that the task of cutting a track through them was both tedious and laborious; nor was this condition of bamboo forest changed till the expedition left Mount Knutsford, beyond which there was none. The zones of moss and mist, which are apparently inseparable, end together, and a fine dry climate begins with the bamboo, which is never lost till a descent is made to the 8,000 and 8,500-foot level into fog and moss. At 2 p.m., on the 6th June, the summit of Mount Knutsford was reached, and its height found to be 11,100 feet above sea-level. The climate here was magnificent, a dry and cold atmosphere, possessing a temperature of between 60 and 70 degrees Fahr. during the middle of the day, in the partial shade of the forest; and 40 to 45 degrees Fahr. at night and in the early morning. This position was some 2000 or 3000 feet clear above the great masses of snow-white clouds, which completely cut off all view of the lower regions. The top of this mountain culminates in two great accessible masses of rock, each about 100 feet high, separated by a space of about a quarter of a mile, upon the middle of which is situated a smaller and lower mass of rock. The limited area of these rocky peaks was covered with an Alpine flora, which also flourishes in the highest 500-foot zone of the mountain; specimens of all these were obtained, but,

altogether, the limited flora of Mount Knutsford was considered disappointing. From base to summit, the geological conditions of this mountain are diorite and crystalline micaceous schist.

The clouds in this region, which were apparently motionless, excepting an occasional projection of small jets of vapour shot upwards through narrow ravines right to the summit of the mountains, were considered to be formed solely by the union of local causes and not brought thither by the south-east winds. The upper surface of this stratum of cloud, which is usually about 4,000 to 5,000 feet thick, is like a field of snow, almost dazzling in its whiteness and its rugged masses, which are irregular in their serration, extend their hoary flakes so far as to obstruct the vision beyond their limited horizon, while the tops of the higher mountains reared their lofty and majestic heads from 2,000 to 5,000 feet above this Arctic landscape, which caused them to assume the appearance of islands in a silvery sea of glassy smoothness. In the early forenoon, before the obscuration of the lower regions occurred, which was usually about 10 o'clock, a clear view could be obtained of the country bounded between the top of Mount Knutsford and the south coast; it was also observed that numerous plantations and plantation houses were located on the north side of Mount Musgrave, and that the only permanent villages and human habitations observed on any section of the Owen Stanley Range were situated on Mounts Knutsford and Griffith; the altitude of the sites of the permanent villages did not exceed from 4,000 to 5,000 feet above the level of the sea. From the top of Mount Knutsford the most extensive and effective view is obtained of the basin and course of the River Vanapa, through which the whole of the south waters of the Owen Stanley Range flow. This river divides at the north-west end of Mount Musgrave into two branches, the one trending west drains the eastern waters of Mount Cameron; the eastern and southern waters of Mount Lilley, and the southern waters of Mounts Thynne and Griffith. The eastern branch gravitates at first between Mounts Knutsford and Musgrave, thence for a short distance separating the former from

Mount McIlwraith till they are divided by a projecting offshoot of Mount Victoria ; the river then forms itself into five divisions ; the first branch flows between Mounts McIlwraith and Morehead ; the second between the latter and Mount Victoria ; the third between the latter and the southern slopes of Mount Douglas ; the fourth between the latter and Winter Height ; and the fifth, which is the principal and true head of the Vanapa River, flows between Mounts Griffith and Knutsford on the south, and that part of the Owen Stanley Range named Winter Height on the north. The lower and middle section of this river is well adapted for the transportation of timber ; but, owing to the immense boulders and stones which obstruct its channel, the upper section from the west end of Mount Musgrave is impracticable for navigation. Mounts Service, Morehead, and McIlwraith attain to altitudes of from 10,000 to 11,000 feet, and are situated between Mount Victoria and the Brown River, which is a branch of the Laroki. On the 8th June the journey was continued in a north-westerly direction, along the summit of Mount Knutsford ; and, for the last time on the outward journey, across the Vanapa, at a place 10,130 feet above sea-level, where the river is 5 yards wide, with a very rocky channel. On crossing the river the ascent of the central spur of the Owen Stanley Range was commenced, and, on the afternoon of the 9th, Winter Height was reached, at an altitude of 11,882 feet, on the top of the great central ridge of the Owen Stanley Range ; continuing the march on the same day, a camp was made on the lowest part of this ridge, between Mount Douglas and Winter Height, where the top of the gorge on the south watershed meets a similar formation on the north watershed, at an altitude of 10,884 feet above the sea. The forest here was mainly composed of cypress, and the only sound to break its silence was the howling of the wild dogs. Next day the march was continued, the top of Mount Douglas passed over, at a height of 11,796 feet where strawberries were found, excellent in flavour but not of large size ; and, after travelling a distance of 5 or 6 miles, camp was pitched at a point on the main

Owen Stanley Range, some few hours' march from its highest crest, which was reached at 11 a.m. on June 11. This culminative crown, which was named Mount Victoria, in honour of Her Majesty the Queen, possesses no trees within 1,500 feet of its top, and but few bushes within 1,000 feet thereof; it, however, possesses a great variety of grasses, daisies, buttercups, forget-me-nots, heaths, etc. Of the birds, which were very few and uninteresting, three specimens were obtained, including a lark. Two nights were spent at a point on Mount Victoria, 12,452 feet above the sea, and 670 feet below the summit of its highest peaks. The temperature here was, during the day from 10 a.m. till 4 p.m., between 50° and 60° Fahr. in the shade; and on the tops of the highest peaks where exposed to the direct solar action, the temperature in the middle of the day was 70° Fahr.; and in the early morning, before reached by the rays of the sun, the surface of the ground was white with frost, and icicles more than an inch in diameter and 7 or 8 inches long, were brought into camp. Excepting a slight haze at times, when a strong south-east wind was blowing, the sky in the daytime was blue and cloudless, and at night the mighty galaxy of stars shone with great brilliancy in the clear heavenly vault. The existing conditions of Mount Victoria and of all the most prominent features of the Owen Stanley Range indicated a dry region, and the impressive silence of the surroundings was not broken by even the trickling of rivulets nor the more mighty weird moaning sounds of the romantic waterfall and cataract. A series of six separate serratures or peaks projecting from a common base, the plane of which is one and a quarter miles long, extending from south-east to north-west with a slight curvature, the convexity of which lies to the north of a straight line joining the extremities, constitutes the crest of Mount Victoria; the extreme north-west and the south-east of these peaks, which are of equal height, and comparatively easy of ascent by great rifts in their rocky sides, are a few feet higher than those of intermediate position, which, being formed of nearly perpendicular and over-hanging bare rough-surfaced rocky

masses, especially the upper hundred feet of their sections, are exceedingly difficult of ascent. These peaks are separated from one another by chasms many feet deep, laborious to traverse, and their tops, which are composed of decomposed rocks, bedecked with beautiful flowering moss and heath, are from 8 to 10 yards broad, and from 50 to 60 yards long.

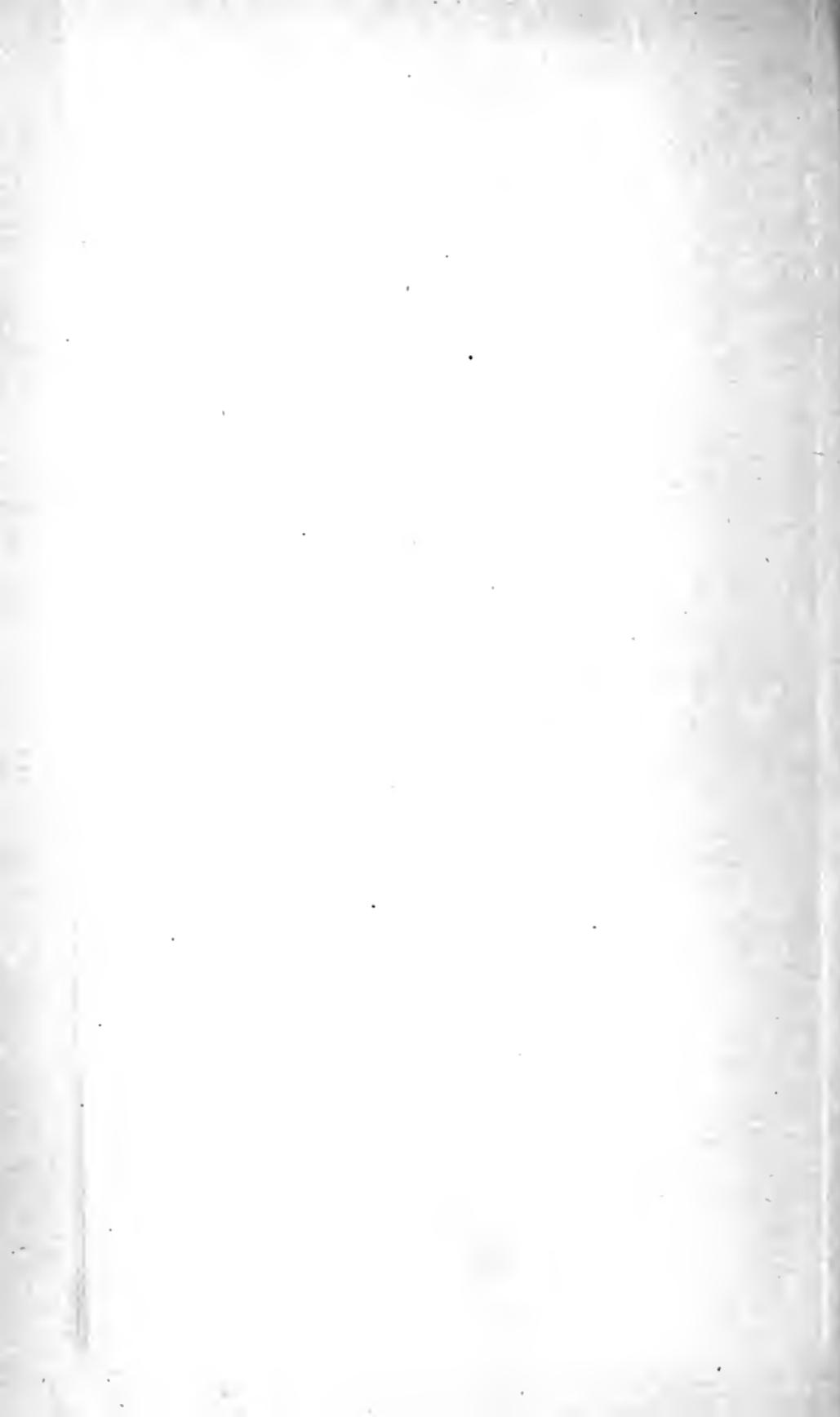
The eastern end of the Owen Stanley Range is not the culminative axis of an isolated pyramidal block, as described by previous observers from afar, nor yet does it possess a crowning eminence, the conformation of which in ordinary geographic or geometric phraseology could, with the smallest pretence to correct application of appropriate designation, be named a pyramidal block or pinnacle, although it is just possible that the conformation of a mountain crest, composed of many peaks, may be such as to make it appear one solid mass, when viewed from certain positions, and may actually be accepted and described as such by those of inexperience.

Mount Victoria is formed by the convergence and union of five huge rocky precipitous buttresses exceeding 12,000 feet in height, two of which are on the northern side, two on the southern side, and a giant one on the south-east side, all of which are bristling with grim peaks and inaccessible crags and precipices. The Owen Stanley Range continues unbroken from Mount Lilley in the north-west for a distance of about 30 miles to Mount Victoria in the south-east, which is separated by a number of low rounded hills from the rugged mountainous country to the north-west of, and in the neighbourhood of, Mount Obree; it will, therefore, be observed that to speak of Mount Obree as part of the Owen Stanley Range is just as incorrect and misleading as it is to speak of the pyramidal block or highest pinnacle of Mount Owen Stanley.

The views from the peaks of Mount Victoria, which were of the most romantic character, and the panoramic and scenic bold and clear outlines of the great physical conformation of the south-east section of New Guinea, from the southern to the northern coast, was of the greatest possible interest, and would



M^r ALBERT EDWARD FROM PEAK N^o 3 M^r VICTORIA.
(figures represent Magnetic bearings)



have more than satisfied the utmost limits of the wildest imagination. Here the natural curvature and irregularities of the Owen Stanley Range were observed from its point of union with Mount Griffith on the south, and the bold, bare, rocky, treeless, serrated-topped Mount Scratchley on the north, to Mount Lilley on its extreme north-westerly termination.

Mount Scratchley, which is estimated at a height of 12,250 feet, and is, in consequence, the third mountain in the Possession, presents a bold rugged outline with the upper 500 feet of its section composed of bare rocky masses, with a general trend in a north-east direction for 3 or 4 miles, where it is formed into two great offshoots which terminate opposite Mounts Gillies and Parkes. North from Mount Scratchley, and having a general trend in a similar direction, lies Mount Albert Edward, the second mountain in the Possession; this mountain, the height of which is estimated at 12,550 feet, possesses a partly bare and partly grass-covered rocky crown, with the upper 1,000 feet of its section, destitute of timber, but only 4 or 5 miles of its crown was visible from Mount Victoria. Between Mount Victoria and the northern coast, which was plainly visible for several hours in the forenoon, only two great mountain masses are observed within the first quadrant of the circle. These mighty mountains, which are apparently separated from one another and from the Owen Stanley Range, were named Mounts Gillies and Parkes; they are from 7,000 to 8,000 feet in height, and the most western, Mount Gillies, presents a regularly shaped profile of from 15 to 20 miles long in a north-easterly direction, densely covered with an unbroken forest mantle, and separated from Mounts Scratchley and Albert Edward by a valley of a mile or two in width, and from Mount Parkes, east of it, by a river. Mount Parkes, which obtains a length of from 25 to 30 miles, assumes a longitudinal position, similar to the direction of the Owen Stanley Range; in general physical appearance it resembles Mount Gillies, has no sharp, well-defined peaks, and is covered with forest. Between Mount Parkes on the north, and the ends of Mounts Scratchley and Douglas on the south, a valley 2 or

3 miles long widens out and disconnects the former from the end of the Mount Obree Range. This valley, which maintains an average breadth of 4 or 5 miles and a length of 30 miles, appeared to be thickly populated.

Although impossible to indicate the direction in which they ran, rivers could nevertheless be seen between the end of the Mount Obree Range and Mount Parkes, and between the latter and Mount Gillies, while far away easterly and southerly could be seen the bold outlines of other mountain ranges.

Viewed from the lofty summit of Mount Victoria, the general conformation of the territory, on the northern side of the range, appeared uniform and comparatively flat, and the population greater than on the southern watershed.

In so far as we have been able to prove, the geological structure of Mount Victoria is of the simplest kind indeed; from the top of the Owen Stanley Range to the mouth of the Vanapa, no great varieties of order occur, so that, geologically speaking, the floor of the Vanapa basin differs little from its higher to its lower level. Specimen rocks brought back indicated the existence of crystalline micaceous schist on Mount Victoria, diorite on Mounts Griffith and Knutsford, and the occurrence of traces of gold in the bed of the upper Vanapa, while in its other sections micaceous schists, hornblende, porphyry, and altered sandstone exist; but, as it is not yet known how much of these rocks are representatives of the districts in which they are found, it is in consequence merely an assumptive conclusion as to the actual geological conditions of that part of the country. Yellow sands containing gold also occur in the lower section of the Vanapa basin.

From the top of Mount Victoria peaks, angular measurements were obtained and recorded of the prominent features of the landscape. On the top of the north-east peak, Mr. Belford left a powder flask containing a record of Sir William MacGregor's ascent of the mountain, on June 11th, 1889, and that he had given to it the name of Mount Victoria; on the top of the south-east peak Sir William drove the stick he had used for

resting the compass on when observing, and on the morning of the 13th June the expedition commenced the return journey, following almost their outward track; the fragments of the expedition were collected, and the coast reached in twelve days.

Although great care was exercised, the expedition was unable to identify places on the Owen Stanley Range named and described by Mr. Forbes; taking that into consideration, together with the substance of his description of the Owen Stanley Range, which, although referring to many prominent features upon which names have been bestowed by the author, shows no geographic positions by which alone identification is possible, we are reluctantly constrained to omit these names, which, if judiciously and appropriately applied to well-defined places, would have received full recognition; it is also regrettable that in describing other localities to which he assigns positions, that explorer has omitted to supply the interesting data employed in their determination, which, to the science of astronomy, alone, would have, at least, been interesting, and possibly, to future travellers, useful.

FLORA.

Regarding the flora of the Owen Stanley Range, Baron Sir F. von Mueller, in a communication addressed to Sir William MacGregor, writes as follows:—

The ascent of the mountains of the Owen Stanley Range in New Guinea to their very summits, recently accomplished with so much courage and perseverance by Sir William MacGregor, demonstrates the occurrence of an almost Alpine vegetation between elevations of 11,000 feet and 13,000 feet; and more than this, it renders known, for the first time, an extraordinary and significant commigration of forms, some typical of the Northern, others of the Southern Hemisphere. On the crest of the range, above the limits of forests, occur, as we now learn, so near to the equator, such mainly extratropic genera as *Ranunculus*, *Hypericum*, *Arenaria*, *Potentillas*, *Rubus*, *Epilobium*, *Aster*, *Erigeron*, *Helichrysum*, *Senecio*, *Gentiana*, *Veronica*, *Euphrasia*, *Trigonotis*, *Scirpus*, *Schoenus*, *Carex*, *Agrostis*, *Aira*, *Poa*, and *Festuca*. Many

of these approach in their affinity to forms familiar to us in Europe, a few even being identical with British species, and appear thus to reach in New Guinea their most southern geographic limits. But, on the other hand, many of these Papuan highland plants are of far southern type, such as *Drimys*, *Drapetes*, *Donatia*, *Styphelia*, *Phyllocladus*, *Libertia*, *Carpha*, *Oreobolus*, *Gahnia*, *Dawsonia*; indeed some of the species are absolutely the same as congeners of the Australian and New Zealand Alps. In the collections which during this first attempt of Papuan highlands exploration could not be rendered very large in specific forms, *Ericaceæ* (within the genera *rhododendron*, *agapetes*, and *vaccinium*) are rather prominent. Another remarkable fact now established, is the identity of several plants of the Owen Stanley Ranges with such as were described by Sir Joseph Hooker, from Kuni-Balu, in Northern Borneo, where they were discovered by Sir Hugh Low at elevations of about 8,000 feet; for instance, *Drapetes ericoides* and *Drimys piperita*. The four conifers, gathered during Sir William MacGregor's expedition, consist of *Araucaria Cunninghamii*, a *Podocarpus*, a *Phyllocladus*, and what may possibly be a *Libocedrus*; of the latter, however, no fruit was obtained. So far as the material before us allows us to judge, the endemism in the Alpine vegetation of New Guinea seems far less extensive than might have been supposed. The writer of these lines pointed out some years ago, against the views of a distinguished Italian naturalist, that although the main expressions of the Papuan flora in the lowlands and midlands might be regarded as prominently Malayan (notwithstanding the occurrence of *Eucalypts* and *Phyllodinous acacias*), yet we could not ascribe the same general characteristics to the highland vegetation, when *Araucaria* had already come within reach. That the Papuan Alpine flora contains so many largely Australian elements, as we are now able to show, must lead to various scientific generalisations far beyond those of phytology.

MR. THOMSON said he desired to conclude by again tendering his best thanks to Sir William MacGregor, for the cheerful and spontaneous aid he had accorded, in affording every possible facility

for the success of the meeting. Geographical science, and more particularly its handmaid the Queensland Branch of the Royal Geographical Society of Australasia, owed much to the brilliant success of Sir William's expedition to the crest of the Owen Stanley Range. Although various branches of science were greatly added to, the topographical and cartographic departments were specially enriched. Sir William's expedition had supplied the prime material essentially necessary for the progress and development of a country—viz., its topographical aspect. No country could possibly elucidate its natural and artificial capabilities without first possessing a knowledge of its topography, which was of paramount importance in the conservation and economy of water, for the determination of catchment areas, the distribution of soils, forests, metals, &c., and other conditions necessary for the sustenance and comfort of mankind. He was sorry that even the great Colony of Queensland presented a wide field for more comprehensive delineations of its topographical conditions.

The paper, which was illustrated by a map and numerous sketches showing the conformation of the country, was listened to with great interest and attention, and the author on resuming his seat was warmly applauded.

The PRESIDENT invited discussion upon the paper.

SIR WILLIAM MACGREGOR, who on rising was received with applause, said that perhaps it might sound something like a paradox to say that after listening to the very able paper which had just been read, he had learned nothing from it. What he meant was that Mr. Thomson had exercised so much care in preparing his paper, that he (the writer) had practically made no mistakes. Now that said a great deal. That afternoon two friends of his had each sent him a copy of a work on New Guinea. One friend sent him Mr. Lawson's book, and another Mr. Romilly's. He simply mentioned the books together—not because they had any relation to one another, but on account of the coincidence of their coming to him at the same time. He did not mean to infer that they were alike in character. He had

not yet looked into Mr. Lawson's book, but he had looked into Mr. Romilly's, and though he had only a few moments to spare over it, he learned a great deal—a great deal that he did not know before. The first thing he learned was that one could not get up the Owen Stanley Range, and that if one did it would be no use because nothing could be seen from it. That was new to him, for he could see a very great deal from that range. The second thing he learned was that it was the abode of the devil. (Laughter.) From what he had heard and read of that person's character, he would say that that range would be the very last place to find him, for there was practically nothing for him to do there. Turning over a few more pages of Mr. Romilly's book, he learned next something about the character of the Papuan which he did not know before. Mr. Romilly said, for example, that he had never heard of a brave man or of a brave deed being performed amongst the Papuans. He (Sir William MacGregor) could tell them this, that if they were in New Guinea now, and he were asked who was the bravest man there, he would say Ginger, and Ginger was a Papuan. He was certainly one of the bravest men he (Sir William MacGregor) had ever come across, but he was not much more than half the size of Mr. Romilly or himself (Sir William MacGregor). Mr. Romilly also told us that he had been looking for a virtue among the Papuans, and had been unable to find one, even that of conjugal virtue among married women. Well, he (Sir William MacGregor) had not been in New Guinea so long as Mr. Romilly, but he had discovered virtues of different kinds in the Papuan race. He had never in the whole of his experience heard of a criminal assault upon a woman among them, and in that respect the Papuan must stand head and shoulders above all other communities. This had been brought specially under his consideration when having to deal with matters more or less under a legal aspect. But there was another virtue which was very pronounced amongst them. The Papuans, in their domestic and family relations, were, he would say, about the most affectionate people on the face of the earth. They were affectionate in the tribe, in the village, and even in

the district to which they belonged. He had seen when a man was arrested in a very large village, the whole of the population—men, women, and children—turn out to cry and lament because a prisoner was being taken away. This was a scene which very greatly impressed him at the time. Unfortunately, he had had cause to see similar scenes since, but he was convinced that, so far as family ties were concerned, the Papuans had a virtue which he believed capable of considerable development. He could go further and say that no man, tribe, or community in which the family tie and the domestic tie had developed, was without hope of improvement. He had no doubt that a great deal could be done with any people possessing such domestic and family attachments. He had, however, no idea of entering upon a speech on this occasion; he preferred very much to hear other people speak. He feared that he had gone on to a matter which had got a little away from bare geographical details. His friend, Mr. Thomson, not long ago wrote a paper in which he tried to put the study of geography in a true light—not as the mere study of the height of mountains or the length of rivers, but as the whole history and aspect of a country, its geology, fauna, and flora. Looking at his digression in that light, they would perhaps pardon his somewhat irrelevant remarks. He wished to express his sincere thanks to Mr. Thomson for the careful and able way in which he had placed the facts contained in his paper before them. (Applause.)

The PRESIDENT said that he was sure they were very much indebted to Sir William MacGregor for his interesting speech, and to Mr. Thomson for the valuable paper which had been submitted to them that evening. He thought it was only fair to Sir William MacGregor, that the Society should then recognise the great feat which he had achieved in ascending the Owen Stanley Mountain Range, by according him a most hearty and unanimous vote of thanks. (Applause.) The achievement was of great value beyond a geographical point of view; it was very valuable from a zoological point of view. More than this, Sir William MacGregor had succeeded in making a very extensive collection of one

branch of zoology, and they could see specimens displayed on the table that evening. Among these were at least fifteen species of birds hitherto unknown to science, and a collection of insects which were obtained, he believed, in the lower altitudes. Sir William MacGregor had also made a valuable botanical collection which had been submitted to Baron Mueller, and had furnished information of great interest respecting the flora of a country hitherto altogether unknown.

HIS EXCELLENCY, GENERAL SIR HENRY WYLIE NORMAN, who was cordially cheered, said that though it was getting very late he did not like to keep silent. He was sure they had experienced a great treat that evening in hearing Mr. Thomson's paper read. That gentleman had had a very high compliment paid to him by Sir William MacGregor, who said he was quite unable to find anything incorrect in the paper. They were very much obliged to him for that paper, and to Sir William MacGregor for the very interesting remarks he had made upon it. Sir William MacGregor alluded to the very gratifying fact that these Papuans, who seemed to have been somewhat maligned, possessed some virtues. He was quite sure that if Sir William MacGregor were to go to London, and read a paper giving his experiences, he would attract an audience which would hardly be contained in the large hall in which the Royal Geographical Society held their meetings. It would be a great drawback if Sir William MacGregor had to leave New Guinea for a long period, but some day he would have to take a holiday, and when he did, he (Sir Henry Norman) was sure that the Royal Geographical Society would warmly welcome him. Not only was he a bold and intrepid and most persevering explorer, and not only did he possess wide scientific knowledge, but he was an Administrator who would be quite certain to conduct relations between the natives in a way to win their affections and not excite their anger or passions. (Applause.) He thought the members of the Royal Geographical Society of Queensland ought to be very proud that a member of so small a society had accomplished this great feat, and as Queenslanders that a gentleman so closely

connected with the government and administration of Queensland should have been one of the first to ascend the Owen Stanley Range, and to add so much to the geographical knowledge of the world. (Applause.)

Some time was then spent in examining the entomological, ornithological, and other zoological specimens, also photographs exhibited by Sir William MacGregor; the former specimens being explained by the President, and by Mr. Hedley, Hon. Sec. of the Royal Society.

The proceedings then terminated.

SECOND ORDINARY MEETING.

FIFTH SESSION.

THE second ordinary monthly meeting of the fifth session of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Monday, September 30th, 1889, at 8 o'clock. The President, Mr. W. H. MISKIN, F.E.S., occupied the chair.

After the minutes of the previous meeting had been read and confirmed, a case containing entomological specimens collected by the Scientific Expedition to Mount Obree, New Guinea, conducted by the Victorian Branch of the Society, was exhibited; the Hon. Secretary announced that these specimens, which had been presented by the Victorian Branch, would be donated by the Council of the Society to the Queensland Museum.

In the absence of the author, the HON. SECRETARY then read the following paper:—

The Gulf of Carpentaria.

By Captain WILLIAM CAMPBELL THOMSON.

This large indent on the north side of the continent of Australia, was named in honour of General Carpenter, one of the officers connected with the Dutch East India Settlements, and may be said to begin at Booby Island, in latitude $10^{\circ} 36' S.$, longitude $141^{\circ} 53' E.$, and extends southward to $17^{\circ} 32' S.$, a distance of 416 miles of latitude, and 300 miles of longitude across from Booby Island to Cape Wessel, in latitude $11^{\circ} S.$, and longitude $136^{\circ} 47' E.$

The general configuration of the gulf may be represented by a pocket narrowing towards the bottom, with the east side deeper than the other. The greatest depth of water is 40 fathoms, gradually shoaling from the centre towards the land, which may be seen from the mast-head, the depth of which is less than 3 fathoms, especially so on the east side.

This side is free from outlying dangers, but on the south side, the Wellesley Group extends a distance of 50 miles from the mainland, and comprise Mornington, Bountiful, Bentinck, and Sweer's Islands, and several others of lesser size.

Further to the north-west, across the boundary line, dividing Queensland from South Australia, is the Sir Edward Pellew's Group, consisting of five islands; the largest bearing the name of Vanderlin's Island.

From here the land trends to the north-west to a large indent, forming what is named Limmen's Bight, with Maria Island at the mouths of two large rivers at the head of the bight. The most northern of these rivers, is the Roper River. From here the main land trends northward, with several large islands lying some distance off; the largest, Groote Eylandt, being 37 miles long by 35 broad; and Bickerton Island, of much smaller size, forming the south side of another bay, called Blue Mud Bay. From here the land continues trending northward to Cape Arnheim, passing an indent called Caledon Bay. From Cape Arnheim the land trends to the north-west, across Melville Bay to Cape Wilberforce, thence to a number of islands called the English Company's Islands, and the Wessel Islands, at the northernmost extreme of which is Cape Wessel.

The shores of the gulf have been a *terra incognita* until a few years ago, and even now comparatively little is known. Many large rivers disembogue into the Gulf, but few are navigable for vessels of ordinary tonnage. The only ones used at present for navigation are the Norman, the Albert, the McArthur, and Roper Rivers.

This part of Australia was the first visited by white men, in the early part of the seventeenth century, and is most interesting, not only from its historical associations, but from the great geological changes that have taken place, entirely altering the geographical appearance of the continent.

Evidence is abundant to show that at one time a shallow sea divided Australia, and that it has been gradually filling up. Either side of this strait or sea is shown by fossils of a miocene

period, while in the middle the tertiary period is represented, extending the whole of the way from the shores of the Gulf south to Adelaide. These changes took place during the age of fire, after the deposition of the present coal beds, which were tilted into the sea on the east side, and the mountains which form the watershed, and which extend the whole length of Australia, were then forced up.

The land on the south side of the Gulf is rising rapidly, owing to the accumulation of marine debris thrown up, and the deposit brought down by the rivers in flood time.

Another mysterious change is going on, the shifting of the beds of the rivers, noticeable not only here but throughout the whole of Australia. In conformity with some law, not yet properly understood, all rivers in the southern hemisphere have a tendency to eat into their right banks; thus, with the rivers on the south side of the Gulf, they are working to the eastward, often forming a curve, and at long intervals breaking through at the weak point of the first abrupt deflection, and running in a straight line until the flood force is spent, when the former wandering motion is reverted to.

A casual observer is rather apt to underestimate the observations of the old navigators, as rivers reported by them are found either not to exist, or are further to the eastward than the place formerly assigned to them. Within the last forty years, great changes have taken place at the mouths of the rivers. A recognition of this law would prevent mistakes being made in the clearing of rivers for navigation. Time and space will not admit of a detailed account of all these changes, and for the present we will but glance down the page of history, and as we near the present day review these changes through our geographical and geological knowledge. Let the mind go back to the time when the great Dutch emporium, Batavia, was in the ascendancy, and the Dutch East India Company held full sway, and their enterprising spirit was in search for fresh fields for commerce, *certainly not colonisation.*

1605.—The "Duyfhen" was despatched from Bantam, on November 18th, 1605, and reached as far as Cape Keer Weer on

the east side. Here several of the crew were murdered, and great must have been their disappointment at finding such an inhospitable shore, where they had hoped to find the beautiful rich tropical foliage that the least imaginative could have conjured up, coming as they did from the lovely isles of the Malay Archipelago.

“This extensive country was found for the most part desert, but in some places inhabited by wild, cruel, black savages.” This is the report they give of the places visited; and that there was nothing to suggest trade, was the reason that so little interest was taken in the discovery of this great land, supposed to be a continuation of Nova Guinea.

1618.—Zeachen is said to have discovered Arnheim's land, naming it after his birthplace in Holland; but no records are known to exist.

1623.—In January 1623, the yachts “Pera” and “Arnheim,” under the command of Jan Carstens, were dispatched from Amboina, by order of His Excellency Governor Coen. Carstens, with eight of the Arnheim's crew, were treacherously murdered by the natives of New Guinea. The “Arnheim” is supposed to have returned, and the “Pera” sailed along the east side, naming the Coen River, sighted Cape Keer Weer, named the Nassau and Staten Rivers, and proceeding as far as latitude 17° , calling the opening there, Van Diemen's Inlet, now known as the Gilbert River. The “Pera” then returned to Amboina.

1636.—In April, 1636, Gerrit Tomaz Pool sailed from Banda with the yachts “Klyn,” “Amsterdam,” and “Weigel”; they made the coast of New Guinea, where Pool met with the same fate as Carstens. The expedition was prosecuted under the command of Pieter Pietersen, but, owing to the south-east monsoons, were unable to make the east side of the Gulf; they however made the coast on the west side, naming Cape Weyel, and coasting along Arnheim's land for a distance of 120 miles, without seeing any people, but plenty of smoke.

1644.—Abel Janez Tasman sailed on his second voyage in 1644, and his instructions are an embodiment of all discoveries made up to that time. The following is taken from Captain

Flinders's introduction to Terra Australis:—"After quitting point Ture or False Cape, situate in 8° on the south coast of New Guinea, you are to continue eastward along the coast to 9° south latitude, crossing prudently the cove at that place. Looking about the high islands or Speult's River, with the yachts for a harbour, dispatching the tender 'De Braak' for two or three days into the cove, in order to discover whether within the great inlet there be not to be found an entrance into the South Sea. From this place you are to coast along the west coast of New Guinea, (Carpentaria) to the furthest discoveries in 17° south latitude, following the coast as it may run west or southward. But it is to be feared you will meet in these parts with the south-east trade winds, from which it will be difficult to keep the coast on board, if stretching to the south-east; but notwithstanding this, endeavour by all means to proceed, that we may be sure whether this land is divided from the great known south continent or not."

Captain Flinders makes the following remark:—"The great inlet or cove where the passage was to be sought, is the north-west part of Torres Straits. It is evident that a suspicion was entertained in 1644 of such a strait, but the Dutch were ignorant of its having been passed. The high islands are those which lie in latitude 10° south, on the west side of the strait.

Speult's River appears to be the opening betwixt the Prince of Wales Islands and Cape York, through which Captain Cook afterwards passed and named it Endeavour Straits. It is somewhat remarkable that of this expedition there are no records to be found, which is no doubt due to the spirit of monopoly which characterized the Dutch East India Company, prompting them to keep secret, or destroy, any records of geographical knowledge that might assist a rival nation. It is generally believed that Tasman sailed right round the Gulf, and that Thevenot's chart of 1663, is the result of this voyage; this opinion is strengthened by the finding of the names of Tasman for instance, and Maria Island, in Limmen's Bight, named after the Governor's daughter, to whom Tasman is said to have been attached.

1770.—Captain Cook, in the “*Endeavour*,” passed through the straits, which he called after his ship: anchored at Booby Island on Thursday, 23rd August, 1770: thence crossed the mouth of the Gulf on his way to Timor.

1802.—Captain Flinders, in the “*Investigator*,” after passing through Torres Straits, crossed Endeavour Straits, and made for the mainland, sighting the mouth of the Batavia River of the old Dutch charts. He mentions very high trees at the mouth of the river; and at the present date these trees form a conspicuous landmark, and can be seen at a great distance. There he met with a large number of natives, armed with spears and womerah or throwing stick. The country seemed well covered with eucalyptus, casuarine, and pandanus. On November 7 he landed at the Coen River, where he made tidal observations; coasting along, he sighted a conspicuous point, which he named after the “*Duyfhen*;” followed the land round the indent; sighted another point, which he called Pera Head, in honour of the old Dutch navigators; passing Cape Keer Weer, he remarks the very low land and shallow water, $2\frac{1}{2}$ fathoms, five miles off the land. November 13th, a large lagoon was seen from the mast-head over the front beach; but it is more than likely this was a mirage, although this corresponds with the Nassau River of the old charts in lat. $15^{\circ} 53' S$. There he found very shoal water, and was obliged to run to the westward, until he dipped the land from the deck, before he got five fathoms. Next day he was off Van Dieman’s River of the old charts, where he observed a small opening on the south side of the point, with a sand flat lying right across the entrance. He remarks that the coast must have undergone a great change to warrant the early navigators calling this a river. From here he followed the trend of the land, and sighted the opening corresponding with the Carron River of Thavenot’s chart. From the unfavourable appearance of the coast and the shallow water, he hauled to the wind, and was too far off to observe any of the rivers that drain this part of the country. On the 16th November, when coasting along the south side of the Gulf, he mentions high trees near the position of the Maet-

suykers River [this is another proof of Tasman having been here, as Maetsuykers was one of the councillors at Batavia who signed his instructions in 1644]; but he was unable to discover any traces of the river. It is very interesting to note that these high trees stand on the west head of what is now known as the Albert River. From here he stood to the northward, and came to an anchor under a small island, which he called Sweers Island, in honour to one of the Dutch councillors during Tasman's time. While here he landed and took observations, calling it Inspection Hill; this being the first land higher than his mast-head which he had seen since he left Booby Island. Near here he found the remains of a wreck, which was afterwards identified by a Malay, whom he met near the Wessel Islands, as part of a prau belonging to the Rajah of Boni, in the Celebes Islands, which was wrecked the year before. Chinese coins have since been found near the scene of the wreck—several of which are now in my possession—which, no doubt, belonged to that vessel, as annual visits were made in search of trepang, or bêche-de-mer, to supply the Chinese markets. The island two miles to the westward he named in honour of Lord William Bentinek, Governor of Madras, and his anchorage he called the Investigator Roads. It was while lying here that he found out the rotten state of his ship, which caused him much uneasiness, and decided him to hurry up with his survey and return to Sydney.

1802.—On December 1st he stood to the northward and rounded Cape Van Dieman, which was thought to be a continuation of the mainland by the Dutch navigators. Flinders found it to be an island over 30 miles long, and he called it Mornington Isle, in token of gratitude to the Governor-General of India. He also named Bountiful Island, from the plentiful supply of turtles procured there—naming the whole group the Wellesley Islands. Following the trend of the land, keeping close in, on the 11th December he sighted the mouth of a small river, corresponding with the river Van Alpnich of the old charts. On December 13th, he made the land in the vicinity of Cape Vanderlin, and found it to consist of a group of islands, which

he called Sir Edward Pellew's Group. The largest island he called Vanderlin's Island, on which he found recent traces of Chinese or Malay fishermen. Several of the natives found here were without the two front teeth in the upper jaw, no doubt a tribal mark common in some parts of New South Wales and also in the South Sea Islands. The custom of circumcision is largely practised among them.

Leaving this group, he crossed Limmen's Bight, and found Cape Maria to be an island 180 feet high.

Following the coast along, he became embayed behind a large island, which proved to be Groote Eylandt, of the Dutch charts. There he spent several days naming several islands in the vicinity; Bickerton Island, in compliment to Admiral Sir Richard Bickerton, and the point adjacent, Cape Barrow, in honour of John Barrow, Esquire. The large indent he called Blue Mud Bay.

1803.—On February 1st, 1803, he stood to the northward, naming the indent Caledon Bay, as a mark of respect to the worthy nobleman, lately Governor of the Cape of Good Hope. Passed Cape Arnheim on February 11th, and stood to the north-west, naming Mounts Dundas and Saunders, and the indent, Melville Bay; the small group of islands to the right taking the name of the Bay.

Cape Wilberforce, the furthest land seen to the north-west, named in honour of William Wilberforce, the representative of Yorkshire; and the adjacent islands were named in honour of the Rev. John Brumby, of Hull. Near here, Flinders found quite a fleet of Malay praus, evidently laid up for the bad season; fortunately, his cook being a Malay, he was able to communicate with them, and the chief, who gave his name as Pobasso, said there were about sixty praus fishing, and that he had been on this coast for upwards of twenty years. It was he who identified the part of the wreck brought from Sweers Island. These praus seemed to be of about 25 tons, and to have 20 or 25 men on each.

Flinders, in concluding his account of the survey of the Gulf, makes the following remark:—"That the form of it given in the

old chart is not very erroneous, which proves it to have been the result of a real examination ; but as no particulars were known of the discovery of the south and western parts, not even the name of the author, though opinion ascribed it with reason to Tasman, so the chart was considered as little better than a representation of fairy land, and did not obtain the credit, which it has now proved to have merited." Flinders returned to Sydney, when his ship, the " Investigator," was found to be unfit for service. She was afterwards sent home, and sold at Plymouth, in 1810, to be broken up.

Flinders again visited the Gulf in the colonial-built schooner, " Cumberland," of 29 tons ; anchored under Booby Island on Monday, October 14th, 1803, thence crossed the gulf, sighted Cape Wilberforce, and passed through between the Wessel Islands, on October 29th, on his way to Timor.

1841.—Since then, the Gulf does not appear to have been visited, until Captain Stokes entered in H.M.S. " Beagle," in June, 1841. He landed at Van Diemen's Inlet, on July 2nd, giving it the name of Bold Point ; he followed the river up 27 miles, but had only advanced eight miles, in a south 60° E. course, when he found it branching off in two directions. This river is now known as the Gilbert River. It will be remembered that Flinders found the mouth of this river on the south side of the point, whereas Stokes found it on the north side of a well-defined point.

On July 7th he arrived at Sweer's Island, where he found an interesting relic, in the form of a tree, on which some of the crew of the " Investigator," had cut their ship's name. Captain Stokes caused the " Beagle's" name to be carved on the other side. This tree was blown down two or three years ago, and was picked up quite lately by Pilot Jones, of the Norman River, and sent by him to Captain Heath, R.N., Brisbane, who has had it placed in the Museum there. The top of the tree with the branches lopped off, which can be easily identified by the sketch made by Captain Stokes, is now in my collection.

Captain Stokes had a well dug on the south side of Sweer's Island, to a depth of 25 feet, and found excellent water perco-

lating through sand, pebbles, and shells. In this survey he named Forsyth Island, also Bailey, Fitzmaurice, Pasco, and Gore Points, in compliment to his officers. Disaster Inlet, he named from Lieutenant Gore having injured his hand by the bursting of his fowling-piece. He went up the Maetsuykers River (which he named the Albert, in honour of Prince Consort), a distance of 50 miles, and speaks in most glowing terms of the appearance of the country, giving it the name of the Plains of Promise. He found another river about 45 miles to the eastward, which he named after Captain Flinders. Ten miles further to the eastward he found what appeared to be another river, which he named Bynoe Inlet, after the doctor on board; and it seems strange, that although he was about here in his boats he failed to find the mouth of the Norman River, but a few miles further on, and it is just possible that at that time, the greater body of water from the Norman River disembogued into Bynoe Inlet.

This survey of the Gulf was confined to the south and east sides, when he afterwards made for Port Essington.

Since then, Captain Norman and Captain Cadell partially surveyed the S.W. and W. sides. Cadell ascended the Roper River, a distance of 40 miles, in 1867. About this time, a boiling-down establishment was formed on the Albert River, called Burketown, but the arrival of a schooner called the "Margaret and Mary," from Batavia, with fever on board, which spread to the residents, carrying a large number off, caused quite an exodus, and the township was formed on Sweers Island, called Carnarvon, and Mr. Landsborough, the explorer, was appointed Government resident.

1868.—In 1868, the "Exulia" barque, belonging to Robert Towns, of Sydney, arrived with kanaka labour for the establishment at Burketown—Sweers Island being the port of entry. Near here the "Governor" brig was lost in the same year. The great flood which caused so much loss of property began on Christmas of 1869; during the whole of January, Burketown was under water.

In February, 1870, a small steamer called the "Black Diamond," left Sweers Island with nearly 200 tons of cargo, and landed the whole of it where the Custom-house in Normanton now stands; for by this time, parties in search of fresh country, for stock, had discovered the Norman River, and traced it down to the site of the present town, which was found to be more central as a port for pastoral interests, than either Burketown or Sweers Island. It received its name in honour of Captain Norman. About this time, the Customs authorities were advised of a vessel supposed to be landing contraband goods near by, and a cutter was despatched from Sweers Island to find her. They ascended Accident Inlet, in mistake for the Gilbert River, a distance of 20 miles, where they found a large B cut on the face of a sandstone cliff, which, no doubt, was done by the Burke and Wills party in 1866.

The tide of prosperity having now set in for Normanton, necessitated the removal of the Custom-house, and Sweers Island was formally abandoned. At the present time, Mr. Craffeld and his family, who are identified with the early days of the Gulf, are the only residents on the island.

Since then Normanton has grown considerably, owing to the development of pastoral and mining interests. Cloncurry, a district to the southward, rich in minerals, having attracted the attention of capitalists at home, and the discovery of gold on Croydon Station only 70 miles from Normanton, has pushed the place ahead, and now the revenue is next to Townsville and Rockhampton. Dredging operations are being carried on at the mouth of the river, and it will be interesting to observe if a permanent channel will be the result, as the proposed channel runs parallel with the shore, and as I mentioned in a former paragraph that these shores were extending seaward. For instance, the soundings of Stokes, of 1841, differ materially from those of the present day. In 1869, the casuarine trees on the north side of the river-head stood at high-water mark, and at the present date, 1889, the tide does not approach within 200 feet of them; and from the way the river is eating into the right bank

and the land increasing on the left, thus moving gradually to the eastward and increasing the distance from the scene of operation, and consequently reducing the advantages of scour, all of which will tell against the chance of the proposed channel remaining open. A great similarity exists between the Brisbane and Norman Rivers, and it will be remembered that Francis Channel, which corresponds with the cutting at the Norman, had to be abandoned in favour of the new cutting, proposed, I think, by Captain Heath.

Had the dredging operations been directed to the cutting of a channel in a direct line from the mouth of the river, in conformity with a law which I have found, causing a river to eat into its right bank, I have no doubt a permanent channel would have been secured.

During the last five years it has been observed that the mangrove trees have extended seaward over 300 yards, at the mouth of the Albert River.

Dr. Lang, in his history of New South Wales, published in 1852, mentions the probability of a port being established here, and a horse tramway conveying passengers and goods to the east side, in latitude about 18° . This is being surely fulfilled by the extension of the railway from Townsville to the westward and the line from Normanton, which will eventually meet. Some years ago the country was agitated to its core by the proposal to run a transcontinental railway, starting from Point Parker, 45 miles west of the Albert River. This idea was abandoned in favour of the construction of the present railway from Normanton; and it would be well to pause before deciding on further extensions, and remember the game that was played some years ago between New South Wales and Victoria, when the produce from the western districts of New South Wales found their way to Melbourne, thus swelling the revenue of Victoria at the cost of the mother colony, owing to the want of railway facilities connecting the Riverine district with its own colonial seaboard. A parallel case would ensue if the pastoral and mining interests to the westward of the present Normanton line are not considered, and the South Australian Government were to construct a

railway from the McArthur River, extending to the south-eastward.

The Batavia River, at the entrance to the Gulf, was visited by Captain Pennefather some years ago, and reported upon very favourably; but so far has not attracted any attention.

Much more might be said in detail; but I think I have said enough to enlist an interest in this comparatively little known part of Australia.

GEOGRAPHICAL NOTES.

ARCTIC REGIONS.

Across Greenland from East to West.—In a paper read at a meeting of the Royal Scottish Geographical Society, in July last, the young Norwegian Arctic traveller, Dr. Fridtjof Nansen, gave an account of his journey across the Inland Ice of Greenland, from east to west. Accompanied by three Norwegians, viz., Captain Sverdrup, Lieutenant Dietrichsen, Kristian Kristiansen Trana, a peasant, and two Lapps, Samuel Balto and Ole Ravna, Dr. Nansen started from Christiana in the first days of May, 1888, and sailed *via* Scotland and the Farø Islands to Iceland, thence for the Coast of Greenland, in the Nowegian sealing ship *Jason*. Six weeks were spent in navigating the ice-studded ocean between Iceland and Greenland, and on the 17th July, the expedition left the ship in the ice near Cape Dan, outside the Sermilik fjord, from which place it was intended to commence the inland journey; this however was not possible, notwithstanding the favourable careering of the currents, which urged the boats rapidly for about twenty hours towards land, to a place so near that the stones could be seen on the shore, and the expedition was buoyant with hopes of reaching it within a short time, but alas!—

“Fate steals along with ceaseless tread,
And meets us oft when least we dread;
Frowns in the storm with threatening brow,
Yet in the sunshine strikes the blow.”

And so it applied to the expedition, for owing to unexpected strong and dangerous capricious currents, the distance from the beautiful mountains and the glaciers round the Sermilik fjord grew rapidly, compelling the expedition to look out for another landing-place, or perhaps meet destruction in the floe-ice. The position was rendered still more inhospitable by heavy rain, which wet the members of the expedition through to the skin. The work was constant and tedious in dragging the boats over the ice-floe, in trying to force a landing. Many times the expedition nearly suffered destruction, especially on one occasion, when swept by the currents to the margin of the open ocean, when the experiences there afforded are thus related by the leader:—“One morning, we observed that we were being

rapidly carried by a strong current towards the open ocean, where a heavy sea was coming from east down upon us; it was in vain to try to drag our boats over the floe-ice against this current; it was inevitable that we must come into the dangerous breakers at the margin of the ice, where it was impossible to stick to the ice. The ice-floes were smashed to pieces all around us; our own floe was broken into several pieces, we had nothing to do but select the strongest ice-floe we could find in the neighbourhood, and to prepare with our utmost determination for a hard struggle for life. We got a strong floe, brought all our things and provisions into our two boats, which were standing on the ice-floe, only our tent and two sleeping bags were still left for use on the ice. Towards night all was ready; we were then some thousand yards from the open sea; we could only too distinctly see how the ice-floes were washed over by the heavy breakers, so that everything was swept away, how they were broken to pieces and then almost crushed into dust. Within a few hours, we should be at the outside margin, there would be nothing left but to try to get our boats through the breakers and enter into the open sea; but as it was best to face this struggle with as fresh energies as possible, all the men were ordered to sleep except one, who should keep watch and call us when it would no longer be possible for us to maintain our position. While Captain Sverdrup took the first turn, we crept into our sleeping bags, and, as we were tired—all of us—we fell fast asleep within a few minutes. Even the Lapps slept well, though they had been dreadfully anxious all the day, and were quite sure they had seen the sun setting for the last time; one of them who did not find the tent safe enough slept in one of our boats, and did not even awake when the breakers very nearly had swept the boat away, so that Sverdrup was obliged to hold it.

After some time, I was awakened by hearing the breakers roar just outside the tent; I expected to hear Sverdrup call, or to see the tent swept away, but Sverdrup did not call and the tent stood; I heard the thunder of the breakers for some time, but then I do not remember anything more. I fell asleep again and did not awake until next morning, when I was most astonished to discover that we had again approached land, and were far distant from the open sea.

Sverdrup told me now that our position had been rather awkward for some hours in the night. We had a large mass of ice on our side, which threatened to crush our floe every moment, and the breakers swept over our floe on all sides, only the spot where the tent was standing was spared. Once he came to the tent door to call us, he unfastened one hook, but then thought he would still look at the next breaker coming; this was worse than the former one. He returned to the tent, unfastened one hook more, but thought it best to wait and watch what the next breaker would be

like. He did not unfasten any more hooks. Just at the decisive moment the current turned, and we were again carried towards land, away from the dangerous breakers."

On the 29th July, the expedition landed at Anoritok, which is not very far from the south point of Greenland, and is situated in $61\frac{1}{2}$ N. lat.; about 250 miles south of the place where it was originally intended to begin the journey across the continent. Although the best time of the Greenland summer had passed away, the boats were steered northwards, and after surmounting many difficulties, arising through the formidable barriers of ice, which in many places had to be broken through by help of axe and poles, sometimes taking hours to advance a few feet, the expedition at last reached a place called Umivik, whence the overland journey was undertaken. The two boats were left on the coast, and the expedition commenced the journey across the unknown interior of Greenland, having for its destination the Danish settlement, Christianshaab, at Disco Bay. The journey was continued till August 27, in lat. $64^{\circ} 50'$ N., about 40 miles from the coast, at a height of 7,000 feet, when owing to the softness of the snow and a continuous snowstorm blowing against it, the expedition changed its route to a westerly direction towards Godthaab. In the beginning of September, an extensive plateau, resembling a frozen ocean, was reached at a height of 9,000 feet, over which the expedition travelled for more than two weeks. The cold was very considerable, the temperature being between 80° and 90° below freezing point, Fahr. Although the sunshine on the snow-fields was bad for the eyes, no case of snow-blindness occurred.

Continuing the journey without mishaps, the expedition reached the sea on the west coast, at the inner end of the Ameralik fjord, on the 26th September, in lat. $64^{\circ} 12'$ N. The distance passed over the inland ice was about 260 miles. The expedition spent the winter at Godthaab, and left for Europe in the Danish steamship *Hvidbjörnen*, in April, 1889.—*Scottish Geographical Magazine*, August, 1889.

GENERAL.

International Congress of Scientific Geography.—The first assembly of the International Congress of Scientific Geography, took place on the 5th August last, in the building of the Geographical Society of Paris, on which occasion a large and brilliant gathering of representatives from the various societies and institutions connected with geographical science

throughout the world was present, amongst whom were kings, emperors and princes. The session of the Congress was continued till the 10th August, when the proceedings were terminated by a grand banquet, at which were honoured the toasts of the President of the Republic, the sovereigns, the delegates to the Congress, the Geographical Society of Paris, the explorers, the Geographical Societies, the ladies, &c. We are gratified to observe that the questions submitted by our Society to the Congress for discussion, occupy a prominent place in the published official list of questions, incorporated in its programme.—*La Géographie*, August, 1889.



PROCEEDINGS AND TRANSACTIONS
OF THE
Queensland Branch
OF THE
ROYAL GEOGRAPHICAL SOCIETY
OF
AUSTRALASIA.

5th SESSION,
1889-90.

EDITED UNDER THE AUTHORITY OF THE COUNCIL OF THE SOCIETY,

BY

J. P. THOMSON, F.R.S.G.S., ETC., ETC.,

Hon. Secretary and Treasurer;

Honorary Corresponding Member of the Société de Géographie Commerciale de Paris,
the Société de Géographie de Marseille, and the Royal Scottish
Geographical Society.

The Authors of Papers are alone responsible for the opinions expressed therein.

VOL. V. PART 2.

Brisbane :

WATSON, FERGUSON & CO., PRINTERS, QUEEN STREET.

1890,



THIRD ORDINARY MEETING.

FIFTH SESSION.

THE third ordinary monthly meeting of the fifth session of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Friday, November 4, 1889, at 8 o'clock. The President, Mr. W. H. MISKIN, F.E.S., occupied the chair.

The minutes of last meeting were read and confirmed.

ELECTIONS.—Life, R. M. Collins, J.P.; Ordinary, Thomas Bartholomew, R. W. Ferguson, and J. W. Ayscough, J.J.P.

The author read the following paper:—

The Torres Group:—The Natives and their Ways.

By DOUGLAS RANNIE, Esq.

Away beyond the range of commerce and the ordinary course of traffic, lies a small group of islands known as the Torres Group. Full of interest to those who study the ways and habits of men, and of great interest to that greater and wider circle who would penetrate still more deeply into the hidden things of the animate and inanimate world. Although I have visited this group some six or seven times, still my pen would come far short of giving anything like a full description, or of doing anything like justice to the innumerable topics that would be of great interest to many men.

To those whose interest I may arouse, but cannot satisfy, I would give the advice—"Go and see for yourselves." To the zoologist and ornithologist, I would not promise much, as the studies embraced by these two, are in the first place confined to pigs, dogs, and rats; and in the second, to a small variety of pigeons, and a few parrots. But to the entomologist, his studies

would be boundless, as the islands are full of many creeping things. I can promise both the geologist and the mineralogist plenty of scope for their science; as who can say what precious stones and metals may lie under the dense vegetation which covers nearly all the rocks and soil. The ethnologist would find his time not ill-spent here; for here he would find man in an almost primeval state of nature. They have their religion, their legends, and their folk-lore; and many a night I have sat and listened to the history of their small world; their origin of man; man's fall; the warning of the two great supernatural spirits or beings who are the origin of good and evil; and their fairy tales of gnomes and goblins who assist in ordering their destinies under the direction of a supreme being. The botanist too has a vast field before him, from the tiny mountain flower and grass, to the gigantic forest tree.

This group, so interesting, is away to the N.W. of the Banks Group. Although I say the group is never visited in the ordinary interests of commerce, yet it is frequently visited by Queensland, Nounean, Samoan, Fijian, and Honolulu vessels in search of labour; and with those vessels only do the natives do any trade. On the island of Low, the Melanesian Mission have settled a station, with a native teacher brought from another group, but progress made I am afraid is *nil*.

Large numbers of natives go away in the abovementioned vessels, and are returning from time to time, bringing with them manufactured materials from the civilized world. And I believe this intercourse with civilization is going far towards their social and moral improvement. At one time, sugar planters objected to their introduction into Queensland, thinking that although they looked robust enough, they had not the physical endurance necessary to undergo the labours attached to sugar growing. But this idea has now been exploded, as it has been proved that they are just as fit for the work, and can endure as much fatigue as the natives of any of the adjacent groups. There is no doubt that the first few natives introduced from the Torres Group, were neglected by their employers, fell ill, and a large

per centage died. Hence the prejudice entertained towards them by many of the other sugar planters

The Torres Group consists of five islands running S.E. and N. by W. First the south island Bouka Bouka, then Low, Tuga, Metumb, and Seio, the most northerly. There are two good anchorages at Bouka Bouka, both at the N.W. end. The first is opposite some black rocks, as you come round a high cliff with a white patch on it. The second is about a mile from there, just before opening up a clear passage between Low and Bouka Bouka. The distance from the shore is about 100 yards, and there is 17 fathoms of water. This may be of some use to navigators, as I do not think it is marked on any of the Admiralty Charts. The whole of the western coast of Bouka Bouka is bold and rocky. The cliffs rise perpendicularly from the sea to a height of 600 feet or more. The natives scramble up the most incredulous looking paths, and with great agility too. The summit is a large table-land, where the natives live and carry on their cultivation. On the east side of the island, a gentle slope runs down from the cliffs, which forms the table-land to the sea. But this slope is uninhabited nor is any cultivation carried on upon it. The coast all round is fringed with coral reef, which is dry at low water. Some of the rocks on the island I noticed to be of limestone, others to be of a conglomerate, and some of a sort of sandstone, in which can be plainly seen mica or mundie, or perhaps some more precious metal. The whole of the cliffs along the coast are densely wooded with many kinds of timber. I may also say the same of the whole island, except where here and there a few patches have been cleared away for the growing of yams, taro, and other native products.

Bouka Bouka lies in lat. $13^{\circ} 25'$ S., and long. $166^{\circ} 40'$ E. Seio or North Island lies in lat. $13^{\circ} 10'$ S., and long. $166^{\circ} 30'$ E. Between those two lie the islands of Low, Tuga, and Metumb.

In Low, the anchorage is right abreast of where the Mission Station is marked on the Admiralty Chart. Low lies lower than any of the other islands in the group, and has a gentle slope up from the sea on all sides.

Tuga has a good anchorage in Hayter Bay, marked on the Admiralty Charts. The island of Tuga stands about 600 feet high, and has much the appearance of Bouka Bouka.

The natives of Tuga brought me some heavy dark stone which appeared to me like iron ore. But as the place where they found it was rather far from where I was at the time, I did not go to inspect it, although they said it was in large quantities.

Metumb is a small island midway between and almost joining Tuga to Scio. Metumb stands about 400 feet high, and can easily be visited from Hayter Bay.

Scio the largest and most northerly of the group, resembles in aspect the islands of Bouka Bouka and Tuga. With a stretch to the extent of about half a mile of low-lying land all round the coast, it rises suddenly in high steep cliffs to a height of 1000 and 1200 feet in places. Thick jungle and scrub for the most part cover the island, with here and there large forest trees towering above the surrounding ever-green bush.

The population of the group I estimate to be about from 4000 to 5000; and to many travellers the people of the islands would be by far the most interesting study.

These Torres people are children of nature pure and simple. Their wants are few and easily satisfied. On my first visit to the group, they were dressed, both men and women, as our first parents were before the fall; if you except the hideous ornaments with which they adorned their noses and ears. Now they show a little more modesty, and their waists, both men and women, are bound round with pounds and pounds of beads, from which they suspend grasses and the leaves of trees. Beads for some time have been the principal article of barter with them, for which they exchange yams, taro, cocoanuts, bananas, pine-apples, and almond nuts, besides pigs and fowls. The nose ornaments I mention are horrible in the extreme. While quite young the child has a hole bored in the cartilage of the nose, and a small stick inserted, which as time goes on, is being continually taken out and replaced by a larger one, till in time the lower part of the cartilage of the nose protrudes a long distance over the point

of the upper lip, quite disfiguring the features and rendering the expression very horrible indeed—features that otherwise might be handsome and attractive. But now I find that those who come in contact with civilisation, almost entirely discard the practice themselves, and discourage it in others. The holes in the noses of some are so large that you could pass a cricket ball through. The ornaments used are generally of very elaborately carved wood, the ends of which are carved pieces of pearl-shell inlaid. When these ornaments are in, and with the majority they are seldom out, there is no possibility of breathing through the nose. And when they talk, they remind you of a person with a very bad cold in the head, and sometimes perhaps the nasal twang you hear among certain Americans. Large holes are also bored in the ears, into which are inserted a number of carved reeds inlaid with bright coloured seeds. Their hair is allowed to grow very long, and is combed out till it stands out all round the head like a large feather duster. The women decorate their hair with beautiful flowers, while the men have long combs and feather plumes, and sometimes a few gay flowers stuck here and there through their long wavy hair. Such is the costume of the native of Torres Group. Occasionally here and there you will see one wearing a calico “lava lava” or loin cloth.

Although the natives have all the same characteristic features, there is a great dissimilarity in complexion. Many have fair hair and a fine healthy Italian complexion, with beautiful brown eyes; and many of the women I have seen I consider to be very handsome and extremely pretty. The women who approach nearest in good looks and personal appearance to the Torres natives, in this part of the Pacific, are the natives of Aoba; but unlike the natives of Aoba, the Torres people are ignorant of cannibalism, whereas the Aoba natives are the most atrocious cannibals I have been among.

Their domestic life is the most peculiar I have witnessed. Each village consists of two large houses, about half a mile apart from one another. The one is occupied by all the men, and the other by all the women in the village. But all the male children

up to the age of six or eight years, live with their mothers in the women's house. Among no other races have I heard of the same style of living; but this is the mode all over the group. Whether it is the best principle to adopt by civilised nations for the furtherance of a universal domestic felicity, I leave married men and fathers of families to decide. I am not competent to give an opinion—not from personal experience at least; but from what I have read about curtain lectures, and mid-night vigils doing "Sentry go" with a lusty lunged offspring, I think the white man might take a lesson, and profit by the example of his dark skinned savage brother. And what of the white woman—the wife of civilisation? she too might rejoice in such an emancipation. Would any question arise then of marriage being a failure? No husband's meals to look after; no wearing away of health and strength sitting up at night for him who rolls home in the early hours of the morning. No trembling with fear at home for the return of her savage, of so-called civilisation, who turns that home into a hell, and beats her brains out with his hob-nailed boots. Occasionally disturbance arises out of even the happy state of domesticity among those children of nature. There is no marrying nor giving in marriage. A man may have as many sweethearts as he likes, but the woman may only have the one man. She is generally satisfied with one I believe, which goes to prove the truth of the lines:—

"Love is of man's life a thing apart,
'Tis woman's whole existence."

But sometimes a girl will show more favour to some youth than she does to her acknowledged sweetheart. The result is that a duel is arranged, and the two young men walk out accompanied by the men of the village. They then start to belabor each other with clubs till one or other gives in. These combats are seldom fatal, as when any one of the two is getting badly the worst of it, the other men step in and put a stop to the fight. If the fight does prove fatal, no punishment is awarded to the survivor, as the decision of the village is that the deceased "died by the fortune of war." But if the deceased should have a brother, he

will take the first opportunity of quarreling with his brother's slayer, and so avenge his brother's death if he can. When a boy is old enough to leave the women's house, he is sent over to the men's house, and there he is seated by a fire with a number of young boys about his own age. They have a sleeping apartment of their own, and cook their food at their own special fire. Nor are they allowed to eat food cooked at any other fire. These boys are in what is called the first stage. After they have served a certain period in this stage, they are brought into the second apartment, where they undergo a certain ritual and ceremony, which they keep as strictly and never divulge as any member of a secret society among ourselves. When they are received into the second grade, they take a new name. Their new name is proclaimed in public, and any one calling them by their old name, after the proclamation of the new one, is liable to severe punishment. And so the child rises grade by grade, each time taking a new name, till he rises to the ninth and highest. By that time he is amongst the elders of the people, and is pretty well advanced in years. There are no chiefs in the group. These elders or men of the highest grade, are the arbiters and combined rulers of the islands. There are no distinctions among the women. They live in the one large house without it being divided off into many partitions, like the men's house. They may cook at their own fires, but they dare not eat meat cooked at a man's fire.

The laws of hospitality are strictly observed among them. If when travelling, a number of men come upon a village, the natives of the village turn out and invite the strangers into the different apartments, according to their degree or rank, and there treat them to whatever there is to eat ; and no breach of hospitality is ever known to occur. A common dish among them, is yam beat up in a mortar, with bananas grated down on the rough bark of a tree, then cocoa-nuts are scraped up fine, water poured over it, and squeezed over the yam and bananas, which are all mixed up, rolled in leaves, and put in a ground oven to bake. When taken out it is really an excellent pudding.

The two native houses which compose the village are very large, as sometimes each house is made to accommodate from three to five hundred people. They are strongly put up with strong poles made from the stems of trees, the sides are of plaited cane, and they are thatched with the leaves of the ivory nut palm.

Great credit is due to the natives for their industry as gardeners. The land is very stony and rocky, although the soil is good. They have a curious legend to account for the quantity of loose stones lying all about. They explained to me how the stones got there, when they were relating to me one night the origin of man. They say that there are two great supernatural spirits. The one the spirit of good, named Quite; the other the spirit of evil, named Woor.

It has often afforded me much amusement, and many a time I have become quite interested in their folk-lore. They originated, I expect, like the nursery tales we have heard in our childhood, and have been told so often that at last they have come to be believed by all these natives as solemn facts; and to express any doubt about them would only hurt their feelings and offend them grievously. There is apparently very little sickness among the natives; and for what sickness there is they have certain simple cures, none of which I have been able to procure from their medicine men. Yet, I think a great deal more lies in the faith they have in the remedies than in the remedies themselves. Still, there are wonderful powers and healing qualities in many of the plants of the Pacific Islands, as yet unknown to medical science. Although it is difficult for the wounds of a white man to heal in this climate, it has astonished me to see how quickly the wounds of the natives heal up, with a few applications of some of their own simple cures. For instance, I saw a native shot through the chest. The bullet (a Snider bullet) came out under the right shoulder blade close to the spine, leaving a great ugly wound, out of which, at every breath he took, the bloody froth came bubbling. Some of the natives mashed and chewed up some leaves, which they applied to the wound, and a short

time afterwards that native was about as lively as ever. Another case I may as well mention, to illustrate the healing qualities of certain herbs. I saw a native shot through the arm completely breaking in two the *humerus* bone. Some leaves were chewed up and stuck in the wound, and that man is alive and well to-day; but his arm is of no use to him, and swings about like any broken branch of a tree. But had he been a white man, the likelihood would be that tetanus would have set in, and then death. A peculiar herb, which is now used by medical men in different ways and for different complaints, is the root of the khava plant, which has been used, from time immemorial by the natives of these islands and the other groups to the southward and eastward, as an intoxicant. The natives here have set customs about their khava drinking, which they will not depart from. In Samoa, Fiji, and other islands to the eastward, it is the custom for young girls to masticate the root of the khava plant and so make the native drink. But in the New Hebrides, Banks, and Torres Groups, no woman is allowed to have anything to do with the making of khava. The system of making this native grog, although not very pleasing to the fastidious, I may as well describe. The coarsest and most common way is this: The men take the khava root and chew it up in large mouthfuls, till they get it into the consistency of pulp, each mouthful about the size of a tennis ball. These balls of pulp are then taken and dipped in water, and squeezed by the hand into cups made from the cocoa-nut shell. It resembles in appearance dirty soapy water. It is then fit for drinking. Some, a little more cleanly in their habits, instead of just squeezing the pulp in their hands strain it through cocoa-nut fibre. In the island of Aoba, New Hebrides, where the natives are the most cleanly of all the islanders, I have met with, the khava is not masticated by either men or women, but is merely ground up in a mortar; then it is strained through the fibre of the cocoa-nut tree into the cocoa-nut cup, and is at once ready for drinking. Khava is taken by all the natives of the three groups I mention, about four o'clock in the afternoon, or sometimes five, and marks the time of day

for knocking off work. The hour is known as khava time. Then again, apart from the daily khava drinking, there are great khava carousals. Then the natives starve themselves for a day or more beforehand, so that the drink will take full effect upon them. The effect taken on the human being by khava is not the same as that taken by alcoholic liquors. While alcoholic liquors will paralyse the mind and body both, khava will paralyse the body alone. And often you will see some old native sot sitting at the door of his hut, unable to move from the place, still able to converse with you and having all his mental faculties about him. Sometimes after these big khava drinks they become an easy prey to their enemies, who have their spies about, and find out when the drinking is to take place; then, having lain close to in ambush, the enemy makes a sudden descent upon the poor helpless objects of attack, and they fall easy victims to the clubs and tomahawks of the victors, being unable to move hand or foot in their own defence, or to take refuge in flight. In the more civilised islands to the eastward—such as Samoa, Fiji, etc.—khava is made up by the young girls. They chew it and strain it, and give it to their men folk to drink. Perhaps this may be the reason why so many Europeans have taken to the practice of drinking khava. It is a fact that very large quantities of khava so made are consumed in the Fijis daily. One gentleman I met with told me that he on an average drank about half a gallon per day, and attributed his robust appearance and splendid health to the fact. I was with him the first time I saw khava made and drunk. I remember him giving his orders to his men, before they began to chew the root—"Now, boys, pick your teeth and see you wash your mouths out well!" Great ceremony was observed on that occasion. The khava was strained into a large bucket, and when ready was served round in a pannikin, the honor of the first drink being proffered to me, but I passed. My friend came next, and he drank his with great gusto, at which all the natives gave a grunt of satisfaction, and smacked their thigh with one hand—a habit which they kept up to the last, as each man drank his pannikinful. All the natives were much

disappointed because I had not drank my share. They tried to impress upon me the amount of good that khava drinking would do me. One told me that if I drank enough my heart would stop beating altogether, and I would feel very happy. I informed the natives that happiness was a state in which my heart would delight, but if that organ stopped its beating I would be unable to enjoy that state on this side of the grave. My poor friend of that night, I am sorry to say, has now gone to his long home. Last year, he was murdered by the natives in the Solomon Islands.

The weapons used by the natives of the Torres Group are the bow and arrow, the tomahawk, and the club, which is long—about five feet—and sharp at the point, and can be used as a spear. It is made of a beautiful and very hard wood, and weighs very heavy. Their bows are of ordinary native workmanship, but the arrows are short, with points of human bone, about a foot long, and sharp at the point as a needle. Although they carry those weapons about with them when strangers visit their island, among themselves they are very peaceable. But at times one island will war against another; and then the row is generally caused by women. The natives in the Torres Group, curiously, have no canoes. They would not have them if you gave them canoes in presents. But they are just like fish in the water, and can swim from island to island, which they often do. Sometimes a woman has a quarrel with her sweetheart, and she clears out and swims over to the neighbouring island. If the natives of the island to which she escapes give her shelter and do not send her back by a certain time, then the sweetheart and friends of the escapee lash a number of bamboo trees together, thus making a raft, paddle themselves and their weapons of war over, and then fight for the runaway. A great noise is made, but very little blood shed; and finally the battle is put an end to by the exchange of a few pigs. At great feasts and dances given by one island to another, those rafts are used to convey families, pigs, yams, and such like from island to island; but they are always broken up after having once served their

purpose. None of the natives can nor will give any reason for so doing, but such is the case. Feasts and dances are indulged in on every possible occasion. The women here, like the women of New Ireland, enjoy more liberty than most of the women of the other groups I have visited. In the dances the women join in with their men, and many pretty figures they make in the mazy winding in and out among each other. But at the feast the women must keep apart from the men. They must cook at their own fires; and they cannot eat any meat, no matter what, which has been cooked at the men's fires. The figures they make are very similar to the "Lancers" in dancing; but the sexes do not pair together. The men stand in one line, and the women in line opposite them. After dancing on the one spot and gesticulating with hands and arms towards each other—the men with clubs in one hand and the women with flowers in theirs—the two lines spread out and advance towards each other, pass right through, and take up reverse positions, going through very much the same performance again, and then dancing most fantastically in circles.

The natives of this part are able to communicate with their friends at a distance, by means of plants, leaves, &c., and signs and symbols traced on the leaves. I have received numbers of those tokens to give to absent friends, should I happen to meet with them. On the receipt of one of those leaves, I have seen a man sit down and weep, and on asking what ailed him, he told me that his father had died about a certain date, mentioning the time.

The greatest evil I have noticed in these islands is the horrible crime of infanticide. It generally happens with newly-born children. The mother just strangles it, and throws the corpse in the bush. It greatly displeases the men when such cases happen; but the women do not care much for their displeasure, and they are never punished. Although cases of infanticide are still very common, they do not occur so frequently as in past years. This is due to the humanising and civilising effect of a few years' residence in Queensland and Fiji of numbers of the men and

women of the Torres Group; and as these natives become better acquainted with the nobler ends of civilisation, those evil practices, I have no doubt, will be entirely swept away.

Another revolting practice among them is the manner in which they dispose of their dead. In Aneiteum, I have seen the dead put in a shallow grave; another, the grave was thickly cemented over the top with a covering of lime. In Mallicolo the dead is left in his house shut up, to decompose until the flesh drops off the body. The body is then filled up with clay and painted, then stuck up against the wall of a great charnel-house full of other bodies, ranged round the wall in the same manner. His pipe is stuck in his ghastly jaws, and his bow and arrows and spear are placed in his arms by his side. Again, in Aoba the dead is placed in a large funeral pile about ten feet high, the same in breadth, and twenty feet long, planted all over with beautiful flowers and crotons; while a trench, about two feet deep and four in width, is dug all round the pile, in which is grown large quantities of khava, for the friends who come every now and then to drink to the memory of the departed. The Torres native has no such secure resting-place as the Aneiteunese with his cement-topped grave. Nor does he, like the Mallicolo man, stand amidst that gloomy company waiting for the blast of the last trumpet. Nor is he laid to rest, like the Aoba man, amidst a bed of flowers, whilst his former friends assemble round the khava bowl and drink to his memory on earth and his present happiness in that spirit land beyond the grave. No! The Torres man dies and is thrown out like a dog to rot in the sun, polluting the air and spreading disease and death among others. It is strange that people so intelligent, and so cleanly in many respects, should have such a loathsome manner of disposing of their dead. In all my experience of South Sea Islanders, I have only met with one other people who do similarly with their dead. Yet not quite similar, because they take their dead to an uninhabited island, and there they throw the dead on one great heap. I refer to the natives of San Christoval, in the Solomon Group. I never was more surprised at the amount of human

bones I saw on visiting their graveyard island, or "boneyard," as my companion more aptly termed it. There were generations and generations of a large tribe, heaped one on the top of the other. Mixed up among that heap of bones was the jewelry of many a beau and belle who had danced to the wild music of the drum and fife, and later on had supped on the bodies and picked the bones of their dead enemies.

I have mentioned the fact that there is a mission station on Low, the second island in the group. There is no regular missionary there. It is left in charge of a native teacher, who studies self-ease and laziness more than he does the Scriptures; and any day in the week will find him begging tobacco from any chance visitor to the island. The only difference a stranger can notice between the pure heathen and the so-called missionary natives is, that the heathen are dressed according to the climate in their own costume of leaves or grass, and sometimes a calico lava-lava, and they have a fine, bold, healthy appearance about them; while the mission men are dressed in the dirtiest of cast-off European clothing. They have an unhealthy, diseased appearance, and I have found them to be adepts in cunning and roguery. But, speaking of missionary work in general among the islands, I cannot pass from the Torres Group without paying tribute to a worthy lady in Bundaberg, whom I have never had the pleasure of seeing. Yet her name is a household word in the Torres Group and in most of the islands of the New Hebrides and Banks Groups, and in some of the Solomon Islands, for the noble work she is doing in civilising and teaching true Christianity to many a South Sea Islander; and I believe that her influence has been more instrumental in spreading the Gospel through the Western Pacific than all other missionary efforts for many years past.

The population of the Torres Group I would estimate to be about from 4,000 to 5,000. The females seem to predominate to a large extent. Three strange freaks of nature may be seen by a visitor to these islands, in the shape of three Albino women. They are sickly white all over, have pink eyes, and their hair is

of a bright golden hue. Two of them are sisters, and the parents of all are very dark. Many instances of those Albinos or white South Sea Islanders are to be found all through the islands.

But now I must bid adieu to the Torres Group. What the future of these islands will be no man can tell. It may be that before long the visitor may hear the ringing of the miner's pick and shovel and the blasting of his dynamite; or perhaps he may smell for miles away the balmy scent of the coffee blossom. If such be the case, and the white man comes, the tawny-skinned race will be pushed aside, and instead of the proud and handsome savage of to-day, you will see that crawling, miserable object that our civilisation makes of the simple child of nature. It is not civilisation alone; it is that trampling upon and grinding down of all aboriginal races by the white, and the inevitable accompaniments to civilisation--namely, vice and immorality.

But this may not be, and generations hence the traveller may find the natives of the Torres Group the same simple savages they were when I first visited them.

MR. P. McLEAN, the President, and the HON. SECRETARY made some general remarks upon, and expressed appreciation of, the paper read, after which the proceedings terminated.

FOURTH ORDINARY MEETING.

FIFTH SESSION.

THE fourth ordinary monthly meeting of the fifth session of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Wednesday, December 4, 1889. The President, Mr. W. H. MISKIN, F.E.S., occupied the chair.

The minutes of last meeting were read and confirmed.

ELECTIONS.—Ordinary, Messrs. M. W. Cunningham, G. Fox, J. Atkinson, W. Castles, S. N. Allen, A. Gilchrist, C. Battersby, Thomas Crookan, W. J. Byrne, and W. J. Hodges, J.J.P.

The HON. SECRETARY AND TREASURER, Mr. J. P. THOMSON, delivered a discourse upon the application of astronomy to meteorology, in which he pointed out that probable success in meteorological investigations would depend very largely, if not altogether, upon the application of certain astronomical problems, more particularly in their relation to solar conditions. Meteorology is, and always must continue, an imperfect science, dependent entirely upon the irregular circulation and other uncertain conditions of the atmosphere, so long as meteorologists are indifferent to the fundamental agencies acting upon and controlling atmospheric currents. As our planet is dependent almost entirely upon the sun for the regulation of its seasons, and the vitality of its animal and vegetable products, the study of its governing power upon our vaporous envelope, must necessarily be accepted as an important matter. Admitting that to be the case, surely the problem most useful in all meteorological discussions is that which applies to solar physics. Periodicity, as applied to weather changes, might probably be servicable in elaborate discussions, but solar cyclic changes must necessarily be considered of far greater weight. These cycles are of necessity regulated by the physical conditions of the solar

photosphere as affected either by spots, facule, magnetic storms, etc., all of which separately or conjointly make themselves felt upon the surface of our globe. One might endeavour to prejudice this view by the presumption that the atmosphere, if so largely influenced by solar changes, should be equally affected from pole to pole, a condition by no means necessary nor usual in cosmical law. When, in the case of our own sphere, it must be considered that various geographical positions possess corresponding climatic conditions; for instance, our heavy tropical and semitropical rains and storms do not extend to the temperate and frigid zones. Periodic changes were in themselves interesting, and, for climatological purposes, useful, as shown by Professor Draper, of the New York Observatory, in his investigations into the rainfall of the Atlantic States of America, where records extending over 100 years were used; also those of France, extending over a period of 200 years. For meteorological discussions of practical use to the pastoralist and agriculturist, the fundamental basis could only be obtained by a more general application of solar physics.

FIFTH ORDINARY MEETING.

FIFTH SESSION.

THE fifth ordinary monthly meeting of the fifth session of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Friday, April 11, 1890, at 8 o'clock. The President, Mr. W. H. MISKIN, F.E.S., occupied the chair.

The minutes of the previous meeting were read and confirmed.

ELECTIONS.—Ordinary, Messrs. A. Campbell, B. P. Brodie, and B. L. Howell, J.J.P.

The receipt of a donation of maps from Mr. C. T. Bedford was announced.

After the communications had been read.

The PRESIDENT said that, since the last general meeting of the society, an event had occurred of the greatest interest to Australian scientists and to all who take an interest in the diffusion of scientific knowledge in the southern hemisphere. He alluded to the second meeting of the Australasian Association for the Advancement of Science held in the Victorian capital. The meeting was attended by a very large number of representative scientific men from all parts of Australasia, and the proceedings were eminently successful in every respect. Addresses and papers upon almost every branch of science were discussed and dealt with, in the most exhaustive and instructive manner from the most modern standpoints; while the complete and thorough nature of the arrangements, and the provision made for the conduct of business and the convenience and comfort of members, likewise the warm hospitality generally extended to visitors, made the gathering one of the principal features in the history of Australasian scientific movements. As previously intimated to members, he was honoured in his capacity of President of the Queensland Branch of the Royal Geographical Society of Australasia with an invitation to accept the Presidentship of the

Geographical Section of the Association, a distinction which he, not without some slight misgivings as to his fitness for so onerous a post, gladly acceded to. Subsequent events proved that he had no cause to regret his decision, as the assistance and sympathy he received from the gentlemen with whom he found himself associated, from the time of assuming the presidential chair at the first meeting of the section on the 9th January until the 13th, when the business was brought to a close, rendered his duties most pleasant and agreeable. That the proceedings of the geographic section were not the least important and profitable of the many other admirably conducted divisions, would, he thought, appear when the published records of the meeting were issued.

The HON. SECRETARY said the members were much indebted to Mr Miskin for the especial interest he had evinced in the operations of the Geographic Section of the Association, and for the trouble he had taken in journeying to the Victorian capital to preside over one of the most important sections of the Association, as also for the very able address he had delivered in the interests of geographic science. He was sure the members were very proud of the great honor and distinction bestowed upon the Queensland Branch of the Society, in selecting its President to preside over the geographic section of the Australian National Association for the advancement and promotion of the sciences.

The HON. SECRETARY then read the following paper, entitled:—

Notes made in the Fly River, British New Guinea.

By Capt. JAMES M. HENNESSY, B.N.G. S.S. "Merrie
England."

To the HON. SECRETARY

of the Queensland Branch of the R.G.S.A.

Sir,—I beg to send you a few notes made on my trip up the Fly River, British New Guinea. It is the first occasion of a ship of such draft as fourteen feet having gone up this little known and much dreaded river, and I am happy to be able to state that we were able to reach to the distance of sixty miles from the mouth without obstruction or molestation.

We anchored off the mouth of the Fly, about two miles distant from the so-called One Tree Island, in the evening, and next day proceeded in the steam launch to sound for a passage over the bar into the river. A channel of just sufficient depth having been found, we landed at a village at the river's mouth called Saguana. The village consists of only three houses, one of them being very much longer than the rest, and capable of housing at least one hundred people. They were very friendly, and showed signs of having had previous intercourse with white people, by the prevalence of sundry garments, but of the unwashed order. Their physique is very poor, and they do not compare at all well with the tribes of the Elema district farther east. I told them I was going back to bring the steamer in, and they seemed very pleased. On the arrival of the steamer off the village, they brought down large quantities of bananas, &c., for sale. I sent a boat to purchase what they had, and also to bring off, if possible, one or two of them to come farther up the river with us. None would be persuaded to come up with us, so we left them and proceeded cautiously up, and succeeded that evening in reaching the village of Kiwai—a much larger village than Saguana or two other villages we passed on the way. All these villages are situated on what appears to be the left bank of the river, but what is in reality only a large island, thirty-seven miles long by about four broad, called Kiwai Island. It is a low, thickly-scrubbed island, and its banks are not more than two feet above high water mark. There are several creeks indenting the coast, and the natives have chosen the banks of these creeks as the *locale* of their villages. The chart of the Fly's survey shows One Tree Island to be an island quite distinct from Kiwai Island; this is not the case, the so-called One Tree Island being in one with Kiwai. Nor is there any distinguishing "one tree" on that end of the island. Possibly there was at the time of the Fly survey, but such distinguishing marks are very misleading—a few years generally efface them.

Only a short stay was made at the village of Kiwai—sufficient to land the Governor, his party, and stores—when the steamer

left *en route* for Thursday Island, for the purpose of towing over a newly-purchased steam launch, in which the Governor was to carry on operations above the highest point reached by the "Merrie England." A deviation in the route through Torres Straits was made by way of Murray Island, the seat of the London Missionary Society's operations, at this end of New Guinea, in order to inquire into the rumours afloat regarding the recently reported murder of the Rev. E. B. Savage, in New Guinea. On arrival at Murray, we learnt that that gentleman was perfectly safe and on his way to Thursday Island. On the next evening, the Mission lugger "Mary," with Mr. Savage on board, was overhauled and towed into Thursday Island.

Having obtained the steam launch "Ruby," and with as little delay as might be, we sailed for the Fly again, and Kiwai anchorage was reached on the third day. The Governor and party were received on board, and we once more started on new ground. Our next anchorage was at Sumai, where we landed and exchanged civilities with the natives. They were very timid. Two of them came off on board. Amongst other things, they promised to go next day higher up the river in the launch, but when the time came they were not to be found.

After a stay of a couple of days here, another start was made, and after with great difficulty finding a sufficiently deep channel, we got to an anchorage off the island of Sumogi, fifty-seven miles from the river's mouth. Coasting along at the upper or north-west end of the island of Kiwai, the channel lies within fifty yards of the bank. It is by no means a wide channel, although the river itself is here about six miles wide. The appearance of the shore of Kiwai Island, with its numerous undermined trees just ready to fall, and scores of others lying newly fallen at every angle, leaves no room for doubt but that *the shore is surely and not slowly washing away*; and the hundreds of tremendous logs and whole trees met with in the river bear testimony to a similar encroachment on the part of the river higher up.

Two other villages on Kiwai were passed above Sumai—Kubiri and Anti. Very few natives were seen about them, and these did not seem much surprised at seeing the ship.

The channel on leaving Kiwai Island crosses over to the right bank of the river. We now for the first time meet with the mainland—called by the natives Dudi. Up to this point the mainland is fronted by eight islands, distant about two miles from it.

We came to an anchorage about three-quarters of a mile from the mainland, and opposite to the islands of Sumogi, in five fathoms of water (low water). The rise and fall here varies considerably; at springs it is as much as fifteen feet. Quite a troublesome sea is created in this broad reach by the gusty north-west winds when the tide is flowing. The barometric tides or variations were noticed to be very marked, the extremes between the morning and afternoon records exceeding one-tenth of an inch. On anchoring here, great quantities of floating timber were met with—to such an extent that it meant sudden death to any of our boats or launches had they not been sheltered by the vessel herself.

The Governor left with his launch and half his party, with two tons of coal, to search for a coal depôt higher up the river. Having been away seven days, and having been successful in finding a suitable place, he returned to the ship to prepare for his further investigations higher up the river.

Seeing some natives one day on the mainland shore, I went away in a boat to try and establish relations with them. It required a deal of patience and care to persuade them not to run away; most of them did, leaving only the older ones to receive me. These were all armed with bow and arrows, but they laid these down when I landed waving my handkerchief. They were very timid indeed, but after receiving a few sticks of tobacco they became more unreserved, and asked me by signs to follow them to their village. Off they started, I following with a Manila man with me, through a regular bog. It was a terrible walk: at every step one sank over one's boots into the soft mud.

underlying about three inches of water. They are evidently used to many floods here, as I encountered well-cut drains about three feet deep and broad, about 200 yards equidistant: these were running like small rivers. After wading through about a mile of this slush, my guides raised the cry of "Moto," which I found to mean village, and soon we emerged from the dense scrub into a large clearing, in which the village was built. It consisted of only three houses, the main one of which was really a wonderful building. It was 520 feet long, built on piles eight feet high. It was about twenty-five feet broad, and was divided down its length by a broad aisle. The whole length at the sides was divided into "quarters" about eight feet square each, with a fireplace in it. The two middle "quarters" were reserved apparently for places of worship, and the natives seemed inclined to keep us clear of them, so that we did not have a good view at them. All these quarters, except the two above-mentioned, were open to the aisle. Outside each separate division was standing a bow with a bundle of arrows, and overhead were stored arrows innumerable. The people received us with evident distrust, but were not in any way insulting or offensive. I saw no women, they and the children having been hurried away before our approach. The men are of medium physique: they mostly have the offensive skin disease so prevalent in Western New Guinea. They are all marked with scores on their arms and breasts; they wear no clothing, but covet articles of dress very much. Their hair is dressed in long thin curls, and hangs like a mop turned upside down. I saw a few warriors painted, and they looked extremely well. They use a yellow clay for the purpose of painting their skin.

After purchasing some bananas, &c., I started again for my boat, with about six of them accompanying me. On arrival I tried to induce a few of them to come off on board with me, and eventually two did come. They, however, took the precaution to tell some of their comrades to bring off a canoe as a means of escape. They were very frightened at being alone in our boat, and hailed their comrades in the canoe to hasten. We got them

on board, their fear increasing all the while, and they casting anxious glances at their canoe in the distance. As soon as it arrived alongside the vessel, my two visitors did not wait to say goodbye, but left indiscriminately. Other attempts were made afterwards to get some of them on board, but with no result. They use conch shells of various sizes for making their dancing music, and very weird it sounds. We could hear it very plainly although nearly two miles off. What must be the effect of such harmony inside a building is easy to be imagined. They do not use drums in this part, it appears, but they are found in plenty lower down the river. The name of this village is Odagositia.

Another village—Domori—we visited, but its houses were very inferior to those of the other village. I tried to get the chief to come off with me, and he was already on board the steam launch, but on the steam blowing at the starting of the engines he yelled and jumped ashore. This village is on an island of the same name, whose banks are about four feet above high water mark. The foliage is most luxuriant, the number of creepers almost hiding the outlines of the trees. A very pleasant spicy smell was noticed on the lee side of the island, from which I should expect to find some spices growing there. We had not time at our disposal to thoroughly search for them. When the Governor and party were ready, which was the day after Christmas Day, they left, going upwards, and we downwards towards the river's mouth, *en route* for Cooktown *via* Port Moresby. The "Merrie England" returns to the Fly this month, and then I may be in a position to glean something interesting for your Society.

A short discussion ensued, in which the PRESIDENT, Captain MICHAEL, Messrs. C. B. LETHEM, THOMAS BARTHOLOMEW, P. N. SPRINGALL, and the HON. SECRETARY took part.

The following paper was then read:—

Notes on the Brisbane River Floods.

By J. P. THOMSON, F.R.S.G.S., &c.,

Hon. Secretary and Treasurer of the Society.

These few introductory notes to probably a more comprehensive treatise apply chiefly to surface drainage areas, as influenced by the flooding of the Brisbane River and other streams, with reference to the agencies of hydraulic degradation as affecting watercourses generally. Large and small streams have their life history indelibly engraved upon the stratifications of the earth's crust. That these prominent historic features may indicate cycles of marked periodicity, or of great eccentricity, will have depended largely upon solar conditions, and the influence they have exercised upon our terrestrial zones of atmospheric circulation and upon geographic positions. The duration of these historical periods will also be prominently recorded by the action of great devastations caused by abnormal precipitations over catchment areas of great magnitude, such for instance as the recent floods in the Brisbane River and in other parts of the colony.* These are alarming phenomena, not only in river life-history, but also in the historic climatic aspect of our country. We are a people inhabiting a colony which in palæozoic times was wholly occupied by sea, excepting three small elongated detached patches bordering upon and parallel to the eastern seaboard, between Brisbane and Princess Charlotte Bay. This great territorial area of ours rejoices under the influence of climatic conditons that present phases to which geometric pro-

* The memorable floods to which we refer occurred about the middle of March, 1890, at which time the Brisbane River overflowed its banks, and inundated the low-lying areas in and around the City of Brisbane. Traffic was almost entirely suspended, many families were for the time rendered homeless and almost reduced to destitution, while great destruction of property resulted from this grievous devastation. The rainfall over the lower section of the river basin was not great enough to balance the augmented waters of the river, but over the upper watershed on the highland areas the precipitation was very great, in some places causing enormous landslips, especially those which occurred in the Rosewood Scrub.

portions might be applied with singularly operative effect. That is to say, our climate is in itself a trinity; at one time we are subjected to disastrous droughts, at other times we enjoy abundance of rain, while, lastly, the supply of rain so far exceeds the demands that the devastations of floods paralyse our national industries, and for a time reduce us to abject poverty and distress, to be relieved only by the charity of our nation, a characteristic feature for which we are justly and singularly famed. As good citizens domiciled on the margin of a tidal watercourse draining a considerable area of our vast territory, it behoves us to acquire a useful knowledge of our environment, the conditions of our river, and the best means to adopt in emergencies arising from the river waters during periods of heavy and abnormal rain. A knowledge of these essential subjects, upon which our welfare so largely depends, ought to be compulsory in the modern educational course, and no student, under any conditions whatever, should obtain a pass at our school examinations unless he prove himself proficient in subjects of such local importance, and exhibit special familiarity with the other geographic conditions of the colony in their various aspects. For a colony depending so largely upon its pastoral, agricultural, and mineral resources to devise no special means to conserve and utilise part of its irregular rainfall is directly against the best interests of national progression, and inimical to the welfare of humanity. Order is the primary law of the universe, and the preservation of life and property is a first duty. Who, then, will deny that as habitants of the bed of a river basin our paramount obligations are to seek such means as may be best suited to guard against the destruction of our property by flood waters, and to modify the dire effects of prolonged droughts with which we are, unfortunately, so well acquainted. Amongst the many engineering problems with which our colonial engineers occupy themselves, that to which the laws of hydraulic degradation apply in river engineering is probably the least understood and most infrequently discussed, although none is of greater importance. By the action of rain torrents over steep mountain faces, and by atmospheric influence,

rocks and soil are disintegrated, and the material carried down the rivers by the impetuosity of their currents during flood time. These immense loads of particles, which are held in suspension over the upper sections of the river bed, are deposited in the lower reaches of low declivity, where the velocity of the stream has diminished, and at the mouths, where the detritus is heaped up in obstructive bars. The consequent effect of these enormous depositions is to diminish the carrying capacity of the river channel, and to augment its flood-producing possibilities. It is thus not infrequently brought about that heavy precipitations over interior areas of the Brisbane River basin produce a greater augmentation of the river waters than its obstructed and circumscribed channel is able to control, with the natural result that the low-lying areas bordering upon the river are inundated, causing danger to life and great destruction to property. The enormous volume of water with which the Brisbane River has to cope in times of flood may be easier realised when it is made known that a uniform rainfall of 7in. over the whole drainage area of it and its tributaries, being a total of 5,478 square miles, is not less than 556,017 millions of gallons, being sufficient to supply the city of Brisbane, with its present population, for a period of over 500 years, were it possible to store and preserve the entire volume from the influence of evaporation. Immense as these results may appear, evidence is not altogether wanting to indicate that the waters of last flood in the Brisbane basin exceeded this volume. This great body of deposit-laden fluid, it is needless to say, was permitted to combine with the waters of the ocean in Moreton Bay, while, by proper means for the utilisation of it and similar volumes, large areas of the basin, now sterile, might be converted into fruitful fields of agricultural and pastoral tenements, remunerative to the holders and profitable to the State. While briefly summarising the conditions favourable to the producing of floods, it is desirable that we should also indicate the probable means for controlling the river flood waters and their utilisation. For the controlling of the river during floods, its head waters could be retained in reservoirs for the

purpose of equalising its volume, or until such time as deposition of sediment was accomplished. By this means its power of corrasion would be separated from its flood waters, and the river deprived of its obstructive material. In conjunction with this, other methods could be adopted, such as the removal of banks and bars, the deepening of the channels by river ploughs, and the shortening of the river by the utilisation of cut-off reaches, so as to increase the declivity, and afford means for deepening the stream by corrasion. When practicable, nearer outlets could also be utilised. These methods possess the recommendatory advantages of offering facilities for storage supply and the utilisation of the flood waters for irrigation purposes, whereby the agricultural and pastoral resources of the country would be largely increased in magnitude and in market value, and geponical operations more vigorously prosecuted. This would also have the salutary effect of creating a vigorous stimulus in the trade and commerce of our metropolis, by inspiring colonists with confidence in a permanent water supply, whereby the many resources of our territory would, at their hands, attain to those progressive stages of development which can never be hoped for under the many adverse climatic conditions to which this great colony is subject. The Brisbane River, with its long reaches and sinuosities, is peculiarly favourable for the application of the method by which rivers are shortened and their declivity increased. This is one of the most important and vital problems of the age, even more so than the operations of the Legislature, for there can be no Parliament without a people, and man can only permanently flourish in a country which affords the conditions necessary to health and wealth, conditions which irregular and uncertain climatic influences, unless counteracted by artificial means, cannot always maintain. In advocating the retention of the head waters of rivers, it must be borne in mind that it is not by any means necessary to retain the entire volume of flood waters, but only so much of them as will equalise the volume of the river, so that the inundation of low-lying areas by an overflow of the banks of the stream may be prevented.

Mr. THOMSON exhibited two photographs, which he had received from Mr. Warren Weedon, showing Lower Edward Street and the Graving Dock, South Brisbane, during the flood. An interesting discussion followed the reading of the paper.

SIXTH ORDINARY MEETING.

FIFTH SESSION.

THE sixth ordinary monthly meeting of the fifth session of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Wednesday, May 7, 1890, at 8 o'clock. The President, Mr. W. H. MISKIN, F.E.S., occupied the chair.

The minutes of the previous meeting were read and confirmed.

A donation was announced from Mr. W. Weedon, consisting of copy of manuscript map, showing the country explored in Northern Queensland, from May, 1864, to March, 1865, by the brothers F. and A. Jardine.

The following paper was read by the HON. SECRETARY:—

Chatham Islands.

(With a Map.)*

BY JOHN A. ROBERTSON, Esq., L.S.

While in Invercargill, New Zealand, in March, 1882, the writer received instructions from the Surveyor-General of New Zealand, to proceed to the Chatham Islands to survey roads, and if possible, settle disputes arising from bad description in titles, held by the settlers on the islands.

The islands are situated between lat. $43^{\circ} 30'$ and $44^{\circ} 25'$ S., and between long. $175^{\circ} 40'$ and 177° N. The longitude depends upon Gordon Point, Whangaroa, being in $176^{\circ} 39' 50''$ W., as determined by the United States Transit of Venus party, in December, 1874. They were discovered by Lieutenant Broughton, of the "Chatham," tender to Vancouver's ship the "Discovery," on the 29th November, 1791, and consist of the main island, called Wharekauri, with an area of about 207,000 acres ;

* For this beautifully executed Map, the Society is indebted to Mr. S. P. Smith, F.R.G.S., Surveyor-General of New Zealand.

Rangiauria, called also Pitt Island, with an area of about 16,000 acres; and numerous other small islands, varying from 100 acres to mere rocks

The "Chatham" came up in a S.E. direction, passing the island called Motuhara, or The Forty-fours. The natives, in their amazement on first seeing the ship, thought she was part of Motuhara coming to the mainland. The vessel came off Kaingaroa Harbour, named by them, Skirmish Bay; on the boats coming ashore, they found the Moriories, as the natives are called, quite friendly, but very curious to ascertain what they were, some averring they were men, others women, pulling them about, trying to examine them to find out what they were, some going so far as to try and take them away with them. To cause them to desist, the sailors shot some redbills and gulls, but this not having the desired effect, and seeing a chief coming with several more following, they fired at them, killing the chief and wounding two others. On this the natives fled; afterwards the boats were sent back again with some presents, which were placed on shore and taken possession of by the Moriories. At this time the Moriories must have numbered 3,000 souls, as from actual computation they numbered about 2,000.

A few years after the discovery of the island, it was visited by Sydney sealers, one of which passing between the islands to the north, called Rangitutahi or The Sisters, and Wharekauri, was boarded by some Moriories while out fishing; the crew appeared to be suffering from a virulent fever which the Moriories caught; it swept the island, the survivors leaving their dead in many places unburied, and forsaking their homes; they state they lost about 1,600 in all.

The Maories who came to the island, were a section of the Ngatiawa who occupied land in Taranaki. Owing to wars among themselves, but more particularly from the acquisition by the northern natives, first, of guns they made war against their more southern neighbours, forcing the Ngatiawa south to Wellington. While there, those who came down to the island, found a brig called the "Rodney," and seizing the captain, (Rabbit)

compelled him to bring them to the island,—they having heard from one of their people named “Pakewhara,” who had returned a short time previous to Wellington from a sealing cruise, that there was an island which he called Wharekauri, from the part where he had lived, which was a wonderful place for food of all kinds. Birds, sea and land, the latter including several wingless specimens, such as the kakapo, the mehonui, and hopiritu; the sea birds, from the mutton bird downwards, all nest on the island; but since the advent of dogs, cats, pigs, and rats, all of which destroy them either in their nests or burrows, they have deserted the island in most places. Fish, including eels, with which the lakes swarmed, excited the desires of the Maories, but more particularly through hearing the Moriories were a quiet, inoffensive race of people, who did not know how to fight.—they seized the captain as before stated, who unwillingly agreed to take them down, they paying him in scraped flax, pigs, and even muskets. This happened in December, 1836. The Maories were landed in two batches; the brig returning directly for the second lot, landing them all in Whangaroa Harbour. Shortly after, they all went round and took possession of the island, enslaving the Moriories, whom they treated very unmercifully, killing and eating about 200 of them—as calculated by one of themselves; but it is quite probable that there were even more, as after a lapse of so many years, they could scarcely fail to forget some of the slain. The Moriories made no resistance whatever. In connection with the eating of the Moriories by their captors, I was witness to rather an amusing incident, which took place in the Court House at Waitangi; it was necessary to prove that a certain spot had been known amongst the Maories by a certain name, but the old Maori who at the time was being examined, and who refused to remember any place with such a name, was brought up sharply by a Moriori who was present, saying he was ashamed to acknowledge it; then turning to the Maori, he said “I suppose you remember helping to eat my brother there?” The name of the place having reference to a cannibal feast held by the Maories.

A gleam of sunshine came for them however, on the arrival of the teachers of Christianity, in 1843 or 1844. (I may mention here, that the late Mr. Schermaister, who was for a number of years pastor of the Lutheran Church in Wickham Terrace, Brisbane, was one of them.) Their influence put an end to any more killing, although several times they ran great risks of sharing the fate of those they were trying to save. But slavery continued until the establishment of British law, which took place about 1855, on the arrival of a Resident Magistrate, (Mr. Shand) although even then their liberty in several instances was not assured until later on, many Maories being very unwilling to part with their former servants.

Previous to the arrival of the Maories, the Morories had neither kumaru, taro, or potato; the first would not grow on the island, and the second only with much care and trouble; they lived chiefly on fish (including eels), all of which were very plentiful. Pippis, a species of mussel, were very much used by them, and could always be had in great numbers, also fern roots, of which there were abundance, karaka berries (roasted and steeped much as I understand the Australian natives treat the chestnuts and some other berries), the young of all sea birds which they caught in their season, there being any quantity of them on the cliffs and rocks round the coast: as well as the land birds—ducks, especially—which they snared in the pools of water; also wingless birds. Then the flesh and oil of stranded whales, which came ashore in large numbers. Seals, also, they ate, keeping the skins for clothing. They were so plentiful that they thereby forgot to make the old style of mat to keep themselves warm, and through their wholesale destruction by the sealers, the advent of the Maories found them nearly naked, only having a large wide plaited mat of flax such as the Maories use to keep the floor of their wharis clean, and frequently keeping such to windward and carrying a lighted firestick in one hand, generally to light another fire wherever they might be going to fish.

In connection, however, with their very rapid decrease (in 1855 they numbered 212—they now number 20, all told;) it seems

very probable that, through their continuous intermarriages—although they had a rule amongst themselves forbidding near relations to marry, which seems to have been observed—the race had become very weak, and this, coupled with the very heavy labour which was required of them by their Maori masters, seems to have killed them off in numbers, the Maories finding them dead, several at a time, in their houses.

Considering the weak kind of thing they had to use as a canoe, they were most bold and adventurous in going out to all the outlying islets in search of birds and seals, and continuous accidents were happening by the canoes getting blown off the land. These were constructed of “korari,” or flax sticks, made buoyant with dried kelp lashed inside, there being no material to make anything approaching a Maori canoe. Owing to this, they were great observers of winds and especially tides, which they watched, so as to go out with the ebb and return with the flood, as the case might be.

Their dead they usually buried in the sand hills along the sea shore, but sometimes they put the bodies in rude hollowed-out coffins, shaped something like a short canoe, and placed them in the forest on top of cliffs overlooking the sea.

Touching the origin of the Morories, there seems to be no doubt that they were part of the migration which settled in New Zealand. Their legends and myths, in all main particulars, are identical, shewing them to have come like the Maories from Hawaiki, wherever that may be.

The language is, in all essentials, the same, although much altered and disguised by the pronunciation; the slurring or cutting off the terminal vowel, frequently making a consonant ending. As a rule, they were a well built race; even those that were left in 1883 were still good manly specimens. Occasionally very good stone axes, chisels, and fish-hooks are picked up, the axes and chisels being cut out of the basaltic rock, the hooks carved from the bones of the larger species of fish; as a rule these are found among the graves or in the sand near the sea.

In April, 1866, the Government of New Zealand made use of

the island as a prison for a large number of Hauhan Maories, altogether about 250 of them, including wives and children, several of the prisoners being allowed the privilege of having their families with them. At first they were very strictly guarded, but, as time wore on and the appearance of things looked very quiet, the guard were relaxed and reduced in numbers by a retrenching Government, until only four or five were left to guard about 200 fighting men, with the result that one fine morning the Hauhaus rose, captured the fort, took possession of the arms, and, proceeding to the Court House, captured the Resident Magistrate and officer in command of the guard, put them in the lock-up, besides several of the principal Europeans on the island, and leaving them guarded, proceeded to the beach, where a boat was lying belonging to the schooner "Rifleman;" this they took possession of, and going out, captured the schooner, cutting another schooner—"The Florence"—adrift, so that she went ashore. They forced the mate (the captain being amongst the captured in the lock-up on shore) to take them to New Zealand, where they landed in July, 1868. There being no vessel other than "The Florence," which had been destroyed, no information could be sent to New Zealand, so that the New Zealanders had to find out for themselves of the escape. The resident Maories on the island made no attempt to interfere one way or another; in fact, the whole thing was managed so quickly that few of the islanders knew of their escape till after they had sailed.

The Chatham Islands lie about 480 miles from Wellington and about 535 from Lyttleton: the passage occupies by sailing vessel, from three days to three weeks: by steamer, about 40 hours.

The main or Chatham Island is about 38 miles in length, by 25 in width; and is generally of a low level nature, especially towards the north. The average height above the sea level does not exceed 150 feet. Towards the south it gradually rises till it reaches a height of about 900 feet, and ends abruptly in perpendicular cliffs. The north, east, and part of the west coast as far south as Waitangi Bay, is very low, and is fringed by a wide

bank of sand hills, this backed by a belt of bush varying greatly in width, the centre being composed of flat peaty country. The south and south-west coast has a line of bold perpendicular cliffs, in most places quite inaccessible.

The principal and only safe harbour on the island is Whangaroa, which is situated at the north end of Petre Bight, but as the country round about is of a poor nature, the harbour is not much used.

Waitangi Bay, at the south end of Petre Bight, is the harbour which is mostly used, but it is a very unsafe one, as during westerly and south-westerly gales a very heavy sea rolls in. As a rule, captains of any vessels that may be in clear out should there be any signs of stormy weather.

Hanson Bay, on the east coast, affords good anchorage during westerly gales, although marked on the chart as dangerous, but generally a very heavy surf rolls in.

On the north coast, Kaingaroa Bay, before mentioned as the port made use of by the "Chatham," is a fair harbour, but is rather difficult of access, being very narrow, there being also a number of sunken rocks about. Further along the north coast, there is good anchorage with the wind off the land at the following places, viz.: Matarakau, Taupeka, and Tupuangi. and at Owenga, on the south-east coast. Approaching from the westward, the western reef lies directly in the fairway of vessels making Waitangi or Whangaroa harbours, and although part of it shows above water and can easily be seen by daylight, still the surroundings are very treacherous, and it has to be approached with caution in rough weather. The sea breaks for four miles in a south-westerly direction from Point Somes. Between the main reef (that part above water) and the mainland, there is a good channel, which is the usual course for vessels, unless they are well to the southward. The Sentry Reef is another very dangerous rock, and being awash at high water, it is only indicated by the break. It lies midway in Pitt's Straits, four miles to the south-east of Cape L'Eveque. There are also many other reefs all round the island, making it a very awkward place for strange

shipping. Those reefs and the rough weather so often experienced have much to answer for in the way of wrecks. I have by me a list of 40 vessels which have been wrecked on the island, ranging from small schooners of 50 tons to the clipper ship "Ocean Mail," (wrecked in 1877,) of about 2,000 tons.

There are no rivers to speak of on the island. Waitangi River, running into Waitangi Bay, is the only considerable stream, but there is no lack of creeks, as they are innumerable, many of them large enough to stop traffic after heavy rain.

There are few places in the world where there are so many lakes in proportion to the area of the land—about one-fifth of the entire area of Chatham Island being made up of lakes. Te Whanga, meaning simply "The Lagoon," is by far the largest, and contains an area of from 45,000 to 50,000 acres; Rangitahi, about 2,000 acres; Lake Huro, about 1,500 acres; besides very many of smaller area. Te Whanga is in several places so shallow that crossings exist which are used as main thoroughfares, the one mostly used being about four and a-half miles long. The water generally, when the lake is fordable, is from one to two feet deep, and the journey across the lake on horseback, on a cold day, with a strong south-wester blowing, is something to remember. This lake is brackish, and every four or five years it overflows its banks at a place called Awapatiki, on the east coast, and empties its surplus water into the sea, making a difference of three or four feet in its depth.

After a heavy easterly gale, the entrance again closes, and the lake rises till it is unfordable. A number of the smaller lakes act in the same manner, as several have only a narrow neck of sand between them and the sea.

The hills on the northern part of the island form very conspicuous landmarks, as, although not of any great height, they rise in solitary masses in pyramidal form from the low flat swamps by which they are surrounded; the highest—Mount Rangitihia—being only 627 feet. They are all of volcanic origin and basaltic formation, their striking shape being sufficient to prove this fact. The land to the south, which, as before described,

rises to the height of about 900 feet, gains this height by a gradual slope from the northward, and ends abruptly in perpendicular cliffs on the south coast. These cliffs are of basaltic formation, in many places the bold upright columns standing out clearly defined. Other parts of the island are crossed by basaltic dykes, and at Ouirá, on the west coast, the heads of the columns are on a level with high-water mark, and show very distinctly the divisions of the columns. It is a strange fact that the highest land in the group is to be found on a small island of about 40 acres, called Mangere, off the north-west coast of Pitt's Island. It rises in perpendicular cliffs from the sea, to a height of 937 feet, and is a great resort for all kinds of sea birds.

Pitt Island resembles the southern part of Chatham Island, in that it is high and has a rough precipitous coast line, but generally the land is of a much better nature.

The timber on the islands is of no commercial value. The largest tree is the koraka, growing about 30 feet high, but the timber does not last any length of time. The only wood made use of is the "ake ake" (meaning for ever and ever), a highly scented oily grained timber, which lasts a very long time, either in or out of the ground. It is not a timber that can be sawn, but it splits freely, and is much used for houses and fencing. When a tree is being split in the bush, there is little difficulty in finding the spot, as the scent is quite perceptible a long way off. An old friend, when enthusiastically describing the timber, said "it would last for ever, as he had tried it twice." The other trees are mostly of a scrubby nature, and the bush, as a rule, is well interwoven with a very hard cane vine called "kurruwa," made use of by the natives and Europeans much in the same way as raw hide is used in Queensland. But the real splendour of the Chatham Island bush is its magnificent ferns and tree ferns. In many places it is quite impossible to get along in any other way than by creeping on hands and knees, the tree ferns grow so close together. The stems are used by the settlers as posts for fencing, standing a long time in the ground, and are often squared and used for wharves, making a very warm and comfortable house.

A real good specimen of a silver tree fern is something to remember. We measured one, two of us, with outstretched arms, and could not encircle it.

In many places along the edge of the bush, and in clumps by the lake side, grows the New Zealand flax (*Phormium tenax*). It is not so tough as that found in New Zealand, and is not so much used. At one time the island was almost covered with it, but fires and stock eating it down have kept it under. Horses, cattle, sheep and pigs are very fond of it; the reason may be that it is strongly impregnated with salt, as is all vegetation on the island.

There are three main constituents in the formation of the island—first, the sand: then the strip of good land generally with forest on it, or what has been cleared of forest for cultivation; and the “clears” (meaning the open country), which is generally of a peaty nature. Fully two-thirds of the island is peat, and in some places it can be seen under the sea. In several localities large holes have been burnt in the peat, and are still burning. One place in particular was pointed out as having been burning over 40 years, but so slowly that it is quite impossible to tell that it is so, unless after a dry spell, when, with a fair wind blowing, smoke may be seen. Those holes do not appear to burn very deep—about 10 feet or so from the surface.

The soil in many places is of a really first-class nature, suitable for growing almost any crop that the temperature and changeable weather will permit; but there is never any great extent together. As before stated, it forms a narrow strip between sand and peat. Within late years the area is being gradually diminished. The sand ridges that used to be covered with a thick growth of grasses and low shrubs are, with the constant eating down and trampling, getting quite devoid of vegetation, and are travelling inland so rapidly that in many places cultivations and houses have been covered by the sand. Many of the settlers have tried all in their power to stop its progress, but with very indifferent results; no grass has been found that will grow quick enough on the bare sand, which is always sub-

ject to heavy drenchings of salt spray. As a rule, the cultivations are of a very limited extent—only a few acres; but of late years they have extended, as several of the larger stock owners have been breaking up the land, taking a crop of turnips and oats, then sowing it down in English grass, such as cocksfoot, ryegrass, timothy, and red and white clover, all of which thrive well. The returns given by islanders bear fair comparison with other more favoured countries. Potatoes average five tons per acre, and are about the most successfully grown vegetable on the island. The Maories depend greatly on them for subsistence. They rarely fail, and when grown in good sandy bush soil, are not to be beaten for quality. In the early days they were the staple export, very large quantities being bartered away every year to the traders, who carried them to Sydney and, in several instances, to San Francisco, while the gold rush was in full vigour in California. Sheep, cattle, and horses were brought in exchange, and, I believe, formed the nucleus of the present stock. Oats and wheat were also grown extensively by the Maories, giving from 45 bushels of wheat to 50 or 55 of oats per acre. Linseed and maize have also been grown with fair results. I have seen maize planted among potatoes in the same way that pumpkins are in this colony planted among the maize.

Maize is used by the Maories as a meal, and popcorn roasted in the fire is much relished by them. All European vegetables grow well, but gardens are the exception rather than the rule.

Sheep are now the mainstay of all classes—Maori, Moriories and Europeans. The island carries about one sheep to every $2\frac{1}{2}$ acres, but a good deal of the country is not stocked; that to the south and south-west being too rough and having too much timber and thick undergrowth, which prevents mustering, as so many of the sheep take to the bush on the first alarm. There were about 70,000 sheep a few years ago on the island, and, as lately several of the station owners have been ploughing and sowing grasses, it is probable there are now considerably more. The sheep are generally crossbreeds, and grow very good fleeces. Rams are

brought from New Zealand every year, so they are always having fresh blood. Shearing, when the sheep were first imported, was conducted in a very primitive fashion. One shearing, by a much-envied owner, of one solitary sheep was conducted by using a pippi shell and lasted the greater part of one day. It was no uncommon thing to see razors, knives and scissors made use of to get the fleece off the animal's back.

A few years ago there were about 900 cattle on the island, but they have been killed off extensively, as there was only a very limited market for the beef.

Horses were very plentiful, and great numbers have been shot, as they were profitless and worse than useless. Large numbers of cattle and horses were shipped to New Zealand, but the length of the voyage was a great drawback; very seldom did their sale pay more than expenses. In one case, a ship started with a full cargo, and after being six weeks at sea, turned up again and landed what was left—a few miserable horses and bullocks. She had been driven out of her course away to the south-east, and the remainder of her cargo had been thrown overboard.

The horses, like the sheep, were first brought by traders, and were of very good breeds, the old horses being of a much better stamp than the young ones. (The first importation had a real good time of it; the Maories considering him too valuable to ride.) They might almost be spoken of as a breed by themselves. On the island they were not thought particularly vicious, but when taken to New Zealand have acquired a very bad name. They are horses that can stand any amount of work on very little food; are small, hardy, and very surefooted. Very few horses could walk over the swamps as they do. They have a habit noticed at once by a stranger of spreading out their legs as they cross the soft places, giving one the idea of a cat walking.

Pigs are very plentiful, both wild and tame. The wild ones differ very much in appearance; in some parts they are big and well favoured, in others regular scrubbers. They are generally best near civilization, as they do not breed in so much, a chance boar getting away now and then from the settlers. A Chatham

Island wild boar is certainly not a beauty; they are not as a rule very big, but are uncommonly ugly customers to tackle. All head and shoulders, they run off in the hind quarters, and have a very long hairy tail, very handy to catch hold of at a pinch; they are quick as lightning with their tusks and can inflict a very nasty wound. The settlers have set a price on their heads, as they are a great trouble during lambing time, often following the ewes and killing the lambs as they are dropped. They are also very destructive amongst the older sheep, as they worry them a great deal, besides destroying great quantities of grass and ruining cultivations.

Fish are, and always have been, a very important item of food for the inhabitants of the islands. They include the habuka, a large fish weighing from thirty to seventy pounds, with a firm flesh, capital eating either fresh or smoked. Cod, trumpeter, mokie, terekie, flounders, soles, crawfish, and eels are amongst the principal, and all are very plentiful. Most of them can be caught with lines from the rocks; by using a boat they are caught in large quantities, with the exception of flounders, soles, and mullet, which are netted and speared. When fishing for cod, a strong line is used, with usually three hooks. It is a very common occurrence on drawing up the line to find a fish on each hook, and at times they are so voracious they will follow the line until left by the waves on the rocks. Fishing from the rocks is rather a dangerous amusement. Usually a heavy sea is breaking; one has always to be on the lookout for the large waves that come rushing in every now and then, even on the calmest day. The Maories catch the eels in a very simple manner. Round "Te Whanga" (the big lagoon) the water is very shallow, extending in places for a mile or so. In this shallow water grows a fine grass, almost forming a mat. In the early morning, as the sun gets up, the natives, armed with sticks shaped like swords, go out amongst this grass on foot, and with the aid of the sticks kill large quantities of the eels, which are in the habit of coming on top of the grass and sunning themselves. They are as a rule very large, and are esteemed a great luxury. When camping out,

the Maories cut them in pieces about four inches long, split a small stick half-way, and insert the piece or pieces of eel, tie the top of the stick with flax, put it in the ground before the fire, and keep turning round as it cooks; in this way all the spare oil runs out. The flesh when properly cooked is capital; but as a rule they are not quite so particular in their cooking, simply placing the eels on the hot coals and roasting. When at home in their whares or houses, they cook them in the same manner as we do potatoes. One season, during my stay there, the Maories sent "Te White" (their prophet in New Zealand) a present of about 60,000, dried and packed in casks.

This grass which grows on the lake is very much prized by the horses and sheep; on a warm day one can see horses feeding a long way out. The sheep that are accustomed to feed along by the lake side can be distinguished from others by the whiteness of their fleeces. Wild horses when chased will go out into the lake, and if hard pushed keep going until only their heads are out of water, and, if within half-a-mile or so of land, think nothing of swimming across. Young foals are often got rid of by hunting the mares into deep water till the foals are drowned.

There are large numbers of birds on the island, both land and sea birds. Ducks are very numerous; great numbers are shot, but the natives do not snare them as formerly. It is very probable that, owing to their being shot at, they have become wild, and cannot be enticed into snares. A peculiar call is used, however, and if one is shooting for the pot comes in very handy: by its use, if the ducks are within hearing, they may be brought within shot.

The sea birds are principally mutton birds, gulls, and a larger species of brown gull called stinkpots. The gulls lay their eggs on the rocks and small islands round the coast, but, as the settlers look upon them as deadly enemies, they have bad times, the eggs always being destroyed when found. The gulls are very vicious; if a sheep or lamb is cast, and cannot get up, they immediately attack its eyes. I have frequently seen a sheep with both eyes pecked out, and still alive. Every year as the season comes

round, parties of Maories, or Moriories, set off for the more unfrequented parts of the island, searching for mutton birds—only the young are taken. All along the high cliffs forming the south coast of the island the mutton birds breed. Unlike most other birds, they do not make nests, but burrow in the soft peaty banks like rabbits. Once a burrow is discovered, little difficulty is found in securing the young. A long stick is put in the hole to show the direction; at some distance from the mouth of the burrow a hole is sunk, and if the birds are not found the same operation is repeated. After securing the young birds, the holes are carefully filled up again, as the old birds use the same burrow year after year; but, as before stated, they are being gradually driven off the island. The young mutton birds are extremely fat, and seem to be fed on oil. It is a frequent occurrence for a native, when he gets one, to put its beak into his mouth and squeeze the bird, making the oil run from it into his own mouth. Salted, dried, and smoked, they are esteemed luxuries, even by the Pakehas (whites). Their flavour resembles that of a red herring.

But the great birding expedition of the year is that for the young albatross. These birds do not now nest on the island, but on the outlying islands and rocks which surround it. The principal are The Forty-fours to the east, and The Sisters to the north. The natives charter the trading schooner for the trip, which usually lasts about a week, and, if the weather has been at all favourable, she usually returns with from 600 to 1,000 young albatross. These are cooked in their own fat, placed in casks, and frequently sent to New Zealand as presents for "Te White." Cooked Maori fashion they are really good. I was invited by the wife of a chief to try one; it was served up fresh from the Maori oven with potatoes, and was fit for any table. All the oily taste was gone, and the birds being young were very tender, and not at all unlike young wild pork.

As I have mentioned a Maori oven, a description of one may not be out of the way. A hole is dug in the ground, and a large fire made, a quantity of stones being also put in the hole, which,

when hot and the ashes raked out, gives heat to the oven. They are covered with wet grass or flax, then the meat or potatoes are put in, with another layer of grass or flax, then the whole well covered up with earth to keep in the steam. I believe the Maori women can cook potatoes as well as anyone. They seem to know to a minute when they are done, and do not require to prod them with sticks or forks as is so frequently done with us.

There is no animal native to the island, although I have been told that there was a native rat, and was shown one, but could discover no difference between it and the common house rat. On Pitt's Island there were originally no rats nor mice, and all goods landed there used to undergo a searching examination, but I believe with all the care they have slipped in and made themselves at home. I recollect seeing an old lady (the wife of a very old resident of Pitt's Island, whose stores of yarns of the old days were inexhaustible) turning out some plants just received from New Zealand, and minutely examining them; she said she was looking for worms and slugs, as there were none on the island, and she did not wish to import them.

The islands used to be, and still are, much frequented by whalers. As a rule they are American, but a few hail from New Zealand and Tasmania. It is rough work, especially so far south, but they seem fairly successful. They are principally manned by half-caste Maories and Kanakas, who make splendid boatmen. It is quite a sight to see a whaleboat in a strong breeze, all hands except the steersman perched like monkeys on the weather-gunwale. They are generally famous swimmers, but I should imagine would not relish a bath there, as the water even in the summer is so very cold. Water, wood, and fresh provisions are generally what they call for; tobacco and rum are frequently exchanged.

The sperm whale is *the* whale, and if a good fish of that species has been secured they are considered very lucky. There are a number of other whales common to those seas, and, although not nearly so valuable, are much sought after. Besides the oil, whalebone is also obtained from them, and a very valuable sub-

stance called ambergris. It is very seldom obtained, and commands a very high price, being used in the making of perfumes; and although in its raw state it has a very strong scent, it is not at all a fragrant one. I was informed it was only obtained from whales that are diseased, and is a collection of matter found in the stomach.

Whaling parties have several times been established on the island, lookouts being kept on hills and cliffs, and signals sent to the station if whales are sighted. One party were there for six months during my stay, but were unsuccessful in getting a single fish, although several were seen. Riding along Waitangi Beach one day, I was witness to a very singular spectacle. About 100 yards out to sea in the surf were a number of whales all aground (there turned out to be eleven of them), making a tremendous noise, blowing and thrashing the water with their tails until the sea was a mass of foam. They seemed quite unable to get off into deep water, and were all eventually killed. They averaged about 40ft. in length, being a small species, but yielded a good supply of oil—about nine casks to the whale. For days afterwards there was witnessed a remarkable scene on the beach, any amount of natives, men, women, and children, taking an active part in securing the blubber.

There are no made roads, as no wheel traffic is carried on with the different parts of the island, only horse tracks leading to the homesteads, which are all situated on the coast in such a manner that they have a boat harbour within convenient distance. All heavy goods and stores are brought round by the trading vessel, and landed in boats. This landing is often accomplished at considerable risk, and can only be done when the wind is off shore, the vessel having to stand out to sea immediately the wind changes. There are no piers or wharves; several have been tried, but the violence of the sea has always proved too much for them.

A description of the track from Waitangi to Te Wakaru will give an idea of the tracks used when travelling. First you must try and get a good swamp horse; then, starting from Waitangi,

the first two miles is over a splendid beach (the journeys are, as much as possible, timed to suit low tides); then over low sand-hills into old cultivations. Following along those you ride for some miles alternately through bush and clearing; then out on the clears or the swampy country, every now and then dismounting to lead your horse over some very bad swamp; then down by the shores of Te Whanga; then in and out of the lagoon as the land is hard or soft, till the point of the lagoon is reached, and for the next four miles you have to ride through the lake, generally the most disagreeable part of the journey; then across the sand-hills, your horse kicking aside skulls and human bones, on to the beach; then following the beach to Te Wagaru.

Whenever they can be made use of on a journey, the beaches are always preferred, as then you make up for lost time; the other parts of the journey are usually performed at a walk. In many places the sand-hills are full of human skeletons, taking the new arrival somewhat aback. He is usually shown a few skulls with a bullet hole, or with part of a Maori axe sticking in, which he is assured was the result of a fight in the old days, but which most probably was caused by someone for a joke. It is not a pleasant thing, but on several occasions we had to kick skulls out of the way before pitching camp, and I remember seeing a pyramid made of skulls, placed as an ornament (?) at the gate leading to one of the stations.

The climate of the island is a very wet and boisterous one, a wet day being usually very rough and blowing. A calm day is of very rare occurrence; even dry days, although more frequent, do not come as often as could be wished. During my stay a record was kept, and in six months we had only two or three spells of twenty-four hours without rain. The rough weather generally comes from the south-west and west.

The islanders are, as a rule, weather-wise, like the Moriories in the early days, their interests depending a great deal on the state of the winds and weather. The usual remark after the first greeting has always reference to the wind and the position

of the ship, should she be at the island or on her way up or down.

As there is only one vessel trading, and the regularity of her trips depends so much on the weather, there is a great amount of interest taken in her movements. Coming down from New Zealand she may have cargo for nearly every station on the island, and, as they are placed on all sides, it is quite a question of waiting until the wind changes. Sometimes she will be knocking about the island for over three months, waiting for these chances.

Some years ago, the island was spoken of as being in a very good position for a penal settlement, and I was requested to report upon the matter, but the distance from New Zealand was a great drawback, and I believe the scheme fell through. There are great quantities of shells along the beaches, which when burnt make a splendid lime. Fair building stone, and clay for bricks, are always to be had, while any amount of work could also be found for the prisoners in making roads, breakwaters, &c.

The principal exports are wool, hides, potatoes, tallow, and fungus (this latter is, I believe, sent to China, and is much valued), and live stock, principally sheep.

Imports include general stores, fencing wire, timber, and a fair passenger traffic is also established.

Stray cedar logs are often washed ashore, and sawn up by the settlers for building. Nearly all the houses have pieces of wreckage built in, such as cabin doors, &c.

The Maories originally held all the land, but some ten years ago the Government, when granting the Maories titles, reserved certain portions for the benefit of the Morories. Their reserves are scattered all over the island, and range in area from 50 to 2,000 acres. They run a considerable number of sheep, about 600, so now the few Morories who are left are fairly well off.

The Maories sold part of their land to the Europeans, and in many instances leased large areas with a purchasing clause. In the meantime many of the Maories who were trustees in the original grants died, or became Te Whiteites and refused to sign

anything whatever connected with Europeans. The trustees who had died had again trustees in their estates, many of whom refused to sign, so that the deeds by which a great deal of the land was held were incomplete at the time of my stay, but I believe since then matters have been to a great extent put right.

The Maories on the island are mostly followers of Te White, but are a fairly well-behaved lot, although some years ago it was feared they might give trouble; in fact an alarm was given, and all Europeans, with their families, left their homes and took safety in one of the central stations, which they garrisoned; but fortunately things went no further, and the only shots that were fired resulted in the death of a goat, which a zealous sentinel mistook for a Maori creeping up to the station.

Waitangi is the chief settlement, but it hardly deserves the name, as there is no township. One hotel and the Court House comprise it, together with a Maori pah, the Court being presided over by a Resident Magistrate and Justices of the Peace, of which latter there are three. The only police official on the island is also the holder of numberless other billets, being Postmaster, Deputy Registrar, Customs Officer, &c., arising from the isolated character of the island. There is now a school with a fair number of children, and service is held by the police official on Sundays. Visits from clergymen are few and far between, so much so that while I was there over forty children on one occasion were baptized, some of them being 12 and 14 years of age.

The rainfall during an average season (1883) is, for the summer months 1·98 inches, and for the winter months 3·50 inches per month. This seldom falls in heavy downright showers, but is usually accompanied by strong driving winds, and is very often more in the nature of a heavy drizzle or Scotch mist.

The average temperature for the three summer months is 58·68, with a range of 11; the winter months 46·51, with a range of 9.

The population by returns in 1883 give 197 Europeans, fully two-thirds being children, 82 Maories, and 44 Moriories. At

present the latter are under twenty, with no children, so that a few years will likely see the last of them.

Many Moriori skeletons have been sent to New Zealand, packed in boxes and forwarded as apples. One can imagine the disgust of a sailor broaching cargo on his discovery of the real contents.

Within the last few years steam communication has been opened between the Chathams and New Zealand, so that the distance of about 500 miles is passed in about forty-six hours, instead of an indefinite number of days. I also understand that it is the intention of one of the Freezing Companies in New Zealand to make their vessels call at the island on their way home once or twice every winter for sheep. This will place the island before the public, and I have no doubt will very much increase the prosperity of the inhabitants.

I have to thank Mr. Alex. Shand, of Whangamerino, for much of the information contained in this paper, more especially referring to the Moriories. He is the eldest son of Mr. Shand, the first magistrate on the island, and has spent the greater part of his life there, making a study, in the spare moments of a hardworking life, of the habits and traditions of a race whose course is nearly run. It is to be hoped he may see fit to commit to print the result of his observations and inquiries.

In my experience there is not a more hospitable or kinder settlement of people to be found, all doing their best towards a stranger's comfort.

After some remarks had been offered by the President, Messrs. P. McLean and Springall, the meeting closed.

SEVENTH ORDINARY MEETING.

FIFTH SESSION.

THE seventh ordinary monthly meeting of the fifth session of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Monday, June 30, 1890, at 8 o'clock.

The President, Mr. W. H. MISKIN, F.E.S., occupied the chair.

The minutes of the previous meeting were read and confirmed.

A letter was read from the Hon. the Chief Secretary of Queensland accompanying copies of despatches, maps, and sketches, illustrating the explorations of Sir William MacGregor in British New Guinea. Also a letter from the Secretary of the Royal Scottish Geographical Society, intimating that the members of the Queensland Branch of the Royal Geographical Society of Australasia, when in Edinburgh, would be admitted to the privileges of memberships of that Society without further payment of fees.

It was unanimously resolved, on the motion of Mr. J. Irving, seconded by Mr. C. B. Lethem, to convey the most cordial thanks of the Society to the Council of its Scottish sister in Edinburgh, as a small mark of appreciation for the privilege referred to.

The HON. SECRETARY, Mr. J. P. Thomson, moved "That the Society desires to place upon the records of its proceedings an expression of profound regret at the loss it has sustained by the death of one of its esteemed foundation members, the Hon. C. S. Mein, a Fellow of the parent Royal Geographical Society of England, and loyal supporter of this Society."

This was seconded by Mr. W. CASTLES, supported by Dr. WAUGH and the PRESIDENT, and carried.

The HON. SECRETARY, MR. J. P. THOMSON, F.R.S.G.S., read some notes on

Sir William MacGregor's Upper Fly River Exploration, British New Guinea,

of which the subjoined is an abstract.

Sir William MacGregor left the S.S. "Merrie England" near the village of Odagositia, some fifty miles from the mouth of the Fly River, and started on the 26th December, 1889, with a party of eighteen—consisting of Mr. Cameron, Mr. Douglas, Charles Kowald, two other Europeans, also George Belford, three Papuans, and nine other colored men.

The party travelled in a steam launch and had two whale boats in tow, with provisions and supplies for six weeks. On the first day, fifty miles were accomplished, and a point some ten miles above the village of Tagota was attained. The natives all proved very friendly, notwithstanding the fact that on the 14th December these very people had attacked Sir William's previous expedition. After a night's experience of camping in the boats, it was decided to discontinue the practice, as unhealthy, whenever practicable. On the second day two men were seized with fever, but further attacks were warded off by prompt remedies. At 150 miles from the mouth of the river the tide's influence was uncertain. A magnificent creeper having large bunches of scarlet flowers was here found sparsely distributed. The average depth of the river here was 39 feet, the width 600 yards, the current velocity 3·25 miles an hour. The country along the banks was found to be very poor, low, swampy and devoid of any timber beyond a few cedar, *malava*, nutmeg, and sago trees. Upon the place of union of the Strickland River and the Fly the name of Everill Junction was bestowed, in honour of the leader of the N.S.W. branch of the Australasian Royal Geographical Society's expedition. Here the Fly is 1,000 yards broad; above the junction it is 300 yards, and the Strickland 400 yards. For the next forty or fifty miles, the land lying between the two rivers

is chiefly occupied by swamps and lagoons. A village containing about thirty houses was seen, but a great swamp lay between it and the river, and time did not admit of its being visited. The people appeared to be settled in agricultural communities. Geese, ducks, hornbills, parrots, and cockatoos were seen, but no pigeons. The lagoons are covered with a magnificent pink water lily, the leaf of which is two feet in diameter. Whenever canoes were discovered tied up to the bank of the river, presents were left in them to conciliate the natives. One word of the language of the latter was accidentally acquired and proved to be of great value; it was the "open sesame" to the upper districts of the Fly River. This word, "*Sambio*" and "*Sambi?*" (interrogatively) seemed to set the native mind at rest.

The native canoes appeared to be all of the same pattern, having been chopped into shape and hollowed out by means of the stone adze; they are ten or twelve inches broad, nearly as deep, twelve to fifteen feet long, sharp at both ends, and with no outrigger; it seemed a marvel how the occupants could stand up and paddle these canoes, and at the same time preserve their equilibrium. The natives attached great value to empty bottles, meat tins, knives, and tomahawks, but could not be persuaded to part with articles of head gear or drums for any amount of the coveted "trade." All were armed with bows and arrows, and had the left arm defended as high as the elbow, by a guard of cane twisted spirally. In order to be in readiness for any possible attack on the part of the natives, every night the camp was fortified by a sort of low parapet of split saplings. This fence usually assumed the form of a triangle, the open base being towards the river, close to where the launch was tied up. Sir William describes a timber most valuable for steaming purposes when coal is not available. It is found all along the course of the river, is light, easy to cut and split. On the 4th of January, 1890, the explorers had reached latitude $7^{\circ} 3'$ south, 331 miles from the mouth of the Fly, and 88 miles from Everill Junction. Here the width of the stream varied from 150 to 350 yards, with a current at from 2 to 3 miles an hour.

On the 6th of the month the first real grass patches were met with, 370 miles from the mouth. The banks were still low and wet, but were becoming gradually better defined and higher. The first warlike demonstration occurred on the 7th January. On the bank of the river where it was some forty or fifty feet high, there were sixteen or seventeen houses, from thirty to fifty feet in length. To the utter astonishment of the party, the first thing to meet the eye was a long line of 100 men, each armed with a bow and a sheaf of arrows, and all got up in gala dress. Many were painted in divers colors. Fortunately the river was 300 yards wide there, which enabled the launch to steam up at 200 yards from the occupied bank. The explorers kept shouting "Sambiō!" and making signs to the natives to come to them. After various demonstrations of war and peace, a sort of half confidence was established and canoes came off to the launch, anxious enquiries being first made by the natives in the terms "Pu? Pu?" This evidently referred to puff, puff, *i.e.*, guns. Probably Signor L. M. D'Albertis had come across this tribe, and thus they had learned the power of the rifle. However, Sir William and his party dauntlessly landed and carried on some trade with them. Here a new word which seemed to mean "peace" was learned, "Magisio." These natives chewed the betel nut, the lime used therewith being made from mussel shells. After a short stay, the launch went on its way, leaving favourable impressions of its occupants with the tribe. On the 8th, a camp was made. 423 miles from the sea; the banks of the river rising a little but sloping away into swamps, and the country being quite unfit for permanent occupation. At 486 miles, in the clay of the red hills, was found the first stone met with on the river's course—pebbles of quartz, basalt, limestone, sandstone, &c.; birds were few, and forest food scanty.

On the 13th of January, the party met with the first and only aggression offered by the natives. A red bank about forty feet high having been noticed, consisting of three different layers of deposit—the middle one, twelve feet thick, composed of sand and shingle—it was at once decided to prospect this layer for

gold. Good colors were obtained by washing, and whilst a second dish was being washed, a flight of arrows whizzed past them and wounded a Malay, named Lario, on board the launch. No aggressors were seen and it was considered advisable to leave the locality, although the inclination of all, and of the leader himself, was to fight it out, as their going away might be set down to fear, by the natives. The arrows were of the usual type—a reed shaft and a palm-wood point, unbarbed. In a week Lario was at work again.

The river was now found to contain spits of sand and islands of small stones, pebbles of granite, limestone, conglomerate, quartz, slate, basalt, flint, petrified coral and shells. One fine specimen of petrified palm was found. Specimens of all were obtained and forwarded to Mr. Jack, Government Geologist, Queensland. At one place, where the river was 300 yards wide, a sandstone bar extends right across, but a passage wide and deep enough for the launch was found close to the right bank. The current of the river now became more swift, and rapids were encountered. The first was a mile long, and here there is an island, covered by old forest, three-fourths of a mile long, and a quarter of a mile broad. It was named "Macrossan Island," in honour of the Minister for Mines of Queensland. It is 523 miles from the mouth of the Fly. Sir William concludes that S. D'Albertis' steam launch could not have reached this point, as the course of the river beyond D'Albertis' Junction, as given by the Italian explorer, differs utterly from what was now found to be the true course.

Difficulties were now encountered amongst the rapids. The launch very nearly capsized after being swept down a rapid she had already negotiated. She succeeded in again surmounting it, and a mile and a half further on came to a rapid of the same length. After gallantly forcing her way through the turbulent to the smooth water above, it was found that she could not gain another inch with a full head of steam, so it was decided to let her drive down again, and the conclusion was arrived at that the head of steam navigation in the Fly River had been reached, at

535 miles from the mouth, in latitude (by observation)
5° 58' 15" S.

Arrangements were now made to prosecute the trip by means of the boats. Mr. Douglas, three Europeans, one Papuan, and four other colored men were left with the launch. Sir William, Mr. Cameron, Mr. Belford, two Papuans, and five Polynesians went in the boat. The principal method of advance was by dragging the boat by a rope through the rapids. Only a few natives were seen dragging their canoes by the help of the branches of the trees.

The junction of a narrow, deep, sluggish river with the Fly was named the Palmer, and the newly-discovered river itself, the Palmer, in honour of Sir Arthur Hunter Palmer, of Queensland, "who has done much to facilitate the work of this Government." The country here consists of low hills about 300 feet high, all forest clad, the trees being the same as those met with on the New Guinea lowlands. Traces of gold were also found. The hills are all of sandstone formation, and the alluvial soil contains more sand than humus. A seam of lignite six inches thick was found—useless for all practical purposes. It is merely a layer of trees, leaves, and vegetation of various kinds recently deposited and covered over by sand, which has got a certain amount of cohesion. The process can be seen in earlier stages, at scores of places on the recently cut river banks. Several tobacco plants were found growing in a clearing, at a house built on a red hill, about sixty feet high. This was considered remarkable, as the natives 180 miles lower down the stream, knew nothing of tobacco. Seeds were brought away. 590 miles of the river had now been traversed, and the Victor Emmanuel Range, 5000 to 6000 feet above sea-level was in full view, within about thirty-five miles. The more distant chain, about forty-five miles away, probably rises to 10,000 to 12,000 feet, and runs nearly east and west. A little above the point where this view is obtained, a large branch sixty to seventy yards broad, entered the river on the left bank. This affluent was named the Black River, in honour of the Hon. M. H. Black, Minister for Lands in Queensland. The course of

the Palmer, which the explorers were now ascending, now became encumbered with snags, so it was not considered advisable to take the boats on, without due examination of the river. A fortified camp was therefore constructed at a spot, in round numbers 600 miles from the mouth of the Fly. This camp was therefore called the "600 mile camp." There is no grass country visible here, but vast stretches of reeds occupy the surface. The thermometer stood at 90° in the shade, and fell to 74° at night. Thunderstorms seem to have occurred every afternoon during the voyage. Here again "fine colours" of gold were found.

Two Polynesians and one Papuan were left at the camp. The remainder went on by boat with three days provisions. Again a fine view of the Victor Emmanuel Ranges was obtained. They appeared hopelessly inaccessible, being exceedingly rugged and precipitous; they also appeared to be entirely in German territory. A range lying between the explorers and the Victor Emmanuel Range, about 5000 to 6000 feet high, was named Mount Donaldson in honour of the Treasurer of Queensland, and a portion of it which appeared to lie in Kaiser-Wilhelm Land, Mount Blücher.

The party was now thoroughly split up, and Sir William MacGregor was not without anxiety on account of his scattered companions. "Nine were in the steam launch 4 miles below Palmer Junction, three were in the 600-mile camp fourteen miles from the whaleboat, two were with the whaleboat, and five of us were travelling in the bush up the Palmer," Yet no attack was made on any of these parties. There was clearly a large native population at this point, and judging from the size of their gardens, they appeared to be of more fixed habits than those farther south.

There was now no more to do. It would take three months to explore the ranges, and the party had neither the time nor means for such an undertaking, and the Administrator did not feel justified in entering on such an exploration, without the concurrence of the Government of German New Guinea.

The return journey was started on the morning of the 24th. The dispersed parties were found in safety and fairly free from

fever, and all started in good spirits for the mouth of the river and the "Merrie England." On the way down, they were received on all sides with the utmost friendliness by the natives, who were eager to trade. One of the tribes was estimated to consist of 2,000 souls.

The information obtained by this voyage is important from an administrative point of view. But its commercial value is not so apparent, at least above Everill Junction. There is no reason to suppose that gold can be procured in payable quantities. Climatologically, there seems to be no rainy season here. Thunderstorms are the rule after 2 to 3 p.m. The temperature during the day ranged from 85° to 90°, but the latter figure is unusual. At night the thermometer registered 72° to 76°, possibly owing to the N.W. wind blowing over snow-clad ranges in Dutch New Guinea. The upper districts are fairly free from mosquitoes and sand flies. On an average, there were about two cases of sickness a day, amongst a party of nineteen. None of these were serious except one, which gave the doctor some anxiety. Ethnologically no race of natives has been found inland distinct from the coast tribes. Those seen at the boundary of British and German New Guinea were of a light colour, but that may not signify much. The dialects differ, and every word ends in a vowel. On the lower part of the river they are agriculturists and live in settled communities; on the upper part they cannot do so, owing to the occurrences of floods over the low wet country. They all use the bow and arrow; all suffer from the same diseases. The men tattoo their bodies, the women are all clothed. They differ greatly in type and size. Any future examination of the interior, in this direction, should be made in June or July, in order to procure information respecting the climate during the S.E. monsoon. At that season, too, the birds would be in plumage and could be collected for scientific purposes. A considerable addition has been made to the official collections, but, probably, not much that is new to science. The expedition was absent five weeks and four days, and in that time the party travelled about 1,200 miles.

ANNUAL MEETING.

THE fifth annual general meeting of the Royal Geographical Society of Australasia, Queensland Branch, was held in the Museum Library, Brisbane, on the evening of Monday, July 28, 1890, at 8 o'clock. The President, Mr. W. H. MISKIN, F.E.S., occupied the chair. On his right was His Excellency General Sir Henry Wylie Norman, G.C.B., G.C.M.G., &c., Governor of Queensland; and on his left sat the Hon. Sir S. W. Griffith, K.C.M.G., &c. A large number of members of the Society were present. The visitors were Mesdames J. P. Thomson and E. G. Edelfelt; also Messrs. J. Mathieson, J. B. Henderson, P. Pinnock, and Captain Strachan.

The minutes of the previous ordinary monthly meeting were read and confirmed.

The HON. SECRETARY read the following letter:—

Melbourne, 23rd July, 1890.

To J. P. THOMSON, Esq., F.R.S.G.S., &c.; Hon. Treasurer and Secretary of the Queensland Branch of the R.G.S.A., &c.

DEAR SIR,

On behalf of the Victorian Council of the R.G.S.A., we beg to offer our best felicitation at the new anniversary of the Queensland Branch of our Society, when His Excellency, your honored Governor, will give, as representative of our gracious Sovereign, to your festival the greatest *eclat*, when on a distinguished statesman there will devolve the position of President, after that honored office has been held by prominent predecessors, when the great value of your own secretarial services will anew be recognised, and when, doubtless, further measures for the next year's work of your Branch will be initiated, as well in the interest of purely scientific geography as in the furtherance of colonial settlements and the industrial advantages connected therewith.

The Queensland Branch has prominently distinguished itself by the frequency of its meetings, by the multitude of subjects brought forward at the gatherings, and by the copiousness and originality of its publications; thus all augurs well for the future of its progress, especially as the vastness of the Queensland territory, the richness of its resources, and the direct administrative contact of your colony with British New Guinea, under its highly scientific Administrator, give a particularly ample scope to the action of your Branch in our geographic confederation. May a hope also

be expressed, at your present festival, that the attention of your great colony could likewise be directed to the far South, more particularly so, as new geographic enterprises, in the antarctic regions, will tend to enlarge still further the scientific insight into the physiography of our planet, and as simultaneously a new vast area would be opened for obtaining additional products, to call forth or promote commerce and new industries, for increasing the public revenue and augmenting manifold private wealth, in all the Australian Colonies.

We beg to remain, honored Sir,

Yours obediently,

FERD. VON MUELLER, President.

A. C. MACDONALD, Hon. Sec.

The HON. SECRETARY also read the following general statement upon the operations of the Society during the preceding year:—

Report of Council, Session 1889-90.

GENTLEMEN,

Agreeable to the practice of the past the Council has the honour of submitting for your information the following annual report upon the operations of the Society during the currency of the preceding year:—

MEMBERSHIP.

The fifth session of the Society terminated on June 30th, 1890, at which time its members numbered 120—composed of ten life, three honorary, four honorary corresponding, and 103 ordinary members; the list of ordinary members has suffered a reduction by two deaths, and that of the honorary members by one death. The accessions to the membership of the Society are satisfactory.

FINANCE.

The Council also submits the subjoined financial statement:—

ANNUAL BALANCE SHEET

OF THE

ROYAL GEOGRAPHICAL SOCIETY OF AUSTRALASIA, QUEENSLAND BRANCH,

Dr.

FROM JULY 1ST, 1889, TO JUNE 30TH, 1890.

Cr.

	£	s.	d.
To Balance in Q. N. Bank, June 30th, 1889	70	9	9
„ Entrance Fees and Subscriptions, from July 1st, 1889, to June 30th, 1890	179	1	0
„ Diploma Fees	19	11	0
	£269	1	9
By Printing the Proceedings and Transactions of the Society	95	19	9
„ Printing Circulars and Post Cards, and the purchase of Stationery and Postage Stamps	53	18	3
„ Caretaker of Museum for attendance	2	0	0
„ Freight and Entry on Books	0	10	6
„ Balance in Q. N. Bank, June 30th, 1890	116	13	3
	£269	1	9

9TH JULY, 1890.

J. P. THOMSON, Hon. Treasurer.

I have compared all the Vouchers, Cash Book, and Bank Pass Book, laid before me by the Honorary Treasurer, and found the same correct.

BRISBANE, 9TH JULY, 1890.

WARREN WEEDON, HONORARY AUDITOR.

N.B.—I would beg to suggest for the consideration of the Council, the desirability of forming a "Capital Account" for the purpose of commencing a fund towards the purchase of ground on which to erect a building for the purposes of the Society, also towards premiums for papers read at the meetings; and, as a means of forming a nucleus, that all payments made by the Fellows to ensure their life membership, be placed to this account, both for the past as well as in the future—legacies, donations, &c. In the event of this proposal meeting with the Council's approval, that a separate Bank Account be opened for this purpose.

WARREN WEEDON.

MEETINGS OF THE SOCIETY.

During the session under review there have been held the annual and seven ordinary monthly meetings, at which eight papers, including the anniversary address and several brief communications, were read; to the contributors of these, the Council desires to accord its best thanks.

COUNCIL MEETINGS.

Eight ordinary meetings of the Council have been held during the currency of the session, at which the usual general business connected with the operations of the Society was transacted.

PUBLICATIONS.

The volume of proceedings and transactions has been published as usual. The Council is especially gratified to observe by the current literature of kindred institutions and by the number of applications from foreign societies for exchange of our publications, that the Society has attained a recognised status amongst its sister associations. The Council also observes with pleasure that the innovation of the "Geographical Notes," to which reference was made in last "Annual Report," has met with general approval.

LIBRARY.

The library of the Society has been greatly enriched during the session by the accession of valuable exchange publications from cognate institutions, consisting of books, periodicals, maps, &c. These annual accessions have so accumulated that a means of proper storage thereof is a matter to which the attention of the Council will soon have to be given. The Council again desires to accord the best thanks of the Society to the Trustees of the Queensland Museum for the use of the Library Room.

EXPLORATION.

The Central Australian exploration by the Victorian and South Australian Branches of the Society, and the vigorous prosecution in the British possession of New Guinea, by our

distinguished honorary corresponding member, Sir William MacGregor, is especially congratulatory.

NOMENCLATURE.

The Council is glad to note that the efforts of the Society to discourage the practice to which explorers have but too frequently confined themselves, of bestowing ambiguous and inappropriate place-names to newly discovered topographic features, to the exclusion of the euphonious native appellations, have been warmly supported by all institutions representing geographic science, and especially in a vigorous manner by the recent International Geographic Congress, held at Paris, at which a resolution—originating in our own Branch of the Society—was unanimously adopted, deprecatory of this deplorable practice.

RECIPROACITY.

The Council considers the privileges recently accorded the members of the Society, by the Royal Scottish Geographical Society, as matter for special congratulation; by this friendly relationship, an intercourse conducive to mutual welfare will be promoted, which under unfavourable auspices would not be attained.

For the Council,

J. P. THOMSON,

Hon. Sec. and Treasurer.

HIS EXCELLENCY, SIR HENRY WYLIE NORMAN, congratulated the Society upon the satisfactory position it occupied. There had not been very much exploration in the colony during the past year, nor indeed so much in British New Guinea as had marked the previous year; but the Administrator of the Government there had been going about and doing good useful work. He was surprised that more interest was not taken in the Society, for there was still much which could be done, even as near home as the Macpherson Range. He had been amused at the publication in the local Press of most contradictory accounts of the ascent of

some peaks in this range, during which there was shown a lamentable lack of definite information on the subject. In a place where there were so many young men, it was surprising that every peak of the range was not thoroughly well known, for there was so much attraction in ascending heights which had not been explored before, that could never be equalled by going up mountains in the beaten track of climbers. As regards the suggestion made by Mr Weedon, the auditor, he was thoroughly in accord with it, so far as the building fund was concerned, and should such a fund be opened he would, in his humble way, do what he could to assist it. But he could not agree with the proposal to offer premiums to contributors of papers. In the British Royal Geographical Society, of which he had the honour of being a Fellow, no member or contributor would dream of a premium for papers, the honour of reading them alone being sufficient recompense for the trouble taken in their preparation, and he hoped the same would be the opinion of the Queensland Branch.

HIS EXCELLENCY had much pleasure in moving "That the Council's report and balance-sheet be adopted."

This motion was seconded by Mr. P. McLEAN, and unanimously carried.

The PRESIDENT then addressed the meeting in the following manner:—

Anniversary Address.

By W. H. MISKIN, Esq., F.E.S., President.

UPON the termination of this the fifth year of the existence of our Branch of the Royal Geographical Society of Australasia, and of my year of office as President, it becomes my duty, in accordance with time honoured usage, to address you, previous to my vacation of the presidential chair; a position that I am happy to believe will be occupied during the forthcoming year in a much more distinguished and able manner than I can hope to have achieved.

The year has not passed without the inevitable departure from

our midst of several valuable supporters of the cause. We have to lament the decease of Sir Edward Strickland, the President of the New South Wales Branch, than whom none have done more to further the subject of geographical science in the Colonies and promote and support the objects of our Society. A heavier loss to science generally was the untimely end of the Rev. J. E. Tennison-Woods, a man whose marvellously erudite gifts had earned him a justly world-wide celebrity. While from our own list of members we have to deplore the erasure from our roll of the name of the late Mr. Justice Mein.

The report of the retiring Council, already submitted to the meeting, will have made you acquainted with the operations of our Branch during the past year, a history that I venture to say has not been barren of fairly gratifying results and of evidence of energetic pursuit and successful accomplishment of the objects of the Society, consistent with its means, as of the encouraging present position of the Society, financially and otherwise—its roll of members having been well maintained, and its monetary condition satisfactory.

In proof of the advance made in the recognised status of our Society, it is gratifying to mark the requisition in which our transactions are held by kindred societies the world over, and the reciprocal benefits we are deriving thereby, in the accumulation of literature of the geographical societies of the world, maps, &c., a wealth of valuable material that is, in the absence, unfortunately, of suitable accommodation, becoming almost a source of embarrassment to us, and is thereby for this reason, it is to be regretted, rendered almost valueless from the absence of convenience of reference.

This subject naturally leads to the consideration of the grave necessity, which the new Council will have to grapple with, of studying some scheme whereby permanent quarters may be secured and the full benefit of the Society's operations be made thereby available to the members, a matter which the position of the Society and its importance demands. But for the kind concession of the Trustees of the Queensland Museum, who have per-

mitted the use of the Library Room of the Museum for the holding of the Society's meetings, and the facilities cheerfully afforded by the Museum officers, we should have been hard put for even a place to assemble in.

I cannot refrain here from drawing some comparisons between the disadvantage that our Branch has laboured under, with those of the sister Branches. In New South Wales the Society is supplied by the State with free quarters and the printing of its publications at the public expense. In Victoria the Society is subsidised to the extent of £1,000 per annum; and in South Australia the printing of the Society's transactions is also contributed by the State. While in our case not the slightest assistance has been afforded in any shape by the Government of the Colony, or any official recognition of the Society vouchsafed.

Surely the work that is being accomplished by the Society, obviously for the public benefit, hitherto carried on entirely upon an income derived solely from the subscriptions of its limited number of members, entitles it to some consideration and assistance. Let us hope that a more liberal spirit will be manifested towards the Society by the powers that be in the future, and thus enable the Society to extend the scope of its duties beyond the mere publication of papers, by itself encouraging and assisting in exploratory research.

Before disposing of this branch of my subject, I may refer with satisfaction to the friendly spirit exhibited by a sister society in the old country (The Royal Scottish Geographical Society) which has intimated that any members of our Society will be welcomed to the privileges of membership of that Society, upon visiting North Britain, without payment of any fee or subscription.

The following subjects have been treated of in papers read before our Branch during the past year, some of which have already appeared in our published "Proceedings and Transactions," while others are in course of publication:—

Sir Wm. MacGregor's Ascent of Mount Victoria and Exploration of the Owen Stanley Range, British New Guinea; by J. P. Thomson.

The Gulf of Carpentaria: by Capt. W. C. Thomson.

The Torres Group, &c.: by D. Rannie.

The Application of Astronomy to Meteorology; by J. P. Thomson.

Notes made in the Fly River, British New Guinea: by Capt. J. M. Hennessy.

Notes on the Brisbane River Floods and River Engineering Problems: by J. P. Thomson.

The Chatham Islands: by John Robertson.

Notes on Sir Wm. MacGregor's Upper Fly River Explorations: by J. P. Thomson.

The addition in our published transactions, to original papers, in the shape of short notes of geographical subjects of interest culled from other publications, commenced the previous and continued during the past year, has increased their attractiveness considerably, and has, doubtless, been appreciated by the members.

That the preponderating feature in the contributions to our own transactions, in exploratory research, should refer to New Guinea is not to be wondered at, when it is borne in mind that with the exception of the African continent, this great island presents almost the sole region upon the face of our globe that remains at the present comparatively unknown: and, further, from the relations existing between that portion of New Guinea forming the British possession and our own Colony, we are naturally proportionately interested in acquiring a knowledge of the country, and possess, from such relations, exceptional advantages for securing such information as is available relating to it. At the same time it should not be overlooked that there is much that might be communicated, and that would prove of great interest and value, of the remoter parts of our own Colony, settled as it is in name, that would be welcomed to a place in our transactions: while in the Northern territories of Southern and Western Australia much remains yet for the explorer to investigate.

Regarding the sister Branches of our Society, no publication of

transactions have reached past us during the year from New South Wales or South Australia. In Victoria, however, where a very large roll of members obtains, and where a liberal subsidy is enjoyed, with a consequent prosperous exchequer, great activity has prevailed, especially in pecuniary support afforded to exploratory expeditions—£160 10s. and a bonus of £50 having been contributed to the expedition under Mr. W. H. Teitkins, sent out from South Australia under the auspices of the Central Australia Exploring and Prospecting Association, Limited; a sum of £100 in aid of exploration in British North Borneo; and, in addition, donations have been made to members of the staff of Sir William MacGregor's Owen Stanley Expedition. While the handsome offer has been made of a subsidy of £500 in support of further investigations in that region. The "Transactions and Proceedings" of this Branch contain numerous able contributions to geographical knowledge. The last anniversary address delivered by the President, Baron F. von Mueller, contained therein, being a masterly review of our subject, as relating to this portion of the Southern hemisphere.

Our cause has received an impetus, a now constantly increasing one, through the happily successful exertions of the Australasian Association for the Advancement of Science, one of the sections in its programme being devoted to geography.

The last meeting of the Association, the second in its annals, was held in the Victorian capital in January last, and was of the most successful and encouraging character; representative scientific men were gathered together from all the Australian Colonies and New Zealand, and the various branches of science were ably and exhaustively treated in addresses, contributions and discussions, with a result that must be as highly gratifying, especially to our compatriots of Melbourne, by whom the visiting members were entertained with lavish hospitality, as it is satisfactory and encouraging to the cause of science and its future progress in the Colonies.

The meeting for 1891 has been arranged to be held at Christchurch, New Zealand, upon which occasion it is to be hoped our

Colony will not be unrepresented in one or other of the sections. As in the course of years our time will come for the Association to assemble in Brisbane, it will not be amiss for our learned societies and institutions to begin to think about organising their strength in anticipation of this event.

The geographical section was well represented at the Melbourne meeting, the following papers, in addition to the President's address, were read:

Early Discovery, Exploration, and Physical Geography of Australia; by A. C. Macdonald, F.R.G.S.

On the Distribution of Land and Water on the Terrestrial Globe; by J. J. Wild, Ph.D., F.R.G.S.

Australian Exploration; by P. G. Mueller.

Antarctic Exploration; by Commander Crawford Pascoe, R.N., F.R.G.S.

and most of the subjects were well and fully discussed.

The principal event of exploratory interest in our part of the world, has been Sir Wm. MacGregor's successful accomplishment of the ascent of Mount Victoria—the highest peak of the Owen Stanley Range in British New Guinea—over 13,000 feet above sea level; full details of the expedition have already appeared in our "Proceedings and Transactions," and in the public prints. Sir William's further despatches descriptive of extended investigation of the country and of acquaintance with the aboriginal population, are full of absorbing interest, although the result of his experiences seems to more convincingly establish the fact that New Guinea is never likely to become a field for colonization purposes. That great advantages may accrue from the possession, in the shape of openings for trade possibilities, especially to the Australian Colonies, and for the possible pursuit of tropical agriculture under conditions of employment of cheap labour, in which circumstances alone, in my opinion, can there be any hope of such being profitably and successfully carried on, and competition of similarly favoured countries contended against, is not to be gainsaid.

Next in point of interest is an expedition fitted out by the

Central Australian Exploring and Prospecting Association, Limited, of South Australia, at an expense of £2,000 additionally subsidised by the Victorian Branch of our Society to the extent of £160—under the leadership of Mr. W. H. Teitkins, F.R.G.S., for the exploration of the central part of our continent.

Mr. Teitkin's full report has not yet reached our hands, but will probably appear in an early number of the Transactions of the Victorian Branch. From such scraps of information as have come to hand however, we are aware that matters of great interest have been disclosed by the explorer's investigations, especially with respect to the large interior lakes, and we may look forward with anticipation to the receipt of full details.

And, lastly, I cannot pass without a casual allusion to the important subject of proposed antarctic exploration. Negotiations have been pending for a considerable time past, with the object of securing a thoroughly equipped expedition, for the purpose of attempting to solve the many interesting problems that await a successful mastery of the hitherto insuperable difficulties that defeated the efforts of the early voyagers under Ross, and the later attempts of the "Challenger" expedition, to find an opening through the ice-cliffs, that would permit an investigation of the Southern polar continent. Financial questions have hitherto been the stumbling block upon which these negotiations have failed, but the characteristic energy and enterprise of our Victorian friends, and the strong desire evinced in scientific circles in the old country will, doubtless, overcome the temporary obstacles.

The manifest importance of this matter to the Colonies is so palpable as to hardly necessitate a reference to the causes that recommend its urgency; whether viewed from a commercial point of view, as promising rich returns from the whale and seal fisheries that may be opened up, and possible mineral discoveries; or from the purely scientific aspect as presenting the most valuable disclosures in the study of the glacial conditions, the currents, meteorology, volcanic, seismic, and astronomic phenomena obtaining there, all of which, doubtless, have a very important bearing

and influence upon the climatological conditions of the more Southern parts of Australia and New Zealand, it at once recommends itself to our consideration.

My observations would be incomplete were I to close without glancing at the progress of our subject, in parts of the world beyond our own immediate sphere. I will, therefore, without detaining you too long, give a short synopsis of the principal events that have occurred, geographically, in other countries. The past year has been fertile in geographical interest, the world over. In exploration we have the all-absorbing adventures of the great explorer, Stanley, in equatorial Africa. The account of his travels and adventures, in his work, "Darkest Africa," now in hands of home readers, is eagerly awaited in the Colonies.

The return of the great traveller to the domain of civilization has been signalled by a burst of enthusiasm; continuous ovation awaiting his arrival at his various stopping places, shewing the overwhelming interest that his exploits have awakened in the public mind.

A special gold medal has been presented to him by the Royal Geographical Society, and bronze ones to his officers; and all classes and sections have combined to express, in the most unmistakable manner, their admiration of the conduct of the distinguished explorer and his gallant followers, under the unprecedented difficulties, dangers, and hardships encountered by them, in this protracted struggle through the great dark forest land of Central Africa.

In other parts of the great continent, exploration has been energetically pursued by Teleki and Arnot, respectively, north and south of the equator; by Selous in Central South Africa; De Faucauld in the Atlas Mountains; and Messrs. Thorn and Harris in the less known parts of Morocco. While Dr. Meyer's successful ascent, for the first time, of the monarch of African mountains—Kilimanjoro nearly 20,000 feet above sea level, adds further important contributions to the study of the great continent interior.

A more familiar acquaintance with Central and Northern

Asiatic regions is constantly being extended by the untiring energy of Russian enterprise, not the least interesting of which, is the demonstration by Captain Wiggins (an Englishman) of the feasibility of penetrating Central Siberia by a ship route, *via* the Arctic Sea, and navigation of the Obi and Yenesei Rivers.

Dr Nansen's journey across the peninsula of Greenland, the history of which was communicated some six or eight months since, seems to have acted as a stimulus to that intrepid traveller, for we now find him projecting another undertaking with the object of making researches towards the North Pole.

As settlement naturally follows discovery, we consequently, in the chain of events, have our attention drawn to the great railway undertakings in course of or projected construction, in recently discovered or settled regions; the means of convenient transit being, of course, the first step towards profiting by the labours of the explorer; and we have presented to us two herculean projects in nearly opposite points of the globe: the one being the Congo Free State railway, from a point on the Congo River, at the head of navigation of that river to Stanley Falls, another point towards its head, covering a distance of 250 miles through an absolutely barbarous country. The other, a line across the continent of Asia, by the Russians, to bring their present railway system into connection with their possessions on the Pacific coast. This line has been resolved upon, and the surveys are in course of being proceeded with.

The relation that geography bears to commerce has been well and frequently descanted upon by several writers; one of the most noteworthy essays upon the subject being entitled, "The Physical Basis of Commercial Geography," by Dr. Hugh Robert Mill, communicated at the late British Association meeting. Geography in its educational aspect has been persistently forced upon public attention, and it is gratifying to observe with good results; Professor Laurie's lecture, "The Method applied to the Teaching of Geography in the School," published in the "Scottish Geographical Magazine, 1886," has not been surpassed for a comprehensive and lucid grasp of the subject; but Great

Britain and her Colonies are still a very long way behind countries like France and Germany, in the number of their societies devoted to this science, and of the periodicals published on the subject.

The subject of geographical nomenclature has, of late years, received considerable attention at the hands of various bodies and individuals, but, in almost every case, the unanimous opinion is strongly deprecatory of the practice of giving complimentary designations to natural features, in newly discovered countries, where it is possible to ascertain the native name.

A resolution in substance to this effect emanated from our own Branch, and the principle was supported by the other Branches of our Society, and mentioned with approval by European authorities.

At the Paris Congress the principle was very emphatically affirmed, in language couched in still stronger terms, as follows:—

“The right of the explorer only begins when the country he is exploring has no native inhabitants.”

The subject was also discussed in the geographical section of the recent Melbourne meeting of the Australasian Association of Science, when the same principle was pretty generally approved.

A few of the subjects of paramount interest that have been treated upon in British Geographical publications may be cited as calling for special attention, as follows:—

In the *Proceedings of the Royal Geographical Society*,

Annual Address on the Progress of Geography: by General Strachey.

Geographical Co-ordinates in the Valley of the Upper Nile; by E. G. Ravenstein.

The Great Central Asian Trade Route from Peking to Kashgaria; by Colonel Mark S. Bell.

In *The Scottish Geographical Magazine*,

Journey across the Inland Ice of Greenland from East to West; by Dr. F. Nansen.

On Marine Deposits in the Indian, Southern, and Antarctic Oceans; by Dr. John Murray.

The Cocos Keeling Islands ; by Dr. Guppy.

On the Temperature of the Tidal Estuaries of the South-east of England ; by H. C. Sorby, LL.D., F.R.S.

Anniversary Address. Africa: British and other Spheres of Influence ; by General Sir Lewis Polly, K.C.B., K.C.S.I.

The Evolution of Climate ; by Professor Geikie.

The Physical Basis of Political Geography ; by H. J. Mackinder, M.A., Prof. of Geog. Univ. Oxford.

Border Lands between Geology and Geography ; by the Duke of Argyll.

The Vertical Relief of the Globe ; by Dr. H. R. Mill, F.R.S.E., F.R.S.G.S.

Southern California, Past and Present ; by Professor Blaikie.

In the *Journal of the Manchester Geographical Society*.

On the Teaching of Elementary Commercial Geography in Primary and Secondary Schools, &c ; by J. H. Silberbach.

Indian Railways and British Trade ; by Mr. Holt Hallet.

In *The National Geographic Magazine*.

Geographic Methods in Geologic Investigation ; by W. M. Davis.

Classification of Geographic Forms by Genesis ; by W. J. McGee.

In addition may be mentioned a communication to the Royal Geographical Society, published in the last November number of its Transactions, being a most interesting description of an expedition across Australia from south to north, between the telegraph line and the Queensland boundary, in 1855-6, by David Lindsay, F.R.G.S., which appears to have hitherto otherwise escaped attention, except in a very casual way.

And lastly I may refer to the gathering of the British Association of Science, held in September at Newcastle-upon-Tyne, with its exceptionally numerous attendance of members, the geographical section being especially representative and distinguished by its operations.

But the crowning event of the year was the great Congress held in Paris, under the presidency of the renowned M. Ferdinand de Lesseps, where the whole field of geography, studied from every possible and conceived division of the subject, was exhaustively and learnedly discussed by the most distinguished geographers of the world.

In concluding my observations, and thanking you for the patient hearing you have accorded me, I relinquish my position of President of this Branch of our Society, for the past year, with the feeling that however short I may have fallen in ability in the performance of my duties, I have at least the satisfaction of reflecting that my best efforts have been given to promote the interests and support the cause we all have at heart, in maintaining the usefulness of our Society. And I have to offer my warmest thanks to the members of the Council, and especially to our devoted Honorary Secretary, for the loyal assistance and support that I have received during my term of office.

Dr. WAUGH moved—"That the thanks of the Society be accorded the President for his address and that the same be printed in the 'Proceedings and Transactions' of the Society."

This motion, which was seconded by Mr. C. B. LETHBRIDGE, and supported by the HON. SECRETARY, was carried unanimously.

The HON. SECRETARY read a telegram from the Victorian Branch of the Society, *re* Antarctic Exploration, which urged the desirableness of co-operative action in promoting the interests of the cause.

Mr. THOMSON also made an earnest appeal, on behalf of science, to the meeting and to the public, to afford aid in the proposed expedition to the South Polar regions; apart from the utilitarian results of such an undertaking, the scientific issues would, no doubt, be very great, as thereby we should be enabled to elucidate and probably understand the climatic conditions of Australia, to a far greater extent than we could ever hope for by the use of local data. There could, he submitted, be no doubt that the cool Antarctic air and ocean currents brought near the shores of

this continent, produce some considerable influence upon Australian climate.

A ballot then took place, resulting in the following gentlemen being elected as Officers and Councillors for the Session 1890-1:—President: The Hon. Sir S. W. Griffith, K.C.M.G., M.A., Q.C., M.L.A.; Hon. Secretary and Treasurer: J. P. Thomson, F.R.S.G.S., &c.; Members of Council: the President, the Hon. Secretary and Treasurer, and J. N. Waugh, M.D., W. H. Miskin, F.E.S., R. Gailey, T. S. Sword, P. McLean, J.J.P. and J. Irving, M.R.C.V.S.L., &c.

Sir S. W. GRIFFITH, who, on being conducted to the chair, received the congratulations of His Excellency the Governor and other members of the Society, returned thanks for his election. He trusted the Society would be warmly supported in the future, for the honour of the Colony. Referring to Antarctic exploration, which he warmly advocated, he thought there could be no doubt that the South Polar currents and drift ice influence the climate of Australia, probably in the same way that the climate of Southern Europe is influenced by the Gulf Stream; he had himself seen icebergs off Cape Leuwin; he also thought the central plains of South-Western Australia offered considerable scope for exploration. In concluding a very able and interesting speech upon a geographic subject, Sir Samuel called upon the meeting to accord His Excellency the Governor the best thanks of the Society for his attendance at the annual gathering, as representative of Her Majesty the Queen and of the parent Society of England; also for the moral and material support extended by him to the Society. (Applause).

The HON. SECRETARY moved—“That the Hon. Auditor, Mr. W. Weedon, be reappointed, and that the thanks of the Society be accorded him for past services.”

This motion was seconded by Mr. A. MUIR, and carried.

Mr. WEEDON spoke in support of his suggestion regarding the establishment of a capital fund, and thanked the meeting for his reappointment to the position of Hon. Auditor.

THE HON. SECRETARY also moved—"That the thanks of the Society be accorded the retiring President and Council members."

This motion was seconded by Mr. J. IRVING, and carried unanimously.

HIS EXCELLENCY THE GOVERNOR, in acknowledging the vote of thanks, promised the Society his continued support; he concurred with Sir Samuel Griffith's views upon Antarctic research; he, too, considered that Australia should take part in exploring that region.

GEOGRAPHICAL NOTES.

EUROPE.

Description of Siberia.—To say that Siberia contains $5\frac{1}{2}$ millions of square miles may convey no real impression to our minds. Look at any map. Then we shall begin to take in its vast size. From the North down to about the Arctic Circle we have the treeless Tundra, covered in winter with nearly 10 feet of snow, the ground in summer thawing but to the depth of 12 inches; yet this region is carpeted in summer with numerous flowers. The natives roam it with their herds of reindeer, ever wandering in search of fresh moss. Next we come to the forest region extending for hundreds, nay, thousands of miles. The trees met with are the larch, the cedar, pine, the white birch, the lime tree and the mountain ash. The furs of Siberia are many of them more highly prized than those of N. America. We have the white and brown bear, the white and blue fox, the wolverine, badger, polecat, sable, ermine, weasel, otter, beaver, grey squirrel and flying squirrel, the chinchilla. Do not imagine that the treeless Tundra or the wooded Taigar contain no hidden wealth. Gold, graphite, copper, coal, or at least a valuable lignite, are known to exist in many places accessible to our barges on the Yenisei, and exploration will doubtless reveal many deposits elsewhere. As the African ivory becomes more and more scarce so will the fossil mammoth ivory of the north increase in value; but the real wealth, and the more habitable and populated region begin with the northern limit of cultivation about the 60th parallel. No district in the world will beat in productiveness the upper watershed of the Obi and Irtysh. The steppes nourish enormous quantities of cattle, sheep and horses. The main centres of the grain districts are at Barnaoul and Semipaulatinsk, on the confines of China, and the produce is conveyed in barges down the river to Tjumen, a far greater quantity than most people have any idea of finding its way to Europe, even to London. The chief grains are wheat, barley, oats, rye, buckwheat, hemp, flax, and their seeds are exported in large quantities, likewise potatoes.—*Journal of the Manchester Geographical Society.*

The Warmest Place in Europe is Malaga, it is warmer than the Algerian Coast. The mean of the daily extreme temperature is 19.1° C.

The warmest month—August—has a tropical temperature of 27·1 C. There are only 48 rainy days, on which days about 61 c.m. of rain fell. The maximum temperature reached 43·3 ; the absolute minimum was 0° in the singularly severe winter of 1885. Of all South Spanish Towns not one gives such an impression of the South as Malaga. Northern Africa cannot in the slightest degree compare with these valleys on the Southern Slope of the Sierra Nevada, which no raw wind disturbs. Bananas which elsewhere are only planted singly here and there on the Mediterranean shores, produce here ripened fruit. The cherimoja (custard apple), which will not thrive at Palermo, is plentiful in the gardens of Malaga and annually ripens its scaly fruit. The sugar cane, the chief tropical plant, which cannot bear the slightest degree of cold, has everywhere disappeared from the Mediterranean ; only in Egypt and the immediate neighbourhood of Malaga is its profitable cultivation possible.—*Met. Zeitschr.* 1890.

ASIA.

Exploration and Studies in Lower Laos.—M. J. Taupin contributes a valuable paper with an excellent map, of his explorations in Laos, to the “*Bulletin de la Soci t  de G ographie Commerciale de Paris.*” M. Taupin quitted Angkor in November, 1887, and after thirty days march over muddy plains, through vast forests, barefooted and often with no camp but the open air, arrived at Oubone, where he was attacked by swamp fever. The Governor was not satisfied with a letter from the Governor of Angkor, but demanded one from the King of Siam himself before he would grant permission for the further advance of the traveller into the interior. Thus M. Taupin was compelled to remain seven months at Oubone, a delay which he employed in gathering notes and making excursions into Lower Laos. “The Country,” he says, “lies between the parallels of 13° 50' and 16° 20' N. lat., and 102 and 104 40' E. long. The population is about 1,200,000. The soil is rich and covered with luxurious vegetation. The most important river is the Nam-Khong, and none of the rivers are dry during the dry season. The heat is extreme during summer, averaging 26° C. generally. The principal objects of agriculture are rice, sweet potatoes, sesam , tobacco, barley, sugar cane, betel, cocoa nuts, bananas, and the fruit trees and vegetables of Cochin China. The forests are tenanted by tigers, herds of elephants, rhinoceros, deer, monkeys—of which latter one species, the *Kha-D ng* (red savage) is peculiar to Laos. The

existing minerals are gold, iron, saltpetre, rock salt, and many-colored marbles. The auriferous region comprises many hundred square miles. It is the Laasian California. Buddhism and Fetishism are the two principal forms of religion. There are numerous bonzes and diviners, and the belief in sorcerers and enchanters is general. The people are hospitable and amiable, much given to the drinking of rice spirit and smoking. The Chinese New Year, as well as those of the Laosians and Siamese, are celebrated each year. The natives indulge in many pastimes, as well as in hunting, fishing, horse racing, and gambling. Chess and draughts are favorite games. Laos is divided into large and small provinces, presided over by native governors under the control of Siamese commissioners. Justice is indifferently administered, the judges excessively venal, and the treatment of prisoners very hard. The slave trade still exists, although a decree from the Court of Siam ostensibly suppressed it. Theoretically the land is the property of the King of Siam, but practically it belongs to anyone who chooses to cultivate it. Mr. Taupin describes in a pleasant sketchy manner, many of the domestic customs as well as the religious ceremonies of the people of this country, and concludes by urging France to use every endeavour to render her possession in Cochin China a source of prosperity and wealth to her.

AFRICA.

Dr. Oskar Baumann, whose proposed activity on behalf of the German East African Company, has been mentioned, has, according to latest advices, worked his way from Wuga with good results, in the exploration and occupation of Usambara. Starting from the English Mission Station; Misosue, he crossed the Sigi, and penetrated to the north-eastern mountain-land of Usambara. From the elevated village of Simbili, he could plainly see Kilimaujaro with its two summits. Like an aerial vision the giant African mountain hung over the sharp serrated comb of the Northern Pau Mountains. From Simbili, his road led through immense primeval forests, through Mgumbo and Msasa, to the southern boundary of the Ranges. This he followed as far as the Khnon Valley, which he reached at Korogwe. Starting thence, he mounted the Range of Wugire, and passed through entirely unexplored territory, which is watered by the Luengera and Wuruni, to Wuga. As regards the country traversed, the district between Mgumbo and Msasa, as well as that reaching to the southern boundary of Usambara on one side, and the watershed of the Luengera on the other, is

covered throughout with tall-stemmed, dense primeval forest, and is watered by numerous rivers, tributaries of the Sigi. The greater part of these woods, which yield nothing in luxuriance to the old forests of Manjema on the Upper Congo, and which would certainly present a favourable soil for cultivation, is an uninhabited wilderness, traversed by not one single road. In the same manner, the Luengera Valley is, in consequence of wars, entirely abandoned by inhabitants, and roadless. Baumann describes the district of Wugire to Wuga as a most magnificent upland territory; the summits are covered with a growth of fine grass, and along the numerous streams a rich vegetation of tree-ferns and other plants characteristic of tropical mountain forests are found. The inhabitants of the numerous villages, which lie mostly on the ridges, had large herds of very fine cattle. The country could easily support ten times the number, and would offer favourable conditions for the cultivation of certain plants. Baumann met with no difficulties from the natives. He proposes now to explore the central and north-western portion of Usambara, and to conclude with that the annexation of this country.—*Peterm. Mitteilungen*, 1890.

Lieutenant Jaime, in charge of the gunboat "Mage," has successfully explored the Niger, between the French settlement of Bammatso and Timbuctoo. This little vessel, which forms part of a flotilla which our colonial administration maintains on this part of the Niger, left Koulikoro on the 18th September, under the command of Lieutenant Jaime, and was followed by the gunboat "Niger." Both vessels arrived together on the 21st September at Mopti, where the "Niger" was compelled to stop, owing to a mishap to her machinery. The "Mage" continued her voyage, and on the 4th October arrived at Kabara, the port of Timbuctoo. Fearing, after a stay of forty-eight hours, to run short of fuel, Jaime left again on the 5th, crossed without encountering any obstacle the Debo Lake, and reached Mopti on the 12th, and Koulikoro on the 14th October. The time occupied on the outward journey was nineteen days, and the return was accomplished in twenty days, or thirty-nine days for a trip of 1,600 kilometres (990 miles about).—*Révue Géographique Internationale*.

Ehlers' Ascent of Kilimanjaro.—Further details have been published in *Peterman's Mitteilungen*, in the form of a preliminary report (with map) on his journey by the traveller himself. On the 12th November [? 1888. Ed.] Herr Otto F. Ehlers, in company with Dr. Abbott, an American naturalist who had been collecting for upwards of a year in the country round Taveta, left Marangu with a party of thirty men. The first camp was pitched at the foot of a small crater, almost due south of the eastern creek, Kimawenzi, at an altitude of about 9,800ft. On the following day, Herr Ehlers made an excursion to Kimawenzi, and reached a height of about 16,400ft. Any further ascent of this remarkably jagged mountain seemed to him impossible.

The two following days were spent in collecting plants, and searching for a suitable camping place, where the majority of the native followers might remain, while the travellers proceeded up the mountain. A spot was chosen to the west of their last camping ground, at an altitude of about 10,500ft. From here the two travellers started with five men and provisions for four days, taking a northerly direction up the saddle, between Kibo and Kimawenzi. After some hours' marching they discovered that they had made the same mistake as Dr. Meyer had done in 1887, and were proceeding in a direct line to the summit of the lower eastern peak. Being at this moment overtaken by a snowstorm, they pitched their camp at an altitude of about 15,500ft. On the following morning, which broke bright and clear, they set out in a westerly direction over the newly-fallen snow, proceeding along the northern edge of the line of lava hills mentioned by Dr. Meyer, whose route lay along their southern side. After much toilsome marching, snow having commenced to fall again, the natives were compelled to return, leaving the two travellers to push on to their last camping ground (17th November). The morning of the 18th was exceptionally clear, and an early start was made over the hard-frozen snow. At seven o'clock they found themselves at an altitude of 16,200ft, about the middle of the eastern side of the summit. Instead of attempting to ascend from this side, as Dr. Meyer had done, they proceeded in a north-westerly direction over lava streams and rocky boulders to the northern side of Kibo. Unfortunately at this point Dr. Abbott completely broke down, and Herr Ehlers pushed on alone. Keeping to the east of a mighty lava stream, he pushed his way over sand, ashes, and rubble, covered with the freshly-fallen snow, and after repeated halts, but without suffering at all from the rarity of the atmosphere, he arrived at ten o'clock at the ice-wall, which completely encircles the actual summit, and the scaling of which at this point was impossible. He consequently proceeded along this wall of ice for some distance, in the hope of finding a point at which it could be surmounted, but after a time was compelled to retrace his steps, owing to a steep fall in the ground. Descending the summit a little, he contrived by much toilsome climbing to get round to the north-east side of the summit, and here, from a point of some little elevation, he obtained a comparatively wide view over the summit.—*Journal of the Manchester Geographical Society*, vol. v., 1889.

AMERICA.

Forest Destruction on the Western Continent.—Mr. W. Kefsler contributes an interesting article on the destruction of American forests, to the

literature of the Berlin Geographical Society. *Inter alia* he says :—“ Thus it has come about that even in the most distant and lonely Sierra an uninjured forest is amongst the greatest rarities, and Mexico is ever advancing nearer to the fate of a treeless mountain desert. Yearly the devastation which produces inundations increases ; yearly thousands of hectares of denuded mountainous country are swept away, and still vaster expanses in the valleys are covered with boulders and breccia ; yearly high roads and railways are torn up and destroyed ; but scarcely a voice has raised itself in this unhappy country for the preservation of the mountain-forests which are devoted to certain destruction. Everything, however, which is done in Mexico and in the Southern States by the ignorance of the natives, who, in sad self-consciousness, are pleased to call themselves *gente sin razon*, and by a weak and short-sighted government, is utter child’s play compared with the really gigantic operations, and the war of extermination carried on with an energy, I might almost say a frenzy without parallel, which are conducted in the United States of North America, the glorified country of progress and of freedom, against the forests. * * * Australia even gives plainer proof of this senseless forest destruction than America. Of course every weapon was justifiable to the first settler in the dense primeval forest, to form clearings in the overwhelming vegetation which he would scarcely have accomplished by means of the axe and grubber alone. But those days of pioneer labour have long passed away in the greater portion of the Western Continent. I need scarcely dilate upon the fatal indirect consequences of the forest fires. The fire destroys not only the timber, but also the humus of the upper ground surface, the seed bed, and the fostering soil of the vegetation. The sun and wind now act unimpeded on the dried-up ground, on favourable soil every shower of rain carries away the loose earth, and there remains for a long time a sterile wilderness. Travel where you will in the Union States, everywhere one is accompanied by the charred stumps of once forest giants, silent accusers of man’s crime against nature. Even the celebrated Yellowstone National Park will, by the negligence and folly of visitors occasioning annual bush fires, be divested within a short time of its essential ornament—the woods. The results of this mad destruction of forests are apparent already in a climatic and telluric sense. In the North West, particularly in Michigan, we find in place of the white pine forests vast stretches of swamp, whilst sandy deserts will soon point out the localities where once the extensive groves of pitch pine rotted in the Southern pine belts. Everywhere, especially in California, floods are increasing. * * * Under these circumstances one can understand only too well the sad prospect which an earnest patriot pointed out at the Boston Congress in 1855, in the doleful words : “ With the forests all dead

and gone, man will not long survive on the American Continent.'"—*Verhandlungen der Gesellschaft für Erdkunde zu Berlin*, 1890.

GENERAL.

Fluctuation of the Earth's Axis.—Dr. Klein announces in the latest number of the *Gala* :—By continued observations it is now certainly proved, what was long suspected in scientific circles, but what otherwise is quite a new matter of fact, that the latitude of many cities is subjected to great changes ; thus the latitude of Berlin and Potsdam in the last half-year of 1889 has shown first an extension and then a diminution of about half a second. As the agreement of different observations is too close to enable us to seek for the causes of these variations in the observations or the instruments, other explanations must be sought. One is that in consequence of the constant irregular displacement of the earth's bulk by the agency of the sun (even if we leave out of consideration changes in the unknown interior of the earth), the earth must perform irregular vacillations contrary to the axis of rotation, whilst the axis itself maintains its position in space almost unchanged. The subject will be discussed at the Assembly of the Permanent Commission of International Trigonometrical Survey, at Freiburg, in September of this year.—*Verhandlungen der Gesellschaft für Erdkunde zu Berlin*, 1890.

From the *Révue Géographique Internationale* we cull the following list of the colonies of the German Empire :—

The Germans hold the north-eastern portion of New Guinea.

The Bismarck Archipelago (New Britain and New Ireland).

A portion of the Solomon Islands.

The Marshall Group (Brown and Providence Islands).

In 1884 Dr. Nachtigall annexed Togo (the Slave Coast), also the Cameroon country ; and in 1889 Dr. Zintgraf penetrated to Ibi.

In 1884 M. Luderitz acquired in South-eastern Africa the territory situated between the coast of the Portuguese colonies and the Orange River. Walfisch Bay, on the German coast, however, belongs to England.

In 1885 the Sultan of Witon placed his dominions, situated on the left bank of the Tana, under German protection.

Thus it will be seen that Germany exercises rights over an immense stretch of territory, although annexation only began in 1884.

MISCELLANEOUS.

German New Guinea.—In the course of a short excursion from Finsch Haven, Dr. Hellwig, the botanist, made in January last an ascent of the Saddle Mountain (3,182ft.), which is situated about 5½ miles from the coast. The whole mountain is very rugged, and densely wooded. Baron von Schleinitz has prepared on a large scale a map of the coast of Kaiser Wilhelm's Land, from Cape Cretin to the Legoarrant Islands, near Hatzfeldt Harbour, embodying the results of recent surveys and observations.—*Proceedings of the Royal Geographical Society.*

New Plans for Polar Exploration.—From *Deutsche Geographische Blätter*, edited by the Geographical Society of Bremen, we find that fresh proposals have been made by Dr. Nansen to the Norwegian Geographical Society at Christiania for the exploration of the North Pole. His idea appears to be to follow the supposed direction of the current, and to attempt nothing in opposition to it. Many circumstances point to the existence of a current polewards from Behring Strait to the islands of New Siberia. Drift wood and earthy substances, and objects abandoned on ice-floes by the Jeannette expedition, and a board which had travelled from Alaska,—these had passed the east coast of Greenland and driven round Cape Farewell, and hence a current from Behring Strait, setting northward round the now well-known islands towards Eastern Greenland, might be reasonably expected. Dr. Nansen's plan met with general public approval, and subscriptions were flowing in on 20th February. One Norwegian gentleman living in a foreign country, Herr Houen, has promised 20,000 crowns to begin with, and from other sources 10,000 crowns have been promised. A government subsidy will probably be required, and thus the enterprise will partake of a national character. The expedition, we learn from a postscript, consisting of three boats, with all needful appliances, will be taken to the Greenland coast by steamer, which will then return to Europe. The explorers, to the number of nine persons, would remain two years in East Greenland, exploring coastwise and in the interior, and would then be brought back by steamer. The requisite funds, estimated at from 250,000 to 290,000 crowns, seem to be assured, both by the Government and private subscription.

Antarctic Exploration.—Our Victorian associates are now occupied in promoting the interests of the proposed scheme for the exploration of the South Polar regions. Increased vitality has recently been infused in the movement by the distinguished Swedish *sarants*, Barons Nordenskiöld and Oscar Dickson, who have munificently offered to contribute the handsome sum of £5,000 towards the expenses of the undertaking, conditionally that

an equal sum is provided by Australia. When about the middle of this year (1890) a notification to this effect was received in Melbourne, steps were taken by the Joint Committee of Members of our Melbourne Branch of the Society and the Royal Society of Victoria to appeal to the public for the necessary funds to meet the condition specified by the Swedish representatives. Acting upon the invitation of our Victorian colleagues, steps were contemporaneously taken in Brisbane to form a joint local organisation to afford co-operative assistance in promoting the cause in the colony of Queensland. The representatives chosen by the Royal Society were the Hon. A. C. Gregory, C.M.G., Messrs. L. A. Bernays and W. J. Ryott-Maughan, and those by our own Society J. N. Waugh, M.D., Messrs. R. Gailey, and J. P. Thomson, Hon. Secretary and Treasurer.

The third Polar expedition is planned by Lieutenant Ryder, of Copenhagen, having for its object the exploration of the as yet unexplored coast of East Greenland. The cost is variously estimated at from 145,000 to 293,000 crowns, according to equipment.

Central Australian Exploration.—In a communication addressed to the distinguished President of our Victorian Branch of the Society, Baron Sir Ferd. von Mueller, Sir Thomas Elder offers to defray the whole expenses of an expedition to complete the exploration of Central Australia. Baron von Mueller, in accordance with the desire of Sir Thomas, has invited the sister Branches of our Society to offer such suggestions and advice as will enable him to formulate a scheme to be submitted to Sir Thomas Elder, who, if approving of the same, will supply the necessary funds.

M. Trivier's Proposed Examination of the Lukuga.—M. Trivier, a French explorer, left some time ago for Brazzaville and the Congo. He intends to proceed to Nyangwé for the purpose of carefully examining the west shore of Lake Tanganyika, and exploring the upper course of the Lualaba, and other feeders of the Congo. M. Trivier does not believe that the Lukuga is the real outlet of Lake Tanganyika, and proposes therefore carefully to explore its source, also to discover if there is no other outlet. M. Trivier believes that if the observations of Mr. Stanley are correct, the Lukuga would have ceased to flow long ago, seeing that the level of the lake is rapidly falling. It may be stated, however, that according to Captain Hore's observations, the bed of the Lukuga is a deep layer of mud, which is being washed away, and that it will discharge the waters of the lake until the rock is reached.—*Proceedings of the Royal Geographical Society*, February, 1889.

The Italian possessions on the Red Sea have been united into a colony bearing the name of "Eritrea," and have been placed under the administration of a Military Governor.—*The Scottish Geographical Magazine*, April, 1890.

A Scientific Expedition to the Congo.—The Belgian Government have, at the instance of the Belgian Academy of Sciences, voted the sum of £1,200 towards the cost of a scientific expedition to the Congo State. The main object of the expedition will be to make magnetic observations, for the purpose of ascertaining the declination, inclination, and intensity of terrestrial magnetism. Captain Delporte, Professor of Geodesy at the Military School, will be in command, and will have Lieutenant Gillis for a companion. Although the route of the expedition will be mostly along beaten paths, there is no doubt that the cartography of the region will benefit on the more accurate determination of fixed points.—*Proceedings of the Royal Geographical Society*, August, 1890.

Somali Land.—The Italian traveller, L. Robecchi, has undertaken a journey into the unknown interior of Somali Land. He started in March last. The expedition is being supported by the African Society of Naples.—*Proceedings of the Royal Geographical Society*, August, 1890.

The Royal Geographical Society of Australasia.

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HIS EXCELLENCY GENERAL SIR H. W. NORMAN, G.C.B., G.C.M.G.,
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ELECTED JULY 28, 1890.

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Should any error or omission be found in this list, it is requested that notice thereof be given to the Hon. Secretary.

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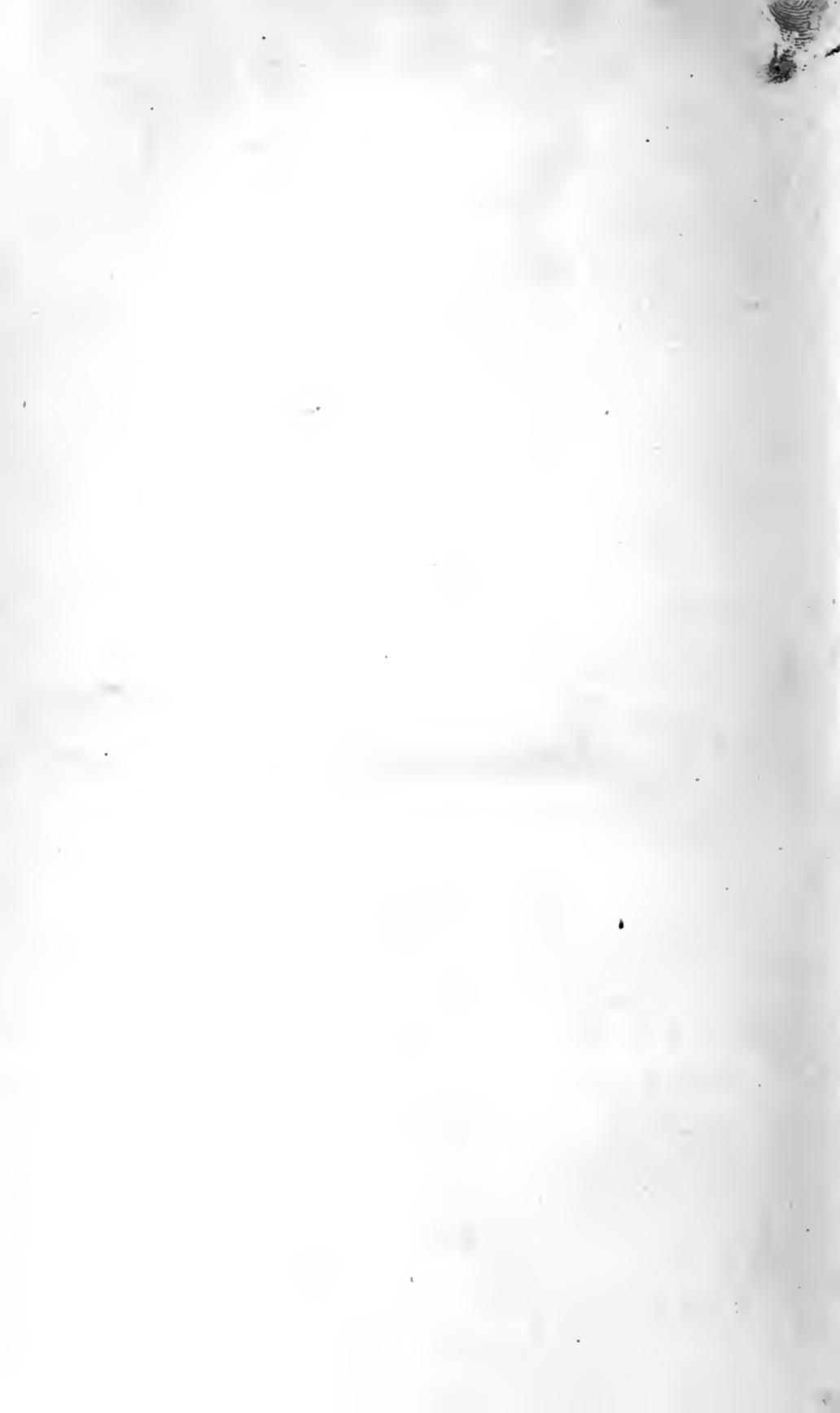
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