AUGUST, 1888.

The monthly meeting of the Royal Society was held at the Tasmanian Museum on August 13th. The president (His Excellency, Sir Robert G. C. Hamilton, K.C.B.), occupied the chair.

Mr. Alex. Morton read a letter from Mr. G. Thureau, F.G.S., calling the attention of the society to the following announcement which appeared in the illustrated *Leipziger News* of July 30, 1887 :—"Dr. Albucht von Groddeck, Royal Mining Counsellor and Director of the United Mining Academy and School of Mines, at Clauthsal, Hanover, on the 18th June, 1887, 50 years of age." The deceased gentleman was a foreign correspondent of the Society.

ADDITIONS TO THE LIBRARY.

The following list of additions to the library during July was tabled :—

Account of the operations of the Great Trigonometrical Survey of India. Vol X. Electro-Telegraphic Longitude operations executed during the years 1881-2, 1882-3, and 1883-4, by Major G. Strahan, R.E., and Major W. J. Heaviside, R.E. (Bound.).—From the Survey Department.

American Agriculturist. (Current Nos.)

Annals and Magazines of Natural History. (Current Nos.)

Annual Report of the Department of Mines, New South Wales, for the year 1887. From the Department.

Bibleothéque de M. L'Abbe Favre (pamphlet), Paris, 1888.—From the Society.

Boletin da Sociedade de Geographia de Lisboa, 7A. seric., Nos. 5-6-7-8.—From the Society.

Bollettino della Societa Geografica Italiana, serie III., Vol. 1., Fascicolo V., Maggio, 1888.—From the Society.

Boletin Mensual del Observatorio Meteorologico del Colegio Pio de Villa Colon. Ano. I. mes de Enero No. 2 (Montevideo).—From the Society.

Bulletin of the New York State Museum of Natural History, No. 3, March, 1888.—From the Museum.

Geological and Natural History Survey of Canada. Alfred R. C. Selwynn, C.M.G., L.L.D., etc., Director.

Summary Report of the operations of the Geological and Natural History Survey, to 31st December, 1887, being Pt. III.

Annual Report of the Department of the Interior, 1887.—From the Department.

Geological Magazine. Current Nos.

Goldfields of Victoria. The Reports of the Mining Registrars for the quarter ended 31st March, 1888.—From the Secretary of Mines.

Iconography of Australian Species of Acacia and Cognate Genera, 9th, 10th, 11th Decade. By Baron F. Von Mueller, K.C.M.G. From the Government.

Imperial Federation (current Nos.) From the Editor.

Journal of the Royal Microscopical Society, Pt. 3, 1888, June. From the Society.

List of Hepaticæ, collected by Mr. Thomas Whitelegge in New South Wales, 1884-5, by B. Carrington, M.D., F.R.S.E., and W. H. Pearson. (Pamphlet.) From the Authors.

Magnetical and Meteorological Observations made at the Observatory, Bombay, in the year 1888, under the direction of Charles Chambers, F.R.S.—From the Government.

Memoirs of the Geological Survey of India, "Palæontologia Indica." Ser XIII., Salt Range fossils, by W. Waagen, Ph. D.S.F.G. 1 Productus—Limestone fossils ; 7 Cœlenterata, Amorphozoa—Protozoa.—From the Department.

Monthly Weather Review, current Nos.—From the Signal Office, Washington.

Monthly weather report. (Current Nos.)—From the Meteorological Office, London.

Monthly notices of the Royal Astronomical Society, April.

Monthly Weather Report. Meteorological Service of Canada. March, 1888. (Pamphlet.) From the Department.

Monthly Notices of the Royal Astronomical Society. Vol. XLVIII. No. 7, May, 1888.—From the Society.

Proceedings of the Linnean Society of New South Wales. Vol. III. Part I, 1888.

Proceedings and Transactions of the Queensland Branch of the Royal Geographical Society of Australasia, 3rd session 1887-8. Vol. III., Part I.—From the Society.

Proceedings of the Yorkshire Geographical and Polytechnic Society, N.S. Vol. IX., Part III. pp. 337-498.—From the Society.

Report on the Meteorology of India in 1886, by J. Eliotopia.—From the Department.

Report of the Technological, Industrial, and Sanitary Museum, Sydney, for 1887.—From the Department.

Scottish Geographical Magazine, Vol. IV. V, Nos. 5, 6, 7.—From the Society.

Sixty-eighth Report of the Council of the Leeds Philosophical and Literary Society at the close of the session, 1887-8 (pamphlet) —From the Society.

Statistics of the Colony of New Zealand for the year 1887. Pt. III. Trade and Interchange.—From the Registrar-General's Office.

Transactions and Proceedings and Report of the Royal Society of Australia. Vol. X. for 1886-7.—From the Society.

Verhandlungen der Gesellschaft Für Erdkunde Zu Berlin. Band XV., No. 4, 5, 6.—From the Society.

THE PROBLEM OF MALTHUS STATED.

A paper of considerable length, bearing the above title, was read by Mr. R. M. Johnston, F.L.S. He stated that he had prepared the paper mainly with a view to force the noble aims and ideas of Malthus from the great misconception which existed in regard to his problems. The paper opened with the following remarks :—Darwin has observed "that in a state of nature almost every full-grown plant annually produces seed, and amongst animals there are few which do not annually pair. Hence we may confidently assert that all plants and animals are tending to increase at a geometrical ratio—that all would rapidly stock every station in which they could anyhow exist. And this geometrical tendency to increase must be checked by destruction at some period of life," and, as an inevitable consequence, he goes on to add "that each individual lives by a struggle at some period of its life, that heavy destruction falls either on the young or old during each generation, or at recurrent intervals. Lighten any check, mitigate the destruction ever so little, and the number of the species will almost instantaneously increase to any amount." These considerations, the writer submitted, when fully appreciated, formed the foundation of the problem of Malthus. [An Essay on the "Principle of population." Malthus. London, 1826.] Much attention was devoted by Mr. Johnston to Mr. Henry George's views on the problem of Malthus. He remarked, "That Mr. Henry George altogether failed to grasp the various elements

of this problem is at once apparent by the manner in which in his otherwise very able work 'Progress and Poverty,' he has attempted to refute the conclusions of Malthus. When Malthus affirmed that the ratio of increase of population increased faster than the ratio of increase of means of subsistence, he never stated or conceived that population could actually outstrip the means of subsistence as interpreted and discussed by Mr. Henry George; and hence the whole of Mr. George's citations and reasonings are either fallacious, or they never touch upon the real causes at the root of Malthus' problem. That there is a thorough misconception on the part of Mr. George is clearly proved by the following quotation from Malthus: 'According to the principles of population the human race has a tendency to increase faster than food. It has, therefore, a constant tendency to people a country fully up to the limits of subsistence; but by the laws of nature it can never go beyond them, meaning, of course, by these limits the lowest quantity of food which will maintain a stationary population. Population, therefore, can never, strictly speaking, precede food.' This clear expression on the part of Malthus casts aside the whole of Mr. George's ratiocinations as worthless. His inability to grasp the most important elements of the problem is still further made manifest by his query, 'How is it, then, that this globe of ours, after all the thousands, and it is thought millions, of years, that man has been upon the earth, is yet so thinly populated?" The paper went on at great length to deal with the subject of checks, and the fallacy of Mr. George's arguments, and the writer maintained that when population is declining it is rather because misery, disease, and vice have abnormally raised the death rate higher than the birth rate, and not because of any material tendency to a decline in the birth rate. While there are different stages of civilisation in existence, over-population is a relative term applicable to the particular country, and not an absolute quantity to be determined by an absolute number of persons to a given area as most erroneously indicated by Mr. George. This is clear to any one who studies the civilisation and the sanitary state of different countries.

Mr. J. S. Laurie said the whole question was in a nutshell. There was a sufficient supply of food for a family of a certain number, but when fresh births occurred in that family without any fresh avenues of work with which to obtain the means of sustenance, trouble began. This principle, when extended, of course, narrowed the pleasures of a certain number, because of there being too large a number to participate in them, Population, however, was fairly balanced by disease, famine, war, etc. As to moral restraint, however, the lower orders knew nothing whatever about it, and had no powers of restraint, and consequently overwhelmed the world by imprudence. This was the reason of the overpopulation in many countries, and he took it that the art of living was to live without making life a burden to one's self. The French adopted this plan, and their families averaged three. In Scotland the average was eight, six or seven in England, and in Ireland 12 or 15. The soil could not produce more than a maximum portion of food, and when there was no further opening for employment, and no further source from which to obtain food, there must be disaster.

SCOTT'S TRACK TO THE WEST COAST.

Mr. James Andrew read a paper entitled "Notes in reference to Scott's Track, *via* Lake St. Clair, to the West Coast of Tasmania." In the notes he said he had been requested by a fellow of the Society whom circumstances prevented from himself representing the subject, to call attention to an error in the designation of a track which appeared in a paper on "The Highlands of Lake St. Clair," read at the November meeting by Colonel Legge. The member referred to was Mr. T. B.

Moore, a well-known explorer, and he had asked him (Mr. Andrew) to bring under the notice of the Society that Scott's Track along the Curvier Valley, and westward to the coast is as such incorrectly described. It was, he knew of his own personal knowledge, Mr. Moore who explored the route and cut the track referred to along which many weeks later the Hon. J. R. Scott travelled. Colonel Legge in speaking of Scott's Track used the name recently adopted by the Lands Office, and it would be most unlikely that he should have any cause to imagine that the gentleman whose name it bore had any claim to such credit as might be attached to developing the first overland route from the southern side of the island to Mount Heemskirk. The notes went on to give a condensed chronological statement of the movements of the two gentlemen referred to and their parties with the view of establishing Mr. Moore's claim as the pioneer of this particular portion of the colony. Encouraged by the indications of gold and tin found in the vicinity of the Pieman and its tributaries by Mr. Sprent's party, Mr. T. B. Moore started from New Norfolk on January 1, 1877, his brother (Mr. J. A. Moore), and the writer of the present notes, with the object of finding a practicable overland route to the West Coast in the deviation recommended. The party were provisioned for four months, but in spite of loss in supplies from depredations from bush vermin, remained in the field for five months. Two months after the party left Mr. Scott started for the coast, and on the 13th of that month he (Mr. Andrew) returned for supplies. He left his companions on the Mount Dundas Range, hard at work cutting through some of the worst scrub that could exist. The distance then reached was, according to Mr. Scott's own estimate, 60 miles from Lake St. Clair. He met Mr. Scott half-way back, and directed him as to where he could best pick out Mr. Moore's route. The Messrs. Moore had meanwhile made to the main depôt, and they met Mr. Scott near Lake Dora, and they gave him further directions to assist him. When he (Mr. Andrew) returned to join the Moore party on April 2, when nearly to the limit of their track, they found warm ashes at a camp recently occupied by Scott, and indications of the route he had taken in the shape of three direction notices, one pointing eastwards to Mount Heemskirk, another along Moore's route north-westerly to the summit of Mount Dundas, and another towards home, giving the distance from Hobart 176 miles. It was on May 13 that Mr. Andrew next joined his comrades, and he then learnt that they and Mr. Scott's party had combined to cut the track down the spur of Mount Dundas to the open coast. Moore's party returned to Hobart in May, 1877, when Mr. J. A. Moore wrote to the Lands department, detailing what occurred in connection with Mr. Scott, and stating that they (Moore's party) were the first white men ever in Dundas, and, judging from the look of the country, he (Mr. Moore) doubted whether a blackfellow had ever been there. It took them 10 days to get from the foot of Mount Read to the top of Dundas. The then Minister of Lands and Works (the Hon. N. J. Brown) at that time wrote to the Hobart *Mercury* stating that as to Mr. Moore's statement that his party had been through the country before the Hon. J. R. Scott, he (Mr. Brown) asserted from his own knowledge that his statement was correct. The notes concluded by pointing out that further testimony as to Mr. Moore's priority as the explorer in this part of the colony was borne by the late Mr. Sprent in his paper on recent explorations on the West Coast. Mr. Sprent did not mention that Mr. Scott in any way assisted in the exploration and development of the Western country.

Mr. R. M. Johnston said he readily endorsed the statement that Mr. Scott would be one of the first to acknowledge the claim of the Messrs. Moore to having discovered the track. He thought it due to Mr. Moore that the track in question should bear his name.

The Hon. N. J. Brown said he could confirm in every particular the statements made by the reader of the paper with regard to Mr. Moore. He was living in that part of the country at the time Mr. Moore went through, and knew the whole history of his expedition.

EXTRAORDINARY PHENOMENON AT BEACONSFIELD.

Mr. R. M. Johnston read the following paper, which was contributed by Mr. Joseph Davies, the manager of the Tasmania gold mine at Beaconsfield :—

"Being connected with the Tasmania mine, and a resident in that district since 1877, I have had the pleasure of witnessing a very extraordinary phenomenon, which has been perceptibly in operation during the past three years. Parallel with the Cabbage Tree Range, the course of which is 30deg. east of south; on the eastern side of the range (at the base), three-quarters of a mile south-east from the Tasmania mine, there is a depression in the surface, which forms a small lagoon, 140 yards in circumference, and 10ft. deep, dish-shaped. (See on No. 1 sketch, section No. 1.) Half a mile further south-east there is a flat almost oval-shaped area, about 20 acres. The Junction Creek passes through the flat between No. 2 and No. 7. No. 2 is a large lime quarry hole, 400 yards. in circumference ; average depth, 24ft. No. 3 is also a lime quarry hole, 100 yards in circumference, and 35ft. deep. Large quantities of limestone were taken out of them 46 years since. The water that was flowing into the two holes was kept under control with pumps driven by water wheels. The quarries were abandoned in the year 1852, and remained full of water, the surplus being one sluice-head in the summer and four in the winter, flowed out of the byewash into the creek. In December, 1885, water at No. 1 commenced to subside, and very soon disappeared. Before the end of the same year the water at Nos. 2 and 3 started subsiding, and within three weeks were quite dry. Just at that time I had a large increase of water in the Tasmanian mine, at the 360ft. level. The increase flowed through the joints of sandstone on the south-east part of the mine. In order to take limestone from No. 4 the creek was diverted into No. 2. I measured the water just a few feet before it passed into the hole, and immediately it passed out, and found that more than one sluice-head had disappeared. Nos. 5, 6 and 7 are small depressions that occurred in September last year, and are the receptacle for an immense quantity of storm-water, which passes down through the fissures and joints in the limestone. There is 10ft. thick of clay, sand, and conglomerate boulders underlaying the lime bed between No. 2 and No. 7. I first saw No. 8 on the 7th of last month ; it is 4ft. deep and 20ft. in circumference. No. 9 depression was first seen on March 17, 1886. The subsiding lasted 10 days, leaving a hole 14ft. deep and 90ft. in circumference. While the subsiding continued, the water being pumped by the Tasmania, Florence Nightingale, and Lefroy mines was almost as white as snow. The hole was filled up with sand, and remained quiet until the 16th of last month, when the sand vanished from sight. The subsiding lasted for seven days, making the hole 25ft. deep and 146ft. in circumference. I examined the bottom part of the hole, and found that it contained soft limestone. I have filled up the hole with 280 cubic yards of clay, and diverted the water from No. 2 hole, which is now dry, and now I find that the water has decreased in all the mines. The strike of the strata which is in parts of the mines (Lefroy mine excepted) is almost on its edge, and cross-course cuts the Junction Creek, also ancient channel, which no doubt has allowed the water to percolate not less than one mile and a half to the mines. As a proof of this, in the year 1880, while the Dally's United Co. was driving at their 200ft. level, towards No. 9 they cut a huge body of water, which filled up drive 240ft. long, and shaft 200ft. deep within 40 minutes, and three sluice-

heads flowed over the surface of the shaft for three years. When the other mines sunk below 200ft. the water subsided. Another proof, the three mines, viz., Lefroy, Florence Nightingale, and the Tasmania have been pumping 1,852 gallons of water per minute, which is far in excess of what might reasonably be expected from a quartz lode only 400ft. below the natural surface. No. 2 sketch shows ancient channel."

At the conclusion of the paper Mr. JOHNSTON said he could quite confirm what Mr. Davies had said. He had an intimate knowledge of the district, and the fruit and flowers he had obtained from that part of the country during the last eight or ten years had enabled him to increase his store of the tertiary flora of the island. His own impression with regard to the phenomenon was that there was a large underground channel running through the limestone, the upper part of which constituted the roof of the channel. The extensive pumping operations which had been going on had reduced the water, which previously supported the roof, and its withdrawal had caused the roof to fall in.

VOTE OF THANKS.

The PRESIDENT moved a vote of thanks to the gentlemen who had contributed papers, and the motion was carried by acclamation.

ANTARCTIC EXPLORATION.

Bishop SANDFORD mentioned the matter of Antarctic Exploration, as he noticed that the Germans were moving in the matter, and the various Australasian societies were quiet about it. The PRESIDENT also asked to be informed as to the exact position of affairs connected with the question. Mr. MORTON stated that the Imperial Government having refused to submit proposals to the Legislature for the undertaking it had dropped for a time, but meetings would be held in Melbourne and Sydney shortly.

THE NATIVE OPOSSUM.

Mr. A. J. TAYLOR drew attention to the destruction of the native opossum, and said that something like 75 per cent. of the animals killed had young in the pouch at the time. The opossum had a large commercial value, and he mentioned the matter, as there was a member of the Government present, but thought the Society should make representations to the Government for the protection of the animals.

Mr. BIRD (the Treasurer) said he would be pleased to receive any information upon the matter.

This concluded the business of the evening.