it. With the cooperation of the Government of the Colony it is hoped that special facilities will be extended to accredited members of your Association to enable them to see these southern islands.

The present is merely a preliminary notice to bring the matter under the observation of your members. I hope next year to extend a more formal invitation and to be able to state more definitely what provision is being made for the entertainment of visitors.

The presidents of the sections of the meeting are

B.—Chemistry: J. Brownlie Henderson, Government analyst, Brisbane.

C.—Geology and mineralogy: W. H. Twelvetrees, F.G.S., Hobart.

D.—Biology: Colonel W. V. Legge, R.A., Hobart.

E.—Geography: Professor J. W. Gregory, Melbourne University.

F.—Anthropology and philology: A. W. Howitt, F.G.S., Melbourne.

G.—Economics, sub-section 2: Agriculture—J. D. Towar, principal Roseworthy Agricultural College, South Australia.

H.—Architecture, Engineering, and Mining: H. Deane, M.A., M.I.C.E., engineer-in-chief Public Works Department, Sydney.

I.—Sanitary, science, and hygiene.—Dr. Frank Tidswell, Department of Public Health, Sydney.

J.—Mental science and education: John Shirley, B.Sc., inspector of schools, Brisbane.

SCIENTIFIC NOTES AND NEWS.

THE National Academy of Sciences holds its autumn meeting at the Johns Hopkins University, Baltimore, beginning on Tuesday, November 11.

PROFESSOR KOHLRAUSCH, president of the Reichsanstalt, has been elected a foreign member of the Swedish Academy of Sciences.

DR. WILHELM FORSTER, director of the Royal Observatory at Berlin, has announced his intention of retiring a year hence. He will, however, retain his professorship in the University of Berlin.

A COMMITTEE of prominent physicians of Philadelphia and Baltimore have arranged for a complimentary dinner to Drs. W. W. Keen and H. C. Wood in honor of their recent return from their long sojourn abroad. The dinner will be given at the Bellevue Hotel, Philadelphia, November 6.

A DINNER in honor of the eightieth birthday of Mr. John Fritz, the eminent steel master, and to commemorate the medal established in his honor, was held in New York City on October 31 under the auspices of the American Society of Civil Engineers, the American Institute of Mining Engineers, the American Society of Mechanical Engineers and the American Institute of Electrical Engineers. In the presence of about 400 engineers and others interested in the manufacture of iron and steel the following program of speeches, with one by Mr. Fritz, was presented:

Salutatory, Henry Goslee Prout, C.E., M.A., Toastmaster.

Presentation of the Medal, John Thomson, C.E.

'The Fathers of the Art,' Hon. Abram S. Hewitt, LL.D.

'The Navy,' Rear-Admiral George W. Melville, U. S. N.

'The Army,' Brig.-Gen. Eugene Griffin, U. S. V.

Messages of Congratulation, Chairman Dinner Committee.

'The American Society of Civil Engineers,' George Shattuck Morison, C.E., M.A.

'The American Institute of Mining Engineers,' Dr. Rossiter W. Raymond, E.M.

'The American Society of Mechanical Engineers,' Capt. Robert W. Hunt, C.E., M.E.

'The American Institute of Electrical Engineers,' Professor Elihu Thomson, E.E.

'The Valley and the Neighbors,' Oliver Williams.

'John Fritz' Old Boys,' Daniel A. Thompkins, M.E.

PROFESSOR HANS VIRCHOW, son of the late Rudolf Virchow and professor of anatomy in the University of Berlin, has celebrated his fiftieth birthday.

DR. K. GAYER, professor at Munich and known for his contributions to forestry, has celebrated his eightieth birthday.

MM. LIPPMANN and Radeau have been appointed members of the council of the Observatory of Paris, filling the places vacant by the deaths of MM. Cornu and Faye. M. Bayet has also been appointed a member of the council of the Observatory of Paris and a member of the council of the Astrophysical Observa-

tory of Meudon in place of M. Liard, recently made vice-rector of the University of Paris.

THE Swedish explorer, Sven Hedin, has begun a tour of the principal cities of Germany to lecture on his travels in Central Asia.

MISS ELIZA R. SCIDMORE, foreign secretary of the National Geographic Society, is a delegate from the Society to the Thirteenth International Oriental Congress meeting in Hamburg.

AT a meeting of the Cold Storage and Ice Association, held at the Institution of Mechanical Engineers on November 5, Dr. Carl Linde, of Munich, read a paper on 'The Technical Application of Liquid Air.'

THE Mayor of Ealing has unveiled a memorial, which has been erected by public subscription, in the Ealing Public Library to the late Professor Huxley, who was born at Ealing on May 4, 1825. The memorial consists of a mural tablet with a portrait medallion of Huxley by Mr. Frank Boucher. Among those present were Mrs. Huxley, widow of the distinguished scientist, Mr. and Mrs. Leonard Huxley, Professor George Henslow (who presided), and representatives of several of the learned societies with which Huxley was associated.

AN effort is being made by the mayor and municipal council of St.-Just-en-Chaussée, Oise, France, to raise a memorial to two famous men who were born in that town, the brothers Haüy-René Just, founder of mineralogy as an exact science, and Valentin, the philanthropist, who founded the first school for the blind. A sum of 7000 francs has already been raised, mostly in the locality; 25,000 francs is the sum required to carry out the project. American subscriptions may be sent to M. Léon Bourgeois, 1 boulevard Henri IV., Paris.

MAJOR JAMES C. MERRILL, surgeon, U. S. A., librarian of the Army Medical Museum, and known for his contributions to ornithology, has died at the age of forty-nine years.

MR. PETER BROTHERHOOD, a British mechanical engineer, the inventor of an important steam motor, has died in his sixty-fifth year.

DR. HERMANN EULENBERG, an eminent German psychiatrist, has died in Bonn at the age of eighty-nine years.

THE mathematician, Professor Nikolaüs Budajew, of St. Petersburg, has died at the age of sixty-nine years.

THE visiting Society of Americanists passed through Washington on Tuesday, October 21, spending the entire day there. In the morning they were received by the President, after which they were driven to various places of interest, scientific and otherwise, ending at the Congressional Library, where lunch was served. In the afternoon they were received at the Smithsonian Institution by Secretary Langley and spent most of the remainder of their time there and at the National Museum. Smaller parties visited other points of scientific interest, but all met at the Arlington Hotel for dinner at 5:30. This was presided over by Professor C. D. Walcott, who introduced Professor W J McGee as toastmaster, and short speeches were made by the vice-presidents of the society. At 7:30 the visitors left for Pittsburg and Chicago.

THE eleventh International Congress of Hygiene and Demography will be held at Brussels from September 2 to September 8, 1903. The office of the secretary-general of the Congress is 1 Rue Forgeur, Liége.

THE Belgian Surgical Society, which recently held a meeting in Brussels, has appointed a committee, consisting of prominent surgeons from all parts of the world, to draw up plans for the foundation of an international surgical society.

THE International Congress of Tuberculosis adjourned on October 26 to meet next year at Paris.

THE state and provincial boards of health at their meeting at New Haven on October 29 passed the following resolution: "That the conference of State and Provincial Boards of Health of North America views with abhorrence the irretrievable disgrace of the present State Board of Health of California, and pronounces the plague situation in California a matter of grave national concern. That the National Conference of State

and Provincial Boards of Health of North America does hereby advise the various State Boards of Health of the United States to consider the propriety of calling upon the Surgeon General of the United States Public Health and Marine Hospital Service to arrange at the earliest possible date a joint conference for the purpose of eradicating the plague from the United States.

It is stated in *Nature* that the office of Meteorological Reporter to the Government of India will become vacant in about a year by the retirement of Mr. J. Eliot, F.R.S., who has administered the office with great success for a long series of years. The selection of suitable names for consideration, with a view to the filling of the prospective vacancy after a preliminary period of training in Europe and in India, is now occupying the attention of an advisory committee of the Royal Society, nominated at the request of the government of India. The problem of the future administration and scientific development of the department is also under consideration by the committee, in conjunction with Mr. Eliot, who is now in England for that purpose.

The British Museum of Natural History has recently acquired a valuable collection of birds and animals secured by an expedition to the north and northwest of Ethopia.

The federated Malay states have opened a pathological laboratory for the study of tropical diseases at Kuala Lumpur. It is open to students of all nations.

Dr. Cyrus W. Thomas, of the Bureau of Ethnology, announces the discovery that that part of Lederer's account which deals with explorations in Carolina in 1670 is an invention and that his map of the country between 'Akenatzy' and the head waters of the Neuse is practically worthless.

The copies of Part I. of the Nineteenth Annual Report of the Bureau of Ethnology have been received at the latter institution from the Government Printing Office.

The Scottish Antarctic expedition in the *Scotia* under the leadership of Mr. W. B. Bruce has sailed, its first destination being the Falkland Islands. Before sailing Mr. Bruce and the principal members of the expedition were entertained to dinner in Edinburgh by the president of the Royal Scottish Geographical Society, Sir John Murray. According to the account in the London *Times* the president, in proposing success to the expedition, said that when Mr. Bruce came to him with his first proposal of an Antarctic expedition it was one which was to consist of two ships, and was to extend to two winters in the Antarctic, and was to cost £35,000. Mr. Bruce had not succeeded in raising £30,000, and he had found it necessary to limit his expedition to one ship and to about one year's cruise. The men in a day or two would start through the fiery zone of the tropics to the frigid zone of the Far South, there to do battle with the fiercest forces of nature and to fight with the most forbidding region that our planet afforded. He hoped they would come out of that struggle victorious. Mr. Bruce, replying, said that there had been a good deal of misconception about the purpose of the Scottish National Expedition. There had been an idea in some quarters that they were starting it as a rival to the others in the field. The idea was not that it should be a rival, but a supplementary expedition. There were three expeditions working in the Antarctic, one sent out largely with the assistance of the British Government, one German, and the other Swedish. They were all more or less associated with the land. The Scottish expedition was especially associated with the sea. The Scottish expedition concentrated on the oceanographical side. Their region would be that part of the Antarctic where Sir James Ross, 60 years ago, took one sounding, attaining a depth of 4,000 fathoms, and reaching no bottom. Captain Robertson, master of the *Scotia,* also replied.

Park Commissioner William R. Willcox, on October 31, formally turned over to the New York Zoological Society the Aquarium in Battery Park. The legal transfer was accomplished several days ago. Professor H. F. Osborn, chairman of the executive committee and vice-president of the Zoological Society, received the city's gift. Commissioner Willcox in mak-

ing the transfer, told how the building had been erected originally upon the rocks and connected with the shore by bridge, and how the structure had been used successively as a battery, a place of amusement, and a landing place for immigrants, until finally in 1896 it was opened to the public as an aquarium by the Department of Parks. Charles H. Townsend, recently appointed director of the Aquarium, and formerly a member of the United States Fish Commission, said in part: "The possibilities of an aquarium as an institution for the instruction of the people have never been properly understood. What we want to do is to make it a part of the city's educational system. It should be a place for study and investigation. Fish culture is fast becoming a profession. We could establish a fish hatchery in the building. This would be interesting, and it could be arranged with glass sides so that the fish could be seen." Professor Osborn said it would be the aim of the Zoological Society to make the Aquarium even more popular than it had been, and added: "We have chosen as director Mr. Charles H. Townsend, widely known for his services in the United States Fish Commission, and the fact that a man of his character and scientific reputation accepts this position signalizes our determination to increase not only the attractiveness, but the educational value of the Aquarium to the masses of the people who visit it. Mr. Townsend will have full authority here; but we are fortunate in associating with him as an advisory board three experts in marine life—Professor Charles L. Bristol, of the New York University, Dr. Alfred G. Mayer, of the Brooklyn Institute of Arts and Sciences, and Professor Bashford Dean, of Columbia University.

The British Medical Journal states that the Huxley memorial lecture of the Anthropological Institute of Great Britain and Ireland was delivered in the lecture theater of the building formerly occupied by the University of London in Burlington Gardens by Dr. D. J. Cunningham, F.R.S., professor of anatomy in Trinity College, Dublin, who selected the subject of right-handedness and left-brainedness. He pointed out that the characteristic was one of vast antiquity, and argued that it had been attained in the ordinary course of the evolution of man by natural selection; but the condition thus established and transmitted from one individual to another did not reside in the right upper limb itself or in the vessel which conveyed the blood to it. All the evidence went to show that right-handedness was due to a transmitted functional preeminence of the left brain. This preeminence was not a haphazard acquisition picked up during the life of the individual, it was not the result, but through evolution it had become the cause, of right-handedness. The superiority of the left cerebral hemisphere rested upon some structural foundation transmitted from parent to offspring, and the exceptional cases of right-brainedness and left-handedness were due to the transference of this structural peculiarity from the left to the right side, or more probably to a transposition of the two cerebral hemispheres in the same way that transposition either partial or complete of the thoracic and abdominal viscera sometimes occurred. At the conclusion of the address the Huxley memorial medal was presented to Professor Cunningham by the president, Dr. A. C. Haddon.

The Electrical World states that during the passage of the special train on the Grand Trunk Railway, between Toronto and Montreal, on October 13, bearing the members of the American Association of General Managers and ticket agents from Chicago to Portland, wireless telegraphic signals were received by the party as the train passed St. Dominique station, at the rate of sixty miles an hour. No special attempt was made to signal to a great distance, but the train remained in touch with the station for from eight to ten miles. Two vibrators, ten by twelve feet, connected with an induction coil of the usual pattern (eight-inch spark), served to transmit the waves from the station, while on the train itself the waves were received by a coherer of the ordinary type. A relay rendered the signals audible to the passengers by ringing bells in three cars. The collecting wires

were run through the guides for the signal cord inside of the train, and extended about one-car length on either side of the coherer. Owing to the natural vibration of the train it was impossible to have the relay at the most sensitive point, but the distance to which it was possible to keep the train in touch with the station was considered very satisfactory by the various officials. The apparatus was loaned for the experiments by the physical department of McGill University, Professor E. Rutherford and Professor H. T. Barnes, assisted by Mr. H. L. Cooke, being present to look after the adjustments. Dean Bovey and Professor C. H. McLeod, of the engineering department of McGill, also witnessed the experiments.

The department of revenue and agriculture of the government of India has recently published the seventeenth issue of 'Agricultural Statistics of India for the years 1896–97 to 1900–01.' According to an abstract in *Nature* the numerical data have been compiled under the supervision of the director-general of statistics and are issued in two parts, the first dealing with British India and the second with native states. The information is tabulated under fourteen headings, including, among others, tables showing the total area of districts; the amount of cultivated and culturable land; the gross cultivated area under each crop; agricultural stock; the principal varieties of tenure held direct from the government; the progress made in the production of tea and of coffee; and the average yield per acre of the principal crops. The tables are accompanied by numerous short, explanatory notes which are often of an interesting nature. The following statistics referring to the cultivation and production of indigo in British India during the past few years show that a remarkable decline has occurred, doubtless in consequence of the competition of the artificial product:

Year.	Acres under Cultivation.	Production in Cwts.
1897–1898	1,339,099	166,812
1898–1899	1,010,318	139,320
1899–1900	1,026,900	111,890
1900–1901	990,375	148,029
1901–1902	803,697	121,475

The U. S. Geological Survey has recently made public the results of a series of measurements which the division of hydrography conducted in 1901 on a large number of streams in the United States to determine the volume of their flow. The work with which these records deal is unique in character and extent, and consists in the daily record of the height of water, together with the estimated maximum, minimum and average monthly flow in cubic feet, in upwards of two hundred and fifty of the important rivers of the United States. Accompanying these data are important facts concerning the physical aspects of their watersheds, the extent and manner to which their natural powers are utilized, and other information of value to engineers and water users. The report of the investigation of the New York streams is particularly full, an interesting feature being the results of measurements on streams in the Catskill and adjacent regions suggested as a possible source for the supply of New York city. Of interest also are the results of measurements of the streams in the west upon which depend the construction of the contemplated irrigation works under the new irrigation law. The water-power streams of Maine, the drainage from the vast watershed of the southern Appalachians, and the rivers of the central states are all represented in the investigation.

The thirteenth annual general meeting of the Mining Institute of Great Britain was opened on September 16, in Newcastle-on-Tyne, and simultaneously with it was held the jubilee meeting of the North of England Institution of Mining and Mechanical Engineering, upon whose foundation the Mining Institute was built up. Sir Lindsay Wood presided and in his address, according to the report in the *London Times,* reviewed the past history of the institute, and showed that the objects of the founders had been carried out and that the results they anticipated had been realized. He called attention to the great loss of life which occurred in the working of the coal mines of Great Britain previous to 1851, and said it was a universal desire to stop or reduce

to a *minimum* this loss of life that in 1835 a committee of the House of Commons was appointed to inquire into the cause of the accidents that were taking place. That committee reported, with regret, that the result of their inquiry had not enabled them to lay before the House any particular plan by which the accidents might be avoided with certainty, and consequently they made no decisive recommendation. In spite of subsequent committees and investigations, both official and private, the loss of life from accidents in mines did not decrease, and it was under these circumstances that a meeting of mining engineers and gentlemen connected with the working of the mines in the North of England was held at Newcastle on July 3, 1852, for the purpose of forming a society to meet at fixed periods and discuss the means of ventilation of coal mines with a view to the prevention of accidents and for general purposes connected with the mining and working of collieries. The society so formed was the beginning of the Mining Institute. He held that by an interchange of practical experience and by a united and combined effort to improve themselves in the science of their profession they had raised the art and science of mining engineering to a higher state of efficiency than it was in 50 years ago. The good work of the institute was recognized by the government in 1876, when it was granted a royal charter. Similar institutions were formed in various mining districts of the country, and in 1889 these were federated under the title of the Institute of Mining Engineers. He referred to the great part taken by the institute in the formation of the Durham University College of Science in 1871, and said there had been an enormous reduction in the number of fatalities in mines in consequence of the proceedings of the institute and to the education of its members. During the last 50 years the coal trade of the country had greatly increased, the output having more than quadrupled in the period. From 1851 to 1855 the number of deaths caused by explosions in mines averaged 231 per annum, whereas the average of the last five years was 64; if the difference in the number of men employed was taken into consideration, the deaths, calculated at the same rate as in the earlier period, would have been 765. The number of fatal accidents from the falls or roof and sides and from accidents in and about the shafts had also greatly decreased. The total loss of life from all sources on the average of the five years from 1851 to 1855 was 985 per annum, whereas the average of the five years from 1896 to 1900 was 1,001 per annum, or 16 more than in the first period, although there were 525,297 more men and boys employed in and about the mines. If the earlier death-rate had continued during the latter period there would have been a loss of 3,146 lives. There was still much to be accomplished, however, particularly in the reduction of the number of accidents due to falls of roof and sides in mines.

IN a recent paper published by the U. S. Geological Survey, on Wells and Windmills in Nebraska, mention is made of the phenomena of the breathing or blowing wells which are found distributed throughout a large portion of the State of Nebraska. These wells are of the driven type mostly in use upon the Plains, but are distinguished from those of ordinary character by a remarkable and unexplained egress and ingress of currents of air which produce distinctly audible sounds and give the names variously applied to them of breathing, sighing, blowing, or roaring wells, according to their characters in different places. The air currents are readily tested with the flames of candles, or by dropping chaff or feathers into the well tubes. There are periods when these wells blow out for several days, and equal periods when their air currents are reversed. It has been observed that the blowing occurs with changes of the barometer. Some wells are found to be most audible when the wind is from the northwest, with a rise in water level; but with a change of wind air is drawn in and the water is observed to sink. During the progress of a low-barometer area over one of these regions, wind is violently expelled from the wells, with a noise distinctly audible for several rods. Professors Loveland and Swezey, of the University

of Nebraska, have made observations on a well of this nature in Perkins County, and found that its breathing periods were exactly coincident with the barometric changes. The material through which the wells are driven may throw some light on their peculiarities. In southeastern Nebraska a layer of dense limestone about four inches thick lies beneath 50 to 100 feet of subsoil. Below the limestones is found water-bearing gravel. When the limestone covering the water-bearing beds is penetrated water under slight pressure rises about one foot. The water-bearing layer is very porous and must always contain more or less air. As the air above and the air inclosed in the gravels below are alike subject to the fluctuations of the barometer, it follows that if the surface air is rendered less dense the air below will pass out through the well openings until equilibrium between the rarer air and denser air is established, and the opposite effect will follow during a period of high pressure. Still, this explanation, plausible as it is, hardly accounts for the force with which the air is expelled from some of the wells, and a more comprehensive study of the problem is needed to satisfactorily explain all the phenomena.

UNIVERSITY AND EDUCATIONAL NEWS.

IT appears that Clark University will receive the sum of $1,577,000 from the estate of the late Jonas G. Clark. This we understand is in addition to the $500,000 already paid on account of the collegiate department.

AT a recent meeting of the board of trustees of Cornell University plans were authorized for the purchase of sixteen additional acres of land and for the erection of new buildings. A site was assigned for the Hall of Physics, for which Mr. John D. Rockefeller gave $250,000, and for a Hall of Arts and Humanities, to cost $250,000. A plan for retiring and pensioning professors was discussed.

THE trustees of the College of the City of New York have authorized the adoption of the architect's plans for the new buildings to be erected at a cost of $2,100,000.

SIR WILLIAM MACDONALD has given the department of physics of McGill University an installation for making liquid air.

A DEVELOPMENT of the equipment of the University of California's College of Medicine, to consist of a clinical hospital that will cost $400,000, has been proposed in a report submitted by a committee.

THE daily papers state that M. Michonis, a French millionaire, has bequeathed $120,000 as a fund to enable French students to study philosophy and religious sciences in German universities.

DR. T. H. STARKEY, of University College Hospital, London, England, has been recommended by the Dean of the medical faculty as professor of hygiene at McGill University, in succession to the late Dr. Wyatt Johnston.

AT Prague Dr. F. Vejdovsky, professor of embryology and comparative anatomy, has been appointed professor of zoology, replacing Dr. Anton Fric, recently retired.

THE sixteenth annual meeting of the Association of Colleges and Preparatory Schools in the Middle States and Maryland will be held in Baltimore on November 28 and 29 next. Among the subjects to be discussed are 'The Educational Value of Examinations as the Culmination of Preparatory Courses' and 'The Relative Functions and Powers of President, Trustees and Faculty.' On the latter subject President Ira Remsen, of the Johns Hopkins University, will speak on the college presidency; Dr. S. J. McPherson, a trustee of Princeton University, will speak on the duties of the trustee, and Professor George S. Fullerton, of the University of Pennsylvania, will explain the position of the faculty.

MR. E. D. BELL, M.S., has been elected to the chair of animal biology in the Utah Agricultural College, Logan, Utah.

PROFESSOR WLADISLAW ROTHERT, of Charkow, has been elected professor of botany in the University of Odessa.